Kevin Mooney
Senior Project Manager
GE Aerospace

1 Plastics Ave.
Pittsfield, MA 01201

T (413) 553-6610
kevin.mooney@ge.com

Via Electronic Mail

June 19, 2026

Ms. Lisa Danek Burke
EPA Project Manager
U.S. Environmental Protection Agency
New England Region
Five Post Office Square, Suite 100
Boston, MA 02109

Re: GE-Pittsfield/Housatonic River Site
Rest of River (GECD850)
Vernal Pool Pilot Study Supplemental Information Package

Dear Ms. Danek Burke:

I am submitting herewith the *Vernal Pool Pilot Study Supplemental Information Package* (SIP). Due to the large file size, the enclosed document includes only the main text, tables, and figures. A link to the full SIP, including all appendices, will be sent via SharePoint.

As discussed with EPA, in order to conduct the vernal pool pilot study this year, we need EPA approval of Section 3 of this SIP by July 13, 2026, and approval of the entire SIP by August 3, 2026.

Please let me know if you have any questions about this SIP or if you would like to discuss it.

Very truly yours,



Kevin G. Mooney
Senior Project Manager

Enclosure

Cc: (via electronic mail)
Joshua Fontaine, EPA
John Kilborn, EPA
Richard Fisher, EPA
Alexander Carli-Dorsey, EPA
Christopher Ferry, ASRC Federal
Thomas Czelusniak, HDR Inc.
Scott Campbell, Taconic Ridge Environmental

SEMS Doc ID 702600

Izabella Zapisek, Taconic Ridge Environmental
Michael Gorski, MassDEP
Tamara Cardona-Marek, MassDEP
Ben Guidi, MassDEP
Jason Perry, MassDEP
Michelle Craddock, MassDEP
Jeffrey Mickelson, MassDEP
Eve Schluter, MassDFW
MassDFW Project Inbox
Betsy Harper, MA AG
Carol Papp, CT DEEP
Graham Stevens, CT DEEP
Lori DiBella, CT AG
Danielle Perry, NOAA
James McGrath, City of Pittsfield
Andrew Cambi, City of Pittsfield
Michael Coakley, PEDA
Melissa Provencher, BRPC
Jay Green, Town Administrator, Town of Lenox
R. Christopher Brittain, Town of Lee
Town Manager, Great Barrington
Town Administrator, Stockbridge
Town Administrator, Sheffield
Jim Wilusz, Tri Town Health Dept.
Lance Hauer, GE
Eric Merrifield, GE
Matthew Calacone, GE
Rachel Leary, GE
Andrew Inglis, GE
Michael Werth, Anchor QEA
Dennis Lowry, AECOM
Mark Gravelding, Arcadis
James Bieke, Counsel for GE
Public Information Repository at David M. Hunt Library in Falls Village, CT
GE Internal Repository


Vernal Pool 5A-VP-42

June 2026
GE-Pittsfield/Housatonic River Site

ANCHOR QEA AECOM Sevenson Environmental Services, Inc.

Vernal Pool Pilot Study
Supplemental Information Package

June 2026
GE-Pittsfield/Housatonic River Site

Vernal Pool Pilot Study
Supplemental Information Package

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, Inc.
54 Genesee Street, Suite 100A
Camillus, New York 13031

In Conjunction with
AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067
and
Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, New York 14305

Project Number: 260469-11.01

TABLE OF CONTENTS

1 Introduction and Background 1

1.1 Purpose 1

1.2 Key Project Participants 1

1.3 Report Organization 3

2 Project Technical Documents 5

2.1 Technical Specifications 5

2.2 Design Drawings 5

3 Mobilization and Site Preparation Plan 6

3.1 Site Access 6

3.2 Mobilization and Site Preparation 6

3.2.1 Erosion and Sedimentation Control Measures 7

3.2.2 Pre-Construction Protection and Screening Measures for Rare Species 8

3.2.3 Vegetation and Tree Removal and Protection 10

3.2.4 Temporary Access Roads 12

3.2.4.1 Temporary Access Roads West of Pomeroy Avenue, at Miss Hall's School Property, and North of Pittsfield WWTP 13

3.2.4.2 Temporary Access Road South of Holmes Road 14

3.2.5 Equipment and Material Staging and Laydown Areas 15

3.2.6 Temporary Facilities 16

4 Vernal Pool Pilot Study Implementation Plan 18

4.1 Amendment-Based Treatment Implementation 18

4.1.1 Amendment Type and Application Rate 18

4.1.2 Amendment Application and Verification Methods 19

4.1.2.1 Development of Amendment Certification Units 20

4.1.2.2 SediMite™ Application 20

4.1.2.3 Sand/PAC Application 22

4.1.2.4 Sand/PAC Subsurface Mixing 24

4.1.2.5 Amendment Placement Verification 25

4.2 Removal-Based Implementation 25

4.2.1 Removal Areas and Volumes 26

4.2.2 Surveying and Verification of Removal Depths and Backfill Elevations 26

4.2.3 Soil Removal Activities 27

4.2.3.1 Mechanical Excavation 28
4.2.3.2 Fine Excavation Around Trees and Roots 28
4.2.4 Handling of Removed Materials 28
4.2.5 Off-Site Transport and Disposal 29
4.2.6 Water Management 30
4.2.7 Backfilling 31
4.3 Cultural Resource Discoveries 32
4.4 Restoration 32
4.4.1 Existing Conditions 33
4.4.2 Pre-Construction Inventory and Documentation 33
4.4.3 Restoration of Removal-Based Vernal Pools 33
4.4.4 Restoration of Amendment-Based Vernal Pools 35
4.4.5 Adjacent Area Site Restoration Plan 36
4.4.5.1 Vegetation Inventory 36
4.4.5.2 Restoration Implementation 37
4.4.6 Post-Planting Watering 38
4.5 Waste Management 38
4.6 Equipment Cleaning and Decontamination 39
4.7 Post-Restoration Activities and Demobilization 41
5 Traffic Routes for Implementation and Traffic Management 42
6 Project Safety Plan 43
6.1 Health and Safety 43
6.2 Site Management and Security 43
6.3 Spill Prevention, Control, and Countermeasures 44
6.4 Contingency Plan 46
7 Project Quality Plan 48
7.1 Quality of Life Protection Measures 48
7.1.1 Project Work Hours 48
7.1.2 Airborne PCB and Dust Control 48
7.1.3 Noise Control 51
7.1.4 Lighting Control 54
7.1.5 Odor Control 54
7.2 Construction Quality Control 55
7.2.1 Laboratory QA/QC 56

7.2.2 Construction QA/QC 56

8 Pilot Study Monitoring and Evaluation 58

8.1 During-Construction Screening for Rare Species 58

8.2 Amendment-Based Pool Monitoring During Construction 59

8.3 Removal-Based Pool Monitoring During Site Preparation and Construction 60

9 Project Schedule and Construction Completion Report 61

9.1 Construction Schedule 61

9.2 Vernal Pool Pilot Study Construction Completion Report and Subsequent Reporting 61

10 References 63

TABLES

Table 3-1 Rare Species That Could Be Affected by the Vernal Pool Pilot Study Construction Activities

Table 4-1 Amendment Application Approach for Each Amendment-Based Vernal Pool

Table 4-2 Removal Area and Volume Estimates for Removal-Based Vernal Pools

Table 4-3 Waste Material Disposal Locations

Table 9-1 Project Work Schedule

FIGURES

Figure 1-1 Project Lines of Communication

Figure 3-1 Sevenson Staging and Access Plan Pomeroy Avenue Area

Figure 3-2 Sevenson Staging and Access Plan Holmes Road Area

Figure 3-3 Sevenson Staging and Access Plan Pittsfield WWTP Area

APPENDICES

Appendix A Technical Specifications

Appendix B Design Drawings

Appendix C Contractor's Stormwater Pollution Prevention Plan

Appendix D Wood Turtle Management Plan

Appendix E Water Quality and Second Dry Cycle Data Summary

Appendix F Treatment-Based Vernal Pool Amendment Certification Units

Appendix G Excavation-Based Vernal Pool Survey Points

Appendix H	Cultural Resources Unanticipated Discoveries Plan
Appendix I	Consolidated Information on Vernal Pool Existing Conditions
Appendix J-1	Adjacent Area Vegetation Inventory
Appendix J-2	Staging Area Planting Tables
Appendix K	Contractor's Health and Safety Plan
Appendix L	Revised Vernal Pool Pilot Study Performance Monitoring Plan

ABBREVIATIONS

AC	activated carbon
ACU	Amendment Certification Unit
BMP	best management practice
City	City of Pittsfield
CM	Construction Manager
Contractor	Sevenson Environmental Services, Inc.
cy	cubic yard
DBH	diameter at breast height
EPA	U.S. Environmental Protection Agency
Final Pilot Work Plan	*Final Revised Vernal Pool Pilot Study Work Plan*
frac	fractation
FSP/QAPP	*Field Sampling Plan/Quality Assurance Project Plan*
GE	General Electric Company
GPS	Global Positioning System
HASP	Health and Safety Plan
kg	kilogram
MNHESP	Massachusetts Natural Heritage and Endangered Species Program
PAC	powdered activated carbon
PCB	polychlorinated biphenyl
PM_{10}	particulate matter smaller than 10 micrometers in diameter
PPE	personal protective equipment
QA	quality assurance
QC	quality control
QOL	quality of life
QOL Compliance Plan	*Second Revised Quality of Life Compliance Plan*
Revised Final Permit	*Revised Final Permit issued by the U.S. Environmental Protection Agency to the General Electric Company for the Rest of River Remedial Action*
Revised T&D Plan	*Revised On-Site and Off-Site Transportation and Disposal Plan*
ROR	Rest of River
SIP	Supplemental Information Package
SPCC	Spill Prevention, Control, and Countermeasure
TSCA	Toxic Substances Control Act
WMA	Wildlife Management Area
WWTP	Wastewater Treatment Plant

1 Introduction and Background

1.1 Purpose

In accordance with the requirements of the Revised Final Permit issued by the U.S. Environmental Protection Agency (EPA) to the General Electric Company (GE) for the Rest of River (ROR) Remedial Action (Revised Final Permit) and GE's *Final Revised Vernal Pool Pilot Study Work Plan* (Final Pilot Work Plan; Anchor QEA and AECOM 2025), GE has prepared this Supplemental Information Package (SIP) to support implementation of the vernal pool pilot study.

Section II.B.3.b of the Revised Final Permit requires GE to conduct a pilot study to evaluate the use of both traditional excavation/restoration techniques and amendments, such as activated carbon, for the remediation of vernal pools. The principal objective of the vernal pool pilot study is to evaluate the effectiveness and potential adverse impacts of removal-based and amendment-based remediation of the pools to inform selection of an appropriate remedial approach for the remaining vernal pools in Reach 5A as well as those in downstream reaches. Design details for the vernal pool pilot study were presented in the Final Pilot Work Plan, which was conditionally approved by EPA on December 22, 2025.

This SIP includes information relating to the construction activities to be performed by the selected construction contractor, Sevenson Environmental Services, Inc. (the Contractor), in implementing the vernal pool pilot study. The work described in this SIP includes the construction phase of the pilot study and is based on the design requirements of the Final Pilot Work Plan, with relevant updates and additional information incorporated in accordance with EPA's December 22, 2025, conditional approval letter for that work plan, as well as information provided by the Contractor. This SIP also provides information on the monitoring to be conducted during and after the pilot study construction activities.

1.2 Key Project Participants

EPA

EPA is the lead agency responsible for overseeing the vernal pool pilot study implementation in accordance with the Revised Final Permit. As such, EPA retains approval authority for this SIP.

GE

GE is responsible for implementing the ROR Remedial Action, including the vernal pool pilot study, in accordance with the Revised Permit and for requiring that its contractors and subcontractors perform the required construction activities in accordance with the approved Final Pilot Work Plan. This SIP describes the systems that GE has established to ensure that its quality-related responsibilities for

the vernal pool pilot study are fulfilled. GE will be responsible for verifying that the Construction Manager (CM) (defined below) implements and manages the systems described in this SIP. GE will provide targeted construction oversight such that each task is generally overseen at least once during a 24-hour period. GE will also be responsible for formal communications with and submittals to EPA.

Engineer of Record

The Engineer of Record is an independent, duly qualified, licensed design professional retained directly by GE to provide design and engineering services for the vernal pool pilot study construction activities. This definition includes all subcontractors to the Engineer of Record. Anchor QEA is the Engineer of Record for the vernal pool pilot study implementation. Anchor QEA will review the construction-related submittals and address and resolve design issues that may arise during pilot study construction activities, as well as related monitoring activities.

Construction Manager

The CM is a duly qualified entity retained by GE to provide professional construction management and related services in connection with the project. The CM will be responsible for implementing this SIP. The CM will manage the Contractor (and any other contractors or subcontractors) on behalf of GE and serve as the primary point of contact for communications to and from the Contractor (and any other contractors or subcontractors). The CM will provide quality assurance (QA) and monitor the day-to-day construction quality control (QC) activities performed by the Contractor (and its subcontractors) to verify compliance with the contract drawings and specifications. The CM will also manage, coordinate, and administer QA/QC activities and requirements, including those of any subcontractors to the CM. Additionally, the CM may be assigned management of any third-party QA inspection and testing firms retained by GE.

QOL Monitoring Contractor

The Quality of Life (QOL) Monitoring Contractor retained by GE will perform monitoring to demonstrate compliance with the applicable QOL standards and, as warranted, in response to project-related complaints. The QOL Monitoring Contractor will be responsible for monitoring ambient air and noise impacts, as well as odor and light conditions where applicable. during construction activities and for reporting compliance data. The QOL Monitoring Contractor will coordinate daily with the CM regarding the work schedule and sequence.

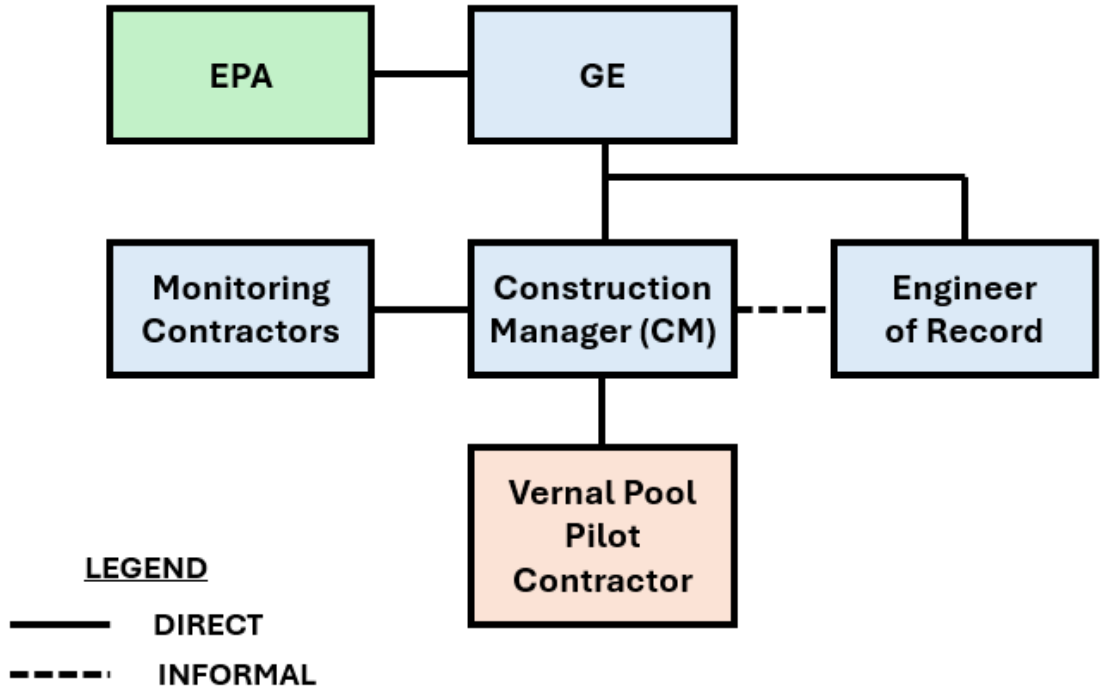
Contractor

The Contractor (Sevenson) has been retained by GE to provide the labor, materials, and equipment required to implement the pilot study construction activities in accordance with the contract documents. The Contractor will be responsible for the QC of its constructed work product as well as

the necessary inspections and tests required to ensure that its work complies with the contract documents. The Contractor will exercise authority over its workforce, including QC personnel and its third-party QC support services.

The lines of communication among the key project participants are illustrated on Figure 1.

Figure 1-1
Project Lines of Communication



1.3 Report Organization

The remainder of this SIP is organized into the following sections:

- Section 2 provides an overview of the specifications and Design Drawings for the vernal pool pilot study construction activities.
- Section 3 describes Contractor mobilization and site preparation activities, including construction of temporary access roads and staging areas.
- Section 4 presents the site implementation plan that includes a description of the primary work tasks to be conducted by the Contractor to perform the vernal pool remediation and restoration activities.

- Section 5 provides details regarding the planned traffic routes to be used by the Contractor to transport waste materials for off-site disposal and to transport imported fill materials to the work areas.
- Section 6 summarizes the safety plan components to be implemented during construction.
- Section 7 provides a project quality plan, including components pertaining to QOL protection measures and construction QA.
- Section 8 summarizes the vernal pool pilot study monitoring and evaluation to be conducted during the construction work.
- Section 9 provides an overview of the anticipated project schedule and identifies the elements of the construction completion report.
- Section 10 lists references cited in this SIP.

The discussions in the following sections are supported by various tables, figures, and appendices included in this SIP.

2 Project Technical Documents

The project technical documents used for the pilot study construction activities consist of construction Technical Specifications and Design Drawings, as described in the following subsections.

2.1 Technical Specifications

Technical Specifications prepared for the pilot study construction activities are based on those specifications included in the Final Pilot Work Plan, with updates incorporated as required by EPA's December 22, 2025 conditional approval letter for that work plan. Additional revisions were made to the specifications, as necessary, during the contractor procurement and planning phase following approval of the Final Pilot Work Plan. The pilot study Technical Specifications are provided in Appendix A.

2.2 Design Drawings

Design Drawings prepared for the pilot study construction activities are based on those Design Drawings included in the Final Pilot Work Plan, with updates incorporated as required by the EPA's December 22, 2025 conditional approval letter. Additional revisions were made to the Design Drawings, as necessary, during the contractor procurement and planning phase following approval of the Final Pilot Work Plan[1]. The pilot study Design Drawings are provided in Appendix B.

[1] Revision clouds shown on the Design Drawings identify modifications made after issuance of the construction drawing set to the Contractor. These clouds do not represent changes relative to earlier versions of the drawings submitted to the EPA as part of the Final Pilot Work Plan. Revision clouds shown on the Design Drawings identify modifications made after issuance of the construction drawing set to the Contractor. These clouds do not represent changes relative to earlier versions of the drawings submitted to the EPA as part of the Final Pilot Work Plan.

3 Mobilization and Site Preparation Plan

This section describes the mobilization and site preparation activities to be implemented by the Contractor, including construction of temporary access roads and staging areas. These activities will be conducted in accordance with the requirements of the Technical Specifications (Appendix A) and Design Drawings (Appendix B) and with Section 4.3 (Cultural Resource Discoveries), Section 6 (Project Safety Plan), and Section 7 (Project Quality Plan).

3.1 Site Access

The vernal pools subject to pilot study construction activities are distributed across Reach 5A and will be accessed through multiple locations, as shown in the Design Drawings and summarized below:

- Vernal Pools 5A-VP-4, 5A-VP-7, 5A-VP-9, 5A-VP-15, and 5A-VP-16 will be accessed from a temporary access road extending west from Pomeroy Avenue.
- Vernal Pool 5A-VP-12 will be accessed from a temporary access road extending from existing gravel roads on the Miss Hall's School property along the western side of Holmes Road.
- Vernal Pools 5A-VP-22 and 5A-VP-27 will be accessed from an existing unimproved access route extending south from Holmes Road.
- Vernal Pools 5A-VP-52 and 5A-VP-57 will be accessed from a temporary access road extending north from existing access routes associated with the City of Pittsfield (City) Wastewater Treatment Plant (WWTP).

Multiple properties will require access to implement the vernal pool pilot study construction and monitoring activities. GE will obtain any necessary access agreements or consent prior to commencing the pilot study construction activities on those properties.

3.2 Mobilization and Site Preparation

Mobilization will include the delivery of Contractor equipment to the relevant work areas, along with materials necessary to initiate construction activities. Equipment will be delivered using tractor trailers or flatbed trucks, and each piece will be unloaded at the designated work areas.

Immediately before or after mobilization to the work areas, the Contractor will perform site preparation activities to establish the necessary controls, features, and procedures to support subsequent construction activities. These site preparation activities will include, but are not limited to, the following:

- Obtaining utility clearances;
- Establishing restricted work area controls, access points, and site safety measures;
- Establishing survey control;

- Installing erosion and sedimentation control measures;
- Implementing pre-construction protection and screening measures for certain rare species;
- Constructing temporary access roads;
- Constructing of staging and support areas;
- Preparing temporary support facilities; and
- Conducting vegetation and tree removal as necessary.

Additional information on key activities is provided in the following subsections.

3.2.1 Erosion and Sedimentation Control Measures

Erosion and sedimentation control measures will be implemented to minimize the potential for erosion of exposed soils. During mobilization to the work areas, the Contractor will install erosion control materials at the locations described and shown in the Design Drawings and Technical Specifications and in the Contractor's Stormwater Pollution Prevention Plan included in Appendix C. The general areas to be protected by erosion control measures include temporary access roads, staging areas, and construction areas associated with each vernal pool. In addition, if earthen backfill or road construction materials are stockpiled at the Contractor's temporary support area to be located at GE''s Tyler Street facility (as described in Section 3.2.6), erosion control measures will be installed around the perimeter of all these stockpiles.

The erosion and sedimentation control measures will include straw wattles, silt fencing, and erosion control blankets. Control measures will be installed using mechanized equipment, including a dedicated trencher. Best management practices (BMPs) specified in the Stormwater Pollution Prevention Plan include, but are not limited to, sequencing construction activities to minimize the area of bare soil exposed at any one time, dust mitigation, minimizing soil tracking off site, temporary and permanent stabilization using seed and mulch, and minimizing steep slope disturbances.

The Contractor will conduct routine inspections of the erosion and sedimentation controls to verify proper installation and ongoing performance. Inspections will be performed at a regular frequency (e.g., weekly), following significant precipitation events, and after major construction activities that could impact control measures. Inspection findings will be documented, and any deficiencies will be promptly addressed to maintain compliance and effectiveness.

Control measures will remain in place and be actively inspected and maintained until the following conditions are met: (1) the drainage area contributing to the control measure has been permanently stabilized; (2) permanent vegetation has been established in all disturbed areas; and (3) the area has

been fully restored and the CM has issued written approval for the removal of the erosion and sediment control measures.

Any silt fencing within the boundaries of the vernal pools and from around portions of the pool perimeters will be removed prior to the first post-remediation winter freeze regardless of whether the previously listed conditions are met.

3.2.2 Pre-Construction Protection and Screening Measures for Rare Species

As specified in Table 7-6 of the *Revised Housatonic River Reach 5A Baseline Restoration Assessment Report* (AECOM 2024a), a total of 12 plant and animal species listed by the Massachusetts Natural Heritage and Endangered Species Program (MNHESP) as threatened, endangered, or of special concern have MNHESP-mapped Species Habitat that encompasses the vernal pools in Reach 5A. These include two bird species, seven plant species, one turtle, and two lepidopteran insects. In addition, consultation with the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) indicated that two federally listed or proposed bat species (which are also state listed) may use these habitats.

Surveys for federally and state-listed rare species were conducted throughout Reach 5A during the 2025 field season in accordance with GE's February 3, 2025, *Supplemental Data Collection Work Plan Addendum* (Anchor QEA 2025) and the May 2, 2025, supplement to it (GE 2025). These surveys confirmed the presence of some of the above-mentioned rare species in impacted floodplain areas of Reach 5A and showed that others were not present and are unlikely to be present. Although some of these observations were located proximate to the pilot study vernal pools and support areas, no observations were recorded directly within any Reach 5A vernal pools or support areas.

Based on the MNHESP Species Habitat mapping, the IPaC consultation, and the results of the 2025 field surveys, the federally and state-listed rare species that could be present or have habitat in the pilot study vernal pools are listed in Table 3-1.

Table 3-1
Rare Species That Could Be Affected by the Vernal Pool Pilot Study Construction Activities

Scientific Name	Common Name	State Status	Federal Status
Reptiles			
Glyptemys insculpta	Wood turtle	SC	NA
Plants			
Ranunculus pensylvanicus	Bristly buttercup	SC	NA
Veronicastrum virginicum	Culver's-root	T	NA
Carex grayi	Gray's sedge	T	NA
Eleocharis intermedia	Matted sike-sedge	T	NA

Scientific Name	Common Name	State Status	Federal Status
Carex tuckermanii	Tuckerman's sedge	E	NA
Sagittaria cuneata	Wapato	T	NA
Malaxis monophyllos ssp. brachypoda	White adder's-mouth	E	NA
Lobelia siphilitica	Great blue lobelia	E	NA
Moths and Butterflies			
Pieris oleracea	Mustard white butterfly	T	NA
Papaipema sp. 2	Ostrich fern borer moth	SC	NA
Bats			
Perimyotis subflavus	Tricolored bat/Eastern pipistrelle	E	P
Lasionycteris noctivagans	Silver-haired bat	SC	NA
Lasiurus borealis	Eastern red bat	SC	NA
Myotis lucifugus	Little brown bat/ little brown myotis	E	NA
Lasiurus cinereus	Hoary bat	SC	NA

Notes:
E: Endangered
T: Threatened
SC: Special Concern
P: Proposed Federal Listing
NA: Not Applicable

Prior to the initiation of on-site construction, screening will be conducted for the presence of wood turtles, state-listed plants, host plants for rare lepidopterans. and potential tree roosting habitats for state-listed bats.[2] These screening activities will be conducted by qualified biologists in all access, staging, and vernal pool construction areas and will include the following:

- Pre-construction protection measures for wood turtles will be implemented as described in the Wood Turtle Management Plan provided in Appendix D. Those protection measures will include: (1) a review of available data on wood turtle activity in Reach 5A generated by the ongoing wood turtle radio-telemetry tracking program; (2) radio-telemetry tracking and clearing surveys in advance of access by construction equipment; (3) relocation and monitoring of turtles observed within or near active construction; and (4) training of construction personnel to recognize wood turtles and their habitat preferences such that their individual actions will avoid and minimize potential direct impacts to individual turtles.
- State-listed plants encountered within pilot pools or support areas will be assessed for potential relocation into suitable nearby habitats. If state-listed plants are observed near work

[2] Measures to be taken to protect rare species during pilot study construction activities are discussed in Section 8.1.

areas, they will be protected with barriers or fencing sufficient to prevent accidental disturbances.

- Host plant surveys for the mustard white butterfly and the ostrich fern borer moth will be conducted within the limits of the support areas prior to construction. Individual host plants will be located by Global Positioning System (GPS) and small stands or patches of host plants will be mapped as a polygon with the total number of plants estimated.
- Trees with a diameter at breast height (DBH) of four inches or greater located within vernal pools and support areas will be identified, measured, and located using a handheld GPS device. For this pilot study, given the anticipated schedule (Section 9.1), the tree cutting cannot be limited to the period of November through March, when the bats are hibernating. In this situation, any trees with a DBH of four inches or greater (including standing dead snag trees) that cannot be avoided will be assessed for bat roosting habitat. Live trees and standing snags will be inspected for exfoliating tree bark, tree cracks, crevices or hollows, dense clusters of live or dead leaves, and abandoned squirrel nests. Trees exhibiting these features will receive follow-up emergence (or "exit") surveys to ensure that bats are not present before the trees are cut down. Surveys will begin 30 minutes before sunset and continue until at least one hour after sunset or until it is too dark to see emerging bats. If bats are observed in a tree that needs to be removed, GE will consult with EPA prior to tree removal about the appropriate action to take.

In spite of these protection measures, the vernal pool pilot study construction activities could have some impacts on the rare species listed in Table 3-1. GE's proposed mitigation for such unavoidable impacts will consist of the mitigation measures proposed generally for Reach 5A in GE's Rare Species Conservation and Management Plan, which is an appendix to GE's *Housatonic River Reach 5A Restoration Plan*, submitted in April 2026 (AECOM 2026).

Any other federally or state-listed faunal species encountered during the site preparation or the pilot program itself will be documented, and any additional observations of state-listed plant species will be cataloged and located by global positioning system instrumentation for reporting to MNHESP. All encounters with or observations of state-listed faunal or plant species will be documented and reported to MNHESP using its online portal, Heritage Hub, within the time frame specified in the Data Release Agreement between GE and MNHESP.[3]

3.2.3 Vegetation and Tree Removal and Protection

Clearing of existing vegetation will be performed only where necessary to access the vernal pools, construct staging/support areas, and complete the removal- and amendment-based work activities

[3] Available at: https://www.mass.gov/info-details/heritage-hub-overview

within the vernal pools. Mature trees with a DBH greater than eight inches will be left in place to the extent practicable.

For the temporary access roads and staging/support areas, the Contractor will use a licensed land surveyor to delineate those areas prior to commencing vegetation removal. Survey controls will include flagging and staking of access road alignments, delineation of staging and support area boundaries, identification of environmentally sensitive exclusion zones, and marking of any trees or features designated for preservation. The currently anticipated layouts for primary temporary access roads and staging/support areas are shown on Figures 3-1 through 3-3. The locations and/or boundaries of these access roads and staging/support areas may be modified in the field from those shown on Figures 3-1 through 3-3 to minimize impacts on existing trees and vegetation. Following survey layout, the Contractor will conduct a joint field inspection with the CM to review the staked limits and confirm the extent of vegetation and tree removal. During this inspection, trees with a DBH greater than eight inches that are located adjacent to or within the vicinity of the work area will be identified and evaluated for protection to the extent practicable. Clearing boundaries and environmentally sensitive areas will be clearly delineated in the field to minimize unnecessary disturbance to mature vegetation and surrounding habitat resources. As discussed in Section 3.2.2, pre-construction screening and protection measures will be implemented for potentially affected rare species.

Within the vernal pools subject to excavation, trees with a DBH greater than eight inches will be left in place. Fine excavation will be completed around these trees, as described in Section 4.2.3.2, to avoid damaging the tree root systems. Trees with a DBH less than eight inches and all other vegetation within the excavation areas will be removed, along with the root systems, as necessary, to complete the required one-foot removals.

There will be no tree removal in the amendment-based test pools. However, in those pools, other vegetation removal will be completed prior to amendment placement, as necessary, based on coordination between the Contractor and the CM. Woody debris will be left in place in the amendment-based pools except in 5A-VP-9 and 5A-VP-15, where mechanical mixing will be conducted, and in areas where large woody debris needs to be removed to facilitate equipment access.[4] Where large woody debris removal is performed, the removed debris will be removed prior to amendment placement and staged near the vernal pool. Following completion of amendment application and mixing, the large woody debris removed from these vernal pools will be placed back into the same general areas from which it was removed or disposed of off-site, as described in Section 4.4.4.

[4] For purposes of this SIP, large woody debris is defined as woody debris that is greater than four inches in diameter and three feet long.

Trees designated for preservation adjacent to temporary access roads and staging/support areas and within the excavation- and amendment-based pools will be protected as necessary through the implementation of protective measures, such as flagging, exclusion zones, and physical protective measures, prior to the commencement of construction activities. The Contractor will instruct all field personnel on the location of tree protection areas and the associated restrictions. Any trimming of limbs required to facilitate access or maintain safe working clearances will be limited to the minimum extent necessary and performed in accordance with generally accepted arboricultural practices.

Throughout construction operations, the Contractor will routinely monitor protected trees and associated exclusion areas to ensure compliance with project requirements and environmental protection measures. Heavy equipment operations within close proximity to preserved trees will be carefully controlled, to the extent practicable, to minimize impacts to root systems, trunks, and overhanging branches. In the event that unforeseen field conditions require work within established protection zones, the Contractor will coordinate with the CM prior to performing such work so that appropriate mitigation measures can be evaluated and implemented if necessary. Upon completion of the work, all temporary protective measures will be removed once the area has been stabilized and the potential for construction-related impacts has ended.

Vegetation clearing, where necessary, will be performed using low-ground-pressure equipment, including excavators equipped with clearing attachments, skid steer loaders with forestry or brush cutting heads, and excavator or skid steer-mounted chippers to mulch vegetation and trees in place. Larger trees designated for removal in or adjacent to access roads and staging areas will be cut down using chainsaws. Where tree cutting is necessary in such areas, trees will be cut flush with the ground and the roots left in place to the extent practicable. For areas where root wads require removal, such as within excavation-based pools, the removed root wads will be disposed of according to the designation of the surrounding or adjacent soils. Aboveground portions of cleared vegetation not impacted by contaminated soil will be managed on site in a manner supportive of the local ecology, such as spreading of smaller chipped material for erosion control, placement of trunks, brush, or branches within the vernal pools as habitat features; or creation of adjacent brush or log piles.

3.2.4 Temporary Access Roads

Temporary access roads will be constructed to support the pilot study construction activities. In most cases, there are existing unimproved paths allowing access to the proximity of the pilot study vernal pools.

Temporary access roads will typically be constructed along these existing paths to prioritize use of disturbed or degraded habitat areas where practicable (e.g., utility corridors, existing paths, and other disturbed areas). Additional temporary access routes will need to be established extending

from the existing paths to some vernal pools to complete the pilot study construction activities, the longest of which will be to vernal pools 5A-VP-4, 5A-VP-12, and 5A-VP-52.

The temporary access routes have been designated as either primary or secondary access roads, as shown in the Design Drawings. Primary access roads are located along main routes that generally align with the existing sewer easements or along existing paths or roadways. The secondary access roads will provide access through undisturbed areas of the floodplain to isolated vernal pools (i.e., 5A-VP-4, 5A-VP-12, and 5A-VP-52) and will be constructed using low-impact construction methods as described in Sections 3.2.4.1 and 3.2.4.2.

Aggregate for construction of the temporary access roads and staging areas will be provided by Troy Sand and Gravel, Inc. from its Cropseyville, New York quarry. The aggregate will be sampled and tested to verify that it meets the project specifications for both chemical and geotechnical characteristics. Results of the testing will be provided to EPA for concurrence prior to delivery of the aggregate to the areas where it will be placed.

Equipment and decontamination measures associated with vehicles using the temporary access roads are described in Section 4.6.

3.2.4.1 Temporary Access Roads West of Pomeroy Avenue, at Miss Hall's School Property, and North of Pittsfield WWTP

After clearing vegetation (where needed), the Contractor will initiate construction of the primary access roads. The primary access roads will remain in place for future use during the full-scale remediation of Reach 5A, after which the temporary access road construction materials will be removed and the disturbed areas will be restored. Primary access roads will be constructed at two work areas: (1) west of Pomeroy Avenue; and (2) north of the Pittsfield WWTP area along Utility Drive. Each primary access road will be constructed by deploying woven geotextile on the ground surface followed by placing and grading crushed dense-grade aggregate. Grading of some areas may be completed prior to placement of the geotextile. The aggregate will be delivered using dump trucks and graded in lifts using a bulldozer. The primary access roads will be nominally seven inches thick and 12 feet wide. In general, the primary access roads will provide single-lane traffic; however, at some locations, bump outs or passing areas will be constructed to allow for two-way traffic. As noted above, the primary access road layout is shown on Figures 3-1 through 3-3, subject to modification in the field to minimize impacts on existing trees and vegetation.

At Miss Hall's School property, the Contractor will access the work area by entering the property from Holmes Road and then traversing existing paved or gravel roads at the property. Therefore, no new primary access roads will be constructed at this property.

Secondary access roads will be conducted to provide access to vernal pools 5A-VP-4, 5A-VP-12, and 5A-VP-52 using interlocking composite construction mats. Prior to the placement of the mats, the Contractor will deploy polyethylene liner or other fabric material on the existing ground surface to provide a demarcation layer, to limit contact between the mats and underlying soils, and to reduce the level of decontamination required, which will reduce the total contact water generated on site. The construction mats will be placed using mechanical equipment and connected and locked into place by laborers. The construction mats will consist of lightweight, interlocking composite mats that provide ground protection, rutting prevention, and load distribution in work areas.

3.2.4.2 Temporary Access Road South of Holmes Road

A temporary access road will be utilized south of Holmes Road to provide access to vernal pools 5A-VP-22 and 5A-VP-27. The access route will generally follow existing site conditions, with improvements implemented only as necessary to support safe and effective construction access. Potential improvements may include localized placement of gravel near the Holmes Road entrance to reduce grade and the use of temporary construction mats where wet conditions could result in rutting from equipment traffic. Single-lane traffic will be maintained along the access road.

The approach to access road construction in this area has been intentionally minimized based on several key considerations. Unlike other work areas where access roads must accommodate frequent heavy truck traffic associated with soil excavation and backfill, pools 5A-VP-22 and 5A-VP-27 will be remediated using in-situ treatment methods involving placement of activated carbon. Accordingly, haul trucks will not be used along this segment, and both the weight and frequency of vehicle traffic will be substantially reduced. Equipment anticipated for use will consist of relatively low-ground-pressure or lighter duty vehicles, such as pickup trucks with trailers, excavators, telehandlers, skid steers, and low-ground-pressure off-road haulers.

Site-specific environmental and stakeholder considerations further support minimizing disturbance along this access route. The northern portion of the corridor consists of well-established mown grass, which will help limit disturbance to underlying soils. In addition, soils within the footprint of this access route are not currently designated for remediation as part of Reach 5A. A truck wheel-washing station will be installed at the Holmes Road entrance to prevent off-site tracking of soil onto public roadways.

The project team has coordinated directly with the owners of the adjacent property (Parcel J5-2-10), who expressed concerns regarding the construction of a gravel road adjacent to their property. In response, the access alignment was modified in consultation with the property owners to shift portions of the route onto their property where practicable. This approach is expected to reduce the length of temporary access road located directly above the City sanitary sewer easement. The

property owners have indicated that use of the existing ground surface is acceptable provided that any rutting or disturbance is restored following completion of work.

For portions of the access route located above the City sewer south of the wider grassed area, construction activities will be performed directly on the existing vegetated surface to the extent practicable. Temporary construction mats will be deployed as needed in areas where ground conditions are unsuitable to support equipment without causing excessive disturbance. This approach balances construction access requirements with the need to protect sensitive environmental resources, maintain the integrity of underlying infrastructure, and address property owner concerns.

3.2.5 Equipment and Material Staging and Laydown Areas

To support pilot-scale remediation, staging and laydown areas will be constructed by the Contractor in the vicinity of each test pool. Laydown areas will include areas designated for vehicle parking, material and equipment staging, dewatering of excavated vernal pool soil (if needed), and equipment decontamination. In addition, two centralized staging areas will be constructed to consolidate, manage, and dewater soils generated from removal-based vernal pools. As previously noted, the locations of these staging and laydown areas are shown on Figures 3-1 through 3-3, subject to revision in the field to minimize impacts on existing trees and vegetation.

The Contractor will construct two lined staging pads at the centralized staging areas, each equipped with perimeter containment berms, to temporarily stage soil removed from vernal pools 5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57. One lined staging pad will be constructed near vernal pool 5A-VP-15 and will be used to temporarily stage and manage the soil removed from vernal pools 5A-VP-4, 5A-VP-7, and 5A-VP-16 and to segregate such soil into material whose disposal is regulated under the Toxic Substances Control Act (TSCA) (referred to herein as TSCA soils) and non-TSCA-regulated material/soils. A second lined staging pad will be constructed near vernal pool 5A-VP-57 to temporarily stage, manage, and segregate the TSCA and non-TSCA soils removed from vernal pools 5A-VP-52 and 5A-VP-57. Limited grading of the existing ground surface will be performed, as necessary, to prepare these areas for construction. The use of centralized staging pads, rather than individual pads at each vernal pool, provides operational efficiencies for soil management and loadout, facilitates effective segregation and containment of TSCA and non-TSCA soils, and minimizes disturbance in the vicinity of each vernal pool.

Aggregate for construction of the two centralized staging areas will be provided from the same source as material used to construct the temporary access roads (i.e., the Troy Sand and Gravel, Inc. Cropseyville, New York quarry).

Laydown areas constructed in the vicinity of the remaining vernal pools, as shown on Figures 3-1 through 3-3, will be used for parking and staging of equipment and materials required to complete

perform work at each vernal pool. These laydown areas will be constructed using construction mats of the same type used to construct secondary access roads, as described in Section 3.2.4. Vegetation clearing will be limited to the minimum necessary to facilitate mat placement, and significant grading of the existing ground surface is not anticipated. Prior to mat installation, the Contractor will deploy a polyethylene liner or a comparable geotextile to provide a demarcation layer and minimize direct contact between the construction mats and underlying soils.

An equipment cleaning area will be constructed by the Contractor at each staging and laydown area to facilitate equipment decontamination. The equipment cleaning area will generally consist of an impermeable liner that is sloped to a collection sump for proper management of wash water. Berms will be constructed and a 24-mil liner will be placed throughout the decontamination area and over the berm, and will be secured on the outside toe of the slope. High-density polyethylene mats will be placed over the berm and within the pad to protect the liner as equipment enters and exits. Water within the bermed area will be collected for treatment. As an alternative at some or all locations, the Contractor may use custom-fabricated metal decontamination pans or wheel wash pans. In that case, ramps would be included within the structures to allow equipment entry and exit.

3.2.6 Temporary Facilities

The Contractor will establish a central temporary field office in Building 100 at GE's Tyler Street facility in Pittsfield. The Tyler Street facility will serve as the Contractor's primary project management hub. The Tyler Street facility may also be used for temporary laydown and storage of construction equipment, materials, and vehicles.

Portable toilet and handwash station units will be deployed at or near each active work area to serve field crews throughout the project. Because personnel will travel between work areas as construction progresses, sanitary units will be relocated to active work areas as needed.

At the four most remote vernal pool work areas, electrical grid power is not available. The Contractor will provide power through self-contained, sound-attenuated portable diesel generators as needed. Generators will be staged within designated work areas, and fueling operations will be conducted in accordance with the Contractor's Spill Prevention, Control, and Countermeasure (SPCC) Plan (discussed in Section 6.3), with drip pans and spill containment provided at all times.

Water supply from the City is not directly available at the vernal pool work areas. The Contractor will acquire a local fire hydrant permit or equivalent approval and fill the water truck as needed for use in dust suppression at the work areas, haul roads, and staging areas throughout the project. Water for maintaining moisture in exposed tree roots in excavation areas and for watering planted and seeded areas will be similarly sourced. Potable water for construction personnel will be provided via bottled

water within coolers, which will be replenished as needed and distributed across the active work areas.

Although night work is not planned during the pilot study construction activities, reduced daylight hours are anticipated in late fall, and temporary lighting will likely be required to maintain safe working conditions during early morning setup and late afternoon operations. The Contractor will provide sufficient supplemental temporary lighting at all work areas to ensure safe working conditions during low-light operations. Any temporary lighting will consist of portable light towers with self-contained generators or balloon-type, glare-free, 360-degree lighting systems powered by the project generators. See also Section 7.1.4. The Contractor will implement shielding, directional aiming, and brightness controls, as needed, to minimize off-site lighting impacts and to protect against potential impacts to traffic safety on adjacent public roadways.

At the completion of the project work, the Contractor will remove all temporary facilities from the work site unless otherwise approved by the CM to remain in place.

4 Vernal Pool Pilot Study Implementation Plan

This section describes the vernal pool pilot study construction activities to be implemented, which generally consist of removal and backfilling in the removal-based vernal pools, application of an in-situ treatment amendment in the amendment-based pools, and site restoration of disturbed areas. Construction activities are summarized in the following subsections.

4.1 Amendment-Based Treatment Implementation

Amendment placement will be conducted in the five test pools selected to receive such treatment (5A-VP-9, 5A-VP-12, 5A-VP-15, 5A-VP-22, and 5A-VP-27), as shown in the Design Drawings (Appendix B).

4.1.1 Amendment Type and Application Rate

As discussed in the Final Pilot Work Plan, the target powdered activated carbon (PAC) application rate is 0.79 pound per square foot, or approximately 34,400 pounds per acre. This is based on amendment bench test results described in the Final Pilot Work Plan. As required by Condition #7 of EPA's December 22, 2025 conditional approval letter for the Final Pilot Work Plan, Appendix E hereto provides an interpretation of the results of the bench-scale column water quality data and second drained cycle column data.[5] The full analytical results were provided to EPA as part of the May 2025 monthly status report under the Consent Decree. As discussed in Appendix E, the conclusions and recommendations presented in the Final Pilot Work Plan remain unchanged with the addition of the second drained cycle data and interpretation of the water quality data.[6]

Two different amendment placement approaches will be tested during the field pilot study: (1) placement of a PAC/sand blend; and (2) placement of SediMite™. Both approaches have been used in wetland environments to address contaminated sediments, and no direct toxic effects (i.e., mortality) have been shown to vertebrate or invertebrate species (ESTCP 2016; Anchor QEA 2022). Indirect toxic effects (i.e., reduced growth) have been observed; however, the magnitude and frequency of these effects are reduced at the field scale, with some studies reporting a limited reduction in species richness, abundance, and biomass following AC placement (Beckingham et al. 2013; Janssen and Beckingham 2013; Kupryianchyk et al. 2012a, 2012b; Cornelissen et al. 2011) and others reporting little to no observable impact following AC placement (Janssen et al. 2013; Cho et al. 2009). While no toxicity testing results are available for the impacts of a PAC/sand blend or

[5] The results from the second drained cycle were not available at the time of submittal of the Final Pilot Work Plan.

[6] The issue of boundary layer formation with use of a solid-phase microextraction (SPME) passive sampler, as discussed in Condition #6 of EPA's conditional approval letter, is addressed in Appendix L (mentioned in Section 8).

SediMite™ on fairy shrimp cysts or wood frog eggs in vernal pool environments, it is expected that, similar to other wetland sites, impacts if present will be minor.

4.1.2 Amendment Application and Verification Methods

The PAC/sand blend will be placed with a target weight ratio of approximately 50% sand and 50% PAC. SediMite™ is a pelletized PAC delivery system composed of approximately 50% PAC, 30% sand, and 20% bentonite clay by weight. When wet, the SediMite™ pellets rapidly disintegrate and release the fine-grained PAC.

As documented in the Final Pilot Work Plan, to achieve the target PAC application rate of 0.79 pound per square foot, the average thickness of the PAC/sand blend placed is estimated at approximately 0.6 inch, and the average thickness of SediMite™ placed is estimated at approximately 0.4 inch.

These amendments will be placed in the five amendment-based pools, as summarized in Table 4-1. As shown in that table, pools 5A-VP-15 and 5A-VP-22 were subdivided to test two different amendment application approaches within each pool. The subdivision of 5A-VP-15 (west and east) and 5A-VP-22 (north and south) are shown in the Design Drawings (Appendix B). As shown by the areas listed in Table 4-1, a total of approximately one acre will be tested using mechanical mixing, 0.5 acre will be subject to a surface application of PAC/sand, and 0.7 acre will be subject to a surface application of SediMite™.

Table 4-1
Amendment Application Approach for Each Amendment-Based Vernal Pool

Vernal Pool	Area (acres)	Amendment Application Approach
5A-VP-9	0.6	PAC/sand with mixing[1]
5A-VP-12	0.27	SediMite™ surface application
5A-VP-15 (West)	0.19	PAC/sand with till mixing
5A-VP-15 (East)	0.18	PAC/sand with tine mixing
5A-VP-22 (North)	0.41	PAC/sand surface application
5A-VP-22 (South)	0.41	SediMite™ surface application
5A-VP-27	0.08	PAC/sand surface application

Note:

1. The mixing method to be used for pool 5A-VP-9 will be determined based on the mixing observations and effectiveness observed for pool 5A-VP-15.

As summarized in Table 4-1, mechanical mixing will be tested during the pilot study in two of the five pools (5A-VP-9 and 5A-VP-15) to evaluate its effectiveness and implementability for increasing the

rate of PAC incorporation into the vernal pool soils. The mechanical mixing methods will be tested in areas where the PAC/sand blend is applied.[7]

Amendment application, mixing, and verification methods to be used by the Contractor are detailed in Sections 4.1.2.1 through 4.1.2.5. Amendment application, mixing, and verification will be conducted in accordance with the Design Drawings and Technical Specifications.

4.1.2.1 Development of Amendment Certification Units

In accordance with the Final Pilot Work Plan, the Contractor has delineated each vernal pool into individual Amendment Certification Units (ACUs). Each ACU will be used to facilitate amendment tracking, placement verification, and QC. The ACUs allow the Contractor to calculate and deploy a known quantity of amendment over a known surface area to verify that the specified amendment application rate is consistently achieved throughout each vernal pool.

The Contractor's proposed ACU layout is included in Appendix F but may be subject to revision based on site conditions following mobilization and site clearing. The ACUs for the sand/PAC placement will be approximately 1,100 square feet, which is the area that will be covered for each 1,000-pound supersack of the sand/PAC blend. The ACUs for the pelletized PAC placement will be sized at approximately 718 square feet, which is the area that will be covered for each 600-kilogram (kg) bulk bag of SediMite™.

Prior to amendment placement activities, the Contractor will use a Professional Land Surveyor licensed in the Commonwealth of Massachusetts to establish and stake the limits of each vernal pool in accordance with the approved design documents and project survey points. Each ACU will be clearly delineated in the field using survey stakes, string lines, and other appropriate field markers to provide visible boundaries for construction personnel and equipment operators during amendment placement operations. The survey layout will allow accurate ACU dimensions and alignment, supporting application of amendment within each designated treatment area. Field staking and marking will also facilitate QC inspections, documentation of amendment placement activities, and verification that amendment application rates are achieved consistently throughout the vernal pool treatment areas.

4.1.2.2 SediMite™ Application

The pelletized PAC will be SediMite™ obtained from Sediment Solutions. It will be delivered to the site in 600-kilogram (kg) bulk bags. Initially, materials will be delivered to the Tyler Street facility for staging inside Building 100 to protect them from precipitation. As needed, the material bags will be

[7] Mechanical mixing methods will not be tested where the SediMite is applied because the bentonite composition of the pellets will interfere with mixing of the amendment. Rather, where applied, SediMite will be applied to the surface of the vernal pool.

transferred to and staged at the designated laydown area near the targeted vernal pools in preparation for deployment. The bags will be staged off the ground and covered to prevent water intrusion and material degradation.

The deployment of the SediMite™ will be performed by the Contractor using a pneumatic delivery system. The uniform deployment will be achieved using a custom-fabricated venturi hopper system combined with an air compressor to apply the SediMite™ across designated ACUs in a controlled and efficient manner. In this system, SediMite™ will be loaded into a hopper designed to maintain steady material flow while preventing moisture intrusion and material bridging. The hopper outlet will feed into a venturi eductor assembly, where compressed air creates a pressure differential that draws the pellets into a high-velocity air stream for conveyance. This pneumatic approach allows for consistent material transport without relying solely on gravity discharge, thereby improving flow reliability and distribution control across the treatment area.

An industrial air compressor supplies the airflow required to generate the venturi effect and propel the pelletized carbon through flexible discharge hoses or piping to the application point. Air pressure and flow rate will be carefully regulated to ensure that pellets remain intact during conveyance while achieving adequate broadcast distance and coverage. The discharge nozzle is engineered to disperse the SediMite™ evenly in a controlled fan pattern, minimizing clumping and preventing localized over-application. Operators can adjust air pressure, feed rate, and nozzle orientation to maintain a uniform spread rate across varying site conditions.

To cover the ACUs effectively, application will be performed in systematic passes with calculated overlap to eliminate gaps or streaking. The pneumatic system allows for both horizontal and elevated deployment, making it suitable for uneven terrain, confined work areas, or sensitive surfaces where heavy equipment traffic must be minimized. By maintaining steady feed rates and consistent air velocity, the venturi hopper system ensures even material distribution across each designated ACU.

Following completion of site preparation activities and installation of the required erosion and sediment controls, the Contractor will initiate SediMite™ placement activities at 5A-VP-12 located at the Miss Hall's School property. Following completion of placement in 5A-VP-12, the Contractor will relocate the equipment for SediMite™ placement in 5A-VP-22.

Prior to placement operations at each vernal pool, the limits of each ACU will be laid out and field verified as described in Section 4.1.2.1, and Contractor personnel will review the approved amendment placement procedures, application rates, and QC requirements with field crews. Amendment placement activities will be conducted in a controlled and methodical manner to minimize dust and disturbance to surrounding areas while ensuring the specified coverage and application rates are achieved throughout the vernal pool treatment area.

The Contractor will sequence the placement, completing one ACU before moving to the next, to minimize unnecessary foot traffic and repeated disturbance within completed treatment areas while maintaining efficient access for field personnel and material handling operations. The ACUs have been sized such that one 600-kg bulk bag of SediMite^{TM} will be applied to each ACU to achieve the specified PAC dosage.

Placement of SediMite^{TM} will be performed using a controlled fanning motion to evenly distribute the amendment material across the surface of each ACU. Contractor personnel will apply the specified quantity of SediMite^{TM} to each ACU in accordance with the predetermined application rate and ACU dimensions. The fanning application technique promotes consistent amendment coverage and reduce the potential for material mounding, gaps in coverage, or uneven distribution. Throughout placement activities, the Contractor will monitor amendment application rates, field conditions, and material distribution to verify compliance with project requirements and implement any necessary operational adjustments.

Upon completion of each ACU, the Contractor will document the amendment placement quantities for that unit and visually inspect the treatment area to verify that the SediMite^{TM} has been uniformly distributed. Inspection will confirm that coverage is consistent and free of visible gaps, mounding, or areas of under- or over-application. Placement operations will continue sequentially until Sedimite^{TM} placement has been completed in all designated ACUs within the vernal pool treatment area.

4.1.2.3 Sand/PAC Application

The sand/PAC amendment will be applied to the vernal pools as a slurry. Based on off-site testing conducted by the Contractor, addition of 0.5% to 2% natural, biodegradable tackifier will improve slurry delivery during the pilot study and reduce the potential for dust generation that could result in exceedance of the QOL standards for particulate matter.

The natural, biodegradable tackifier will consist of food-grade guar gum, which is a water-soluble fiber derived from the endosperm of the guar bean and is frequently used in hydroseeding as a tackifier and moisture-retention agent. It has also recently been successfully applied in multiple aquatic environmental remediation projects as part of amendment applications. The addition of this tackifier provides key constructability and environmental benefits by increasing the viscosity and cohesiveness of the sand/PAC slurry, thereby improving particle suspension and promoting more uniform PAC distribution during application. This enhanced stability minimizes PAC separation and migration during placement, resulting in more uniform coverage, and reduces the potential for preferential movement in sloped areas and into low areas during application or subsequent precipitation events. The tackifier enhances adhesion of the PAC to underlying sediments and organic material, reducing off-target transport and helping maintain the amendment within the intended treatment area.

Following application, a temporary surface crust will form as the applied slurry dries. Based on observations during remote testing by the Contractor, this application method significantly reduces the dust generation associated with the fine PAC particles, thereby minimizing PAC material loss and potential QOL impacts compared to a situation where the sand/PAC is applied without the tackifier. The temporary crust will naturally degrade as the tackifier biodecays over a period of several weeks, which will allow sufficient time for the specified mixing of PAC into the vernal pool soils (where required) prior to placement of the specified leaf litter material at the completion of the amendment application (discussed in Section 4.4.3).

The sand and PAC will be blended at an off-site location by the PAC supplier (Encotech) and delivered dry to the site as a dry blend in 1,000-pound supersacks. The tackifier will either be blended with the PAC and sand by Encotech prior to delivery or will be blended with the PAC and sand on site using a colloidal mixer. Blending operations will be conducted under established QC procedures to ensure that the amendment materials consistently meet the project specifications, required mixture ratios, and performance criteria.

Initially, supersacks of the blended materials will be delivered to the Tyler Street facility and staged inside Building 100 to protect the materials from precipitation. As needed, the supersacks will be transferred to and staged at the designated laydown areas near the targeted vernal pools in preparation for deployment. The supersacks will be staged off the ground and covered to prevent water intrusion and material degradation.

The Contractor will prepare the sand/PAC/tackifier slurry using a skid-mounted, high-sheer colloidal mixing system in combination with associated agitating and pumping equipment to produce a homogeneous and consistently blended amendment mixture suitable for controlled environmental application. The colloidal mixing process will create a stable and uniformly suspended slurry that minimizes separation of PAC from the sand fraction while maintaining continuous agitation throughout the batching and pumping operations.

Following slurry preparation, the material will be deployed to the vernal pool ACUs through a controlled, low-pressure pumping and air-assisted distribution process. The slurry will be transferred from the agitation tank through flexible discharge hoses connected to an air compressor-assisted delivery system designed to maintain continuous material movement and minimize settling of sand and PAC within the hose lines. Laborers equipped with lightweight distribution hoses and spray nozzles will manually maneuver the hose assembly throughout the ACU treatment areas to provide controlled and uniform coverage of the amendment material across the vernal pool surface. The air-assisted slurry deployment approach allows precise placement while minimizing ground disturbance and equipment access within the vernal pools. Operators will regulate flow rates, nozzle orientation, and application thickness in real time to achieve the specified amendment coverage for each ACU.

4.1.2.4 Sand/PAC Subsurface Mixing

Mixing of sand/PAC will be evaluated in vernal pools 5A-VP-9 and 5A-VP-12, as shown in the Design Drawings. Three different mixing approaches will be tested in 5A-VP-15. Vernal pool 5A-VP-15 was selected for evaluation of different mechanical mixing methods because the existing vegetation (i.e., non-persistent emergent vegetation) is anticipated to present less challenging mixing conditions and to recover relatively quickly following mixing activities.[8] The mixing methods to be implemented in 5A-VP-9 (which contains dogwood shrubs, woody debris, and some open areas) will be selected in the field based on demonstrated effectiveness of the mixing in 5A-VP-15. The mixing methods for 5A-VP-9 will be reviewed with EPA prior to implementation.

The first mechanical mixing approach will consist of tilling of the upper approximately six inches of soil following PAC/sand placement. This approach will be implemented in the western area of vernal pool 5A-VP-15. This approach is more aggressive than other methods and is expected to achieve more thorough mixing; however, implementation may be difficult due to obstructions from existing vegetation, roots, and woody debris. The Contractor will use an excavator-mounted rotary tiller to till the upper approximately six inches of soil within the designed treatment areas, thereby loosening compacted layers and breaking up soil clods to create a well-mixed substrate. This tilling attachment allows for control of depth and rotational speed, allowing the operator to achieve uniform mixing and unnecessary disturbance to the underlying substrate. The use of an excavator provides the reach and power needed to efficiently till large areas, including uneven terrain and confined zones, while maintaining consistent mixing performance across the treatment area.

Two mechanical mixing methods will be tested in the eastern portion of 5A-VP-15: tining and discing. Each mixing method will be evaluated in a limited area, and based on the results, the most effective approach will be applied throughout the eastern portion of 5A-VP-15. These methods are anticipated to be easier to implement but may result in less thorough mixing compared to tilling.

The tine mixing approach will use tines to repeatedly penetrate the surface soil following PAC/sand placement. The tines will promote function by pushing some PAC into the subsurface and by creating openings for the PAC to migrate downward into the soil. The Contractor will use a spike aerator attachment consisting of a roller with approximately six-inch-long tines spaced

[8] In addition to the mixing to be tested in pools 5A-VP-9 and 5A-VP-15, the implementability of both types of mixing (till and tine mixing) will be evaluated for different vegetation types at relatively small plots within other amendment-based pools (including areas of dogwoods, areas of other types of wetland vegetation, and areas where larger tree roots are present). The exact number, areas, and sizes of these test plots will be determined in the field in consultation with a project wetland scientist. The proposed mixing areas will be reviewed with EPA prior to implementation. Because the testing of mixing in other pools will be conducted to evaluate the implementability of mixing in various types of vegetation, specific monitoring of porewater PCB concentrations will not be conducted in these areas.

approximately six inches apart that will be capable of penetrating approximately six inches into the soils at the designed treatment areas.

For the discing approach, the Contractor will use a custom-fabricated disc attachment mounted to an excavator to mix the upper approximately six inches of soil, blending the pre-placed sand/PAC into the native soil. The disc system is designed to promote homogenous mixing while minimizing excessive disturbance to the surface soil and to above dragging of existing vegetation. The disc spacing, depth, and speed allow the operator to tailor the soil blending process to site-specific conditions, to provide consistent amendment mixing in the treatment area.

The vernal pool amendment application and mixing activities will be conducted using construction mats to minimize impacts to the vernal pools and surrounding areas.

4.1.2.5 Amendment Placement Verification

Material quantity tracking will be the primary means of verifying that the required amendment quantities are placed within each ACU, as shown in the ACU table included in Appendix F. This material tracking will be informed by the number of amendment supersacks (for sand/PAC) and bags (for SedimMite) applied to each ACU, as each supersack/bag contains a known weight of PAC. Following amendment placement in each ACU, the Contractor and CM will perform visual inspections and photographic documentation to verify that amendments have been uniformly distributed in accordance with project requirements.

The Contractor will implement field verification procedures during amendment placement to confirm that specified application rates are uniformly achieved within each ACU. Verification of SediMite™ placement will be performed using a minimum of three fabricated steel catch pans positioned within each ACU during application. Upon completion of placement in the applicable ACU, the collected SediMite™ will be weighed using calibrated field scales to determine the actual mass applied over the known surface area represented by each catch pan. The measured quantities will be compared to the required application rates to verify compliance with amendment placement specifications.

Similarly, a minimum of three catch pans will be positioned within each ACU during sand/PAC application. However, because the sand/PAC will be applied as a slurry with variable water content, weighing the recovered sand/PAC will not provide an accurate verification method. Rather, the thickness of sand/PAC will be measured in each catch pan. Thicknesses will be compared to other nearby pans to verify that the sand/PAC amendment is placed uniformly across each ACU.

4.2 Removal-Based Implementation

Excavation, backfill, and restoration activities will be conducted in the five test pools selected for the removal-based approach (5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57), as shown in the Design Drawings (Appendix B) and described in the following subsections.

4.2.1 Removal Areas and Volumes

Removal and backfill areas were delineated in the Final Pilot Work Plan for the five vernal pools selected for removal-based evaluation during the pilot study (5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57). The specific portions of the vernal pools where removal of TSCA and non-TSCA soils will occur are shown in the Design Drawings. Table 4-2 summarizes the estimated removal volumes and areas for the five removal-based vernal pools.

Table 4-2
Removal Area and Volume Estimates for Removal-Based Vernal Pools

Vernal Pool ID	Total Pool Area (acre)	Total Removal Area (acre)	TSCA Removal Area		Non-TSCA Removal Area		Total Removal Volume (cy)
			Removal Area (acre)	Removal Volume (cy)	Removal Area (acre)	Removal Volume (cy)	
5A-VP-4	0.23	0.14	0	0	0.14	234	234
5A-VP-7	0.41	0.29	0.24	392	0.05	75	466
5A-VP-16	0.04	0.018	0	0	0.018	30	30
5A-VP-52	0.06	0.05	0.05	80	0	0	80
5A-VP-57	0.49	0.33	0.17	279	0.16	253	532
Total		**0.83**	**0.46**	**751**	**0.37**	**592**	**1,342**

4.2.2 Surveying and Verification of Removal Depths and Backfill Elevations

Survey controls will be established at the start of the work and maintained throughout the construction activities by a Professional Land Surveyor licensed in the Commonwealth of Massachusetts and retained by the Contractor.

The required grid points within each removal-based vernal pool, used to survey pre-construction, post-excavation, and post-construction elevations, are shown in Appendix G. Survey points are positioned at the center of each cell within a 10-foot grid established across and along the perimeter of each removal area. The Contractor's surveyor will perform all elevation measurements at the designated survey points for the duration of the project (i.e., the same survey points will be used to document pre-excavation elevations, confirm post-excavation elevations, and verify post-backfill elevations), unless otherwise approved by the CM.

Surveying will be performed to confirm that the required horizontal and vertical limits of excavation are achieved and that final surface grades meet design requirements. Verification of removal activities will be based on comparison of pre- and post-excavation elevations at each survey point to confirm that the specified one-foot removal depth has been achieved within the specified tolerances. Verification of backfilling will be determined by comparing post-backfill elevations at each survey

point to pre-excavation elevations to confirm that final grades are restored within the specified tolerances.

4.2.3 Soil Removal Activities

The vernal pool removal activities will be conducted using low-ground-pressure mechanical excavation equipment and/or temporary construction mats to minimize impacts to floodplain and wetland areas. Following survey layout and staking of excavation limits, the Contractor will initiate soil removal.

Soil removal in the area north of the Pittsfield WWTP will begin with excavation of non-TSCA soil from vernal pool 5A-VP-57. The non-TSCA soil will be excavated and placed directly into the lined staging pad constructed adjacent to vernal pool 5A-VP-57. Upon completion of non-TSCA soil removal, the Contractor will proceed with excavation of TSCA soil within vernal pools 5A-VP-52 and 5A-VP-57. TSCA soil removed from vernal pool 5A-VP-52 will be loaded into a low-ground-pressure off-road hauler and transported to the lined staging pad near vernal pool 5A-VP-57, where it will be stockpiled and segregated from non-TSCA soil. Vernal pool 5A-VP-57 is located adjacent to the lined staging area; therefore, the excavator, positioned on crane mats, will remove soil to the required depth and place it directly onto the staging pad.

Soil removal in the area west of Pomeroy Avenue will commence with excavation of non-TSCA soils from vernal pools 5A-VP-4, 5A-VP-7, and 5A-VP-16. Non-TSCA soils excavated from vernal pools 5A-VP-4 and 5A-VP-7 will be placed into a low-ground-pressure off-road hauler and transported to the lined staging pad near vernal pool 5A-VP-16, where it will be stockpiled. Vernal pool VP-16 is located adjacent to the lined staging area; therefore, the excavator, positioned on crane mats, will remove soil to the required depth and place it directly onto the staging pad. Once non-TSCA soil removal is complete, the Contractor will excavate the targeted TSCA soil from vernal pool 5A-VP-7 and transport it to the staging pad in the same methods described above.

By sequencing removal of non-TSCA soils prior to TSCA soils, the number of times the excavation equipment must be decontaminated will be minimized. TSCA and non-TSCA soils on the lined staging areas will be segregated to prevent comingling of materials with different waste classifications. When not actively handling soils, the Contractor will cover the piles with plastic sheeting to minimize generation of contact water and control dust emissions. Separation of waste types within the staging areas will be maintained using berms or other physical controls, and each pile will be labeled to prevent misidentification of soils.

As mentioned above, the excavated soils will be transported from the removal areas to the staging pads on the temporary access roads using low-ground-pressure off-road haulers. The Contractor's off-road haulers are equipped with custom-fabricated tailgates designed to prevent spillage during

material transit. During material transport, operators will maintain controlled and safe speeds along the internal access roads, and any significant ruts or potholes in gravel access roads will be promptly filled or regraded to minimize disturbance to transported materials and maintain stable haul conditions.

In conjunction with soil removal activities, the vernal pools will be surveyed in accordance with Section 4.2.2 to verify that the specified excavation depth of one foot has been achieved within the established tolerances.

4.2.3.1 Mechanical Excavation

In areas not subject to fine excavation (discussed in Section 4.2.3.2), excavation of soil from vernal pools will be carefully executed using a mid-size excavator or similar equipment operated from construction mats within or adjacent to the vernal pool to reduce substrate disturbance in areas adjacent to the excavation areas.

4.2.3.2 Fine Excavation Around Trees and Roots

As discussed in Section 3.2.3 , mature trees within or adjacent to excavation areas with a DBH greater than eight inches, where present, will be left in place to the extent practicable. Soil removal in the vicinity of those tree roots will be performed by laborers using air spades and hand tools in conjunction with a vacuum truck or by laborers serving as spotters to guide an excavator equipped with a softened-edge bucket. As soil is excavated, it will be loaded into a vacuum truck or off-road hauler dump machine and transported to the lined staging pad for placement with corresponding material types. If tree roots remain exposed for more than eight hours, they will be protected with burlap and saturated with water to prevent damage until the areas are backfilled.

4.2.4 Handling of Removed Materials

The Contractor will implement controlled excavation and material handling procedures to maintain segregation of soils characterized as TSCA and non-TSCA throughout all phases of the work. The limits of TSCA and non-TSCA characterization areas within the excavation zones are identified in the Design Drawings and will be clearly marked in the field prior to commencement of excavation activities.

Excavation activities will be sequenced to minimize the potential for cross-contamination between waste streams. Non-TSCA materials will generally be excavated, staged, and transported first, followed by excavation of TSCA soils within the identified limits. Separate stockpile locations will be established and maintained within the lined staging areas, and separate loading operations will be maintained for TSCA and non-TSCA soils at all times. Excavated TSCA soils will be transported directly to designated lined staging areas or approved transport vehicles and will remain physically segregated from non-TSCA soils through the use of containment measures, clear labeling, and

controlled equipment movement. Equipment used within TSCA excavation areas will be decontaminated prior to use in non-TSCA areas.

Where saturated soils are encountered, they will be temporarily managed within the excavation limits to allow for gravity drainage, either by placing the material in small piles to promote passive dewatering or by allowing free water to drain from the excavator bucket suspended over the excavation area prior to being loaded into the transport vehicle or placed in the temporary staging areas. BMPs will be implemented to minimize spillage during loading and loading of the soil transport vehicles, such as placement of plastic sheeting beneath the swing radius of the excavator to capture any residual soil that may drip from the bucket. Excavated materials will be staged and managed at the two centralized staging areas until they have been sufficiently dewatered to meet handling and disposal requirements, including passing the Paint Filter Liquids Test.

Soil stockpiles will be covered with polyethylene sheeting or equivalent protective material during periods of inactivity and prior to forecasted precipitation events to minimize additional moisture accumulation. If gravity dewatering does not yield material suitable for transport (i.e., does not pass the Paint Filter Test), drier excavated materials and/or Portland cement will be added and mixed with the excavated material to condition the material such that it is suitable for transport. Once adequately dewatered, the excavated materials designated for final off-site disposal will be loaded directly from the two centralized staging areas into lined and covered over-the-road vehicles for transport to approved disposal facilities.

4.2.5 Off-Site Transport and Disposal

All soils, debris, and other waste generated as part of the pilot study will be disposed of at appropriate off-site facilities. TSCA soil will be disposed of at Arcwood Environmental in Roachdale, Indiana. Non-TSCA soil will be disposed of at the Ontario County landfill in Stanley, New York; the Clinton County Landfill Casella in Morrisonville, New York; or the Seneca Meadows Waste Connections in Waterloo, New York. The tonnage of each load will be recorded on each manifest, and a certificate of disposal will be provided that acknowledges each load's disposal at the respective landfill. The Contractor will provide the final waste manifests, tonnage reports, and certificates of disposal to the CM upon receipt. The local routes that will be used for truck transport of waste materials are shown in the Design Drawings (Appendix B) and further discussed in Section 5.

GE's October 2024 *Revised On-Site and Off-Site Transportation and Disposal Plan* (Revised T&D Plan) describes the procedures for transporting and disposing of sediment, soil, and debris anticipated to be removed during the implementation of the ROR Remedial Action. The Revised T&D Plan also includes BMPs and temporary controls to minimize potential traffic accidents, such as posting of traffic control signs (e.g., speed and parking areas) in the work areas, and, where appropriate, use of

traffic control personnel (e.g., flaggers). The pilot study activities will be performed in accordance with those provisions of the Revised T&D Plan and as detailed in the specifications.

4.2.6 Water Management

Soils will be excavated to a depth of one foot, and it is anticipated that excavation activities will be conducted when the vernal pools are dry or largely dry. As a result, significant water is not expected to be encountered in these excavations. However, there is a potential to encounter some water within the excavations as a result of groundwater infiltration or precipitation/runoff.

Prior to excavation, the Contractor will dewater the vernal pools as necessary to provide stable and controlled working conditions while minimizing impacts to surrounding environmental resources. The Contractor will properly contain, collect, and manage water generated during equipment decontamination activities, water generated from minor surface water removal, and water accumulated within the lined staging areas associated with the vernal pool excavation operations. Contact water generated from soil and debris staging and processing, stormwater that accumulates in the staging area exclusion zone, water drained from stockpiled soils, and water used for cleaning and decontamination that does not contain additives (such as solidification/stabilization additives, detergents, decontamination additives, dewatering polymers or coagulants, or other additives) will be collected at designated sump collection points established at each area. The sumps will be positioned at low points within the staging areas to promote efficient collection and prevent migration of impacted water outside the work areas. Contact water will be filtered through a portable baghouse filter housing system to remove suspended solids and sediment prior to storage. Contractor personnel will routinely inspect the filtration equipment, monitor flow conditions, and replace filter bags as necessary to maintain effective treatment performance throughout the project.

Contact water will be stored in frac tanks adjacent to the work areas pending characterization and disposal. The frac tanks will be positioned within secured and controlled staging areas and will be inspected routinely to verify structural integrity, available storage capacity, and proper operation of associated hoses and transfer connections. The Contractor will maintain appropriate secondary containment measures around the frac tanks and implement spill prevention controls during all pumping and transfer activities.

Contact water that is free of additives will be transported to GE's Building 64G water treatment facility for treatment and discharge. Any water transported to GE's Building 64G water treatment facility will be filtered to remove suspended solids to less than 25 milligrams per liter prior to transport. Licensed tanker trucks will be used to transfer the contact water from the frac tanks at the work areas to the Building 64G water treatment facility. The Contractor will notify the CM of anticipated transfers and operate within the treatment facilities acceptable feed rate (i.e., 20 to 30 gallons per minute).

Liquid waste generated during the pilot study that cannot be treated at the GE treatment facility (i.e., water impacted by any additives) will be containerized and transported for off-site disposal. In that event, or if GE otherwise elects to transport construction waters for off-site disposal, additional sampling and laboratory testing will be performed as required by the receiving facility.

The vernal pool pilot study construction activities are planned for late summer or fall when the vernal pools are not flooded and during relatively dry conditions (see Section 9.1); therefore, it is anticipated that there will be minimal or no standing water in the vernal pools at the time of construction. However, in the unlikely event that there is significant standing water in the pilot study pools at that time, and it is not anticipated that the pools will dry out in a time frame that will allow for completion of the pilot study construction activities in the 2026 construction season, standing water in the pilot study pools will be pumped to the Housatonic River. During pumping, care will be taken to minimize entrainment of sediments at the suction end to avoid impacts to the river. If this contingency is required, the Contractor will work collaboratively with the CM to develop a pumping and discharge plan that will be submitted to EPA for approval prior to initiating pumping.

4.2.7 Backfilling

The Contractor will source the required topsoil backfill material from its restoration subcontractor, Running Brook Farms (Killingworth, CT), for use in restoration and backfilling activities. Running Brook Farms will manufacture the topsoil material using materials sourced exclusively from its organic farm and processed in accordance with project specifications. All components, including native soils, organic matter, and sand, will be selected to meet the physical and chemical characteristics required to support vernal pool hydrology and vegetation establishment. Soil blending will occur in controlled staging areas, with each component proportioned to achieve target soil texture, gradation, organic content, pH, and nutrient levels. Materials will be screened, as necessary, to remove oversized debris, and blending will include repeated turning to produce a uniform, homogeneous soil matrix. The soil will be stored and handled to prevent contamination, segregation, and degradation prior to placement. The topsoil will be sampled and tested to verify that it meets the project specifications for both chemical and geotechnical characteristics. Results of the testing will be provided to EPA for concurrence prior to delivery of the backfill to the placement areas.

Once approved, the topsoil will be transported to Reach 5A via dump trucks and temporarily stockpiled within designated staging areas adjacent to the active work zones. Skid steers and loaders will be used to transport the backfill material from the staging areas to the placement areas. The Contractor will use bulldozers and other appropriate grading equipment to place, spread, and fine

grade the material to the required lines and grades in accordance with the Design Drawings and specifications.[9]

Vernal pool backfilling will be conducted using low-ground-pressure equipment and/or construction mats to minimize disturbance and soil compaction. Backfilling operations will be initiated as soon as practicable after verification of the excavation limits and depths by the CM. Verification of backfill elevations will be performed using the same 10-foot survey grid established for the pre- and post-excavation measurements.[10] Final post-placement elevations at each survey point will be within plus or minus 0.2 foot of the pre-removal grade in accordance with the project specifications. To ensure no loss of vernal pool depth or floodplain storage capacity, the average post-placement elevation across each vernal pool will be less than or equal to the original grade.

4.3 Cultural Resource Discoveries

Based on current information, cultural resources are not anticipated to be encountered during implementation of the vernal pool pilot study, as discussed in the Final Pilot Work Plan. However, if cultural resources are encountered, the procedures specified in the Cultural Resources Unanticipated Discoveries Plan included as part of the Final Pilot Work Plan will be implemented. This plan is included in Appendix H to this SIP for convenience.

4.4 Restoration

Following completion of the pilot study construction activities, the amendment-based and removal-based pilot study pools, as well as temporary staging areas and secondary access roads, will be restored. The restoration activities (including planting plans) were previously described in Section 5.5.8 of the Final Pilot Work Plan and summarized in Section 9.4 of GE's Reach 5A Restoration Plan and are discussed further in Sections 4.4.1 through 4.4.6. The primary access roads will not be subject to restoration as part of the pilot study because the same access roads will be

[9] Placement of topsoil in one-foot lifts is adequate to maintain the intended soil profile and minimize zonation, because zonation (i.e., the formation of distinct layers with differing density, moisture content, or gradation due to uneven placement or segregation) is unlikely when lifts are thin and consist of uniform material, allowing consistent placement, moisture conditioning, and compaction within each layer.

[10] In addition to using 10-foot grid surveying, to ensure that drainage features and representative microtopography are recreated to the extent practicable, the Construction Manager and Contractor will conduct a pre-excavation visual inspection of areas to be excavated to identify key features that will need to be recreated during backfilling.[11] Eventual restoration of primary access roads used during the pilot study implementation and again for Reach 5A remediation will be addressed in accordance with Sections 8.4 and 8.5 of the Reach 5A Restoration Plan that was submitted in April 2026

used for the upcoming Reach 5A remediation.[11] All restoration will be conducted in accordance with the Design Drawings and specifications.

4.4.1 Existing Conditions

EPA's conditional approval letter for the Final Pilot Work Plan required in Condition 3 that GE consolidate all information regarding existing conditions in a single location and in a format that facilitates comparison between the existing conditions, restoration plans, and eventually the post-restoration (as-built) conditions for each study pool (including mapping of existing conditions in control pools). GE provided a draft version of this consolidation of information to EPA on June 1, 2026. It is included herein as Appendix I.

4.4.2 Pre-Construction Inventory and Documentation

Prior to any clearing, excavation, or amendment placement activities, the Contractor will conduct a thorough pre-construction inventory and photographic documentation of each vernal pool work area consistent with the specifications. This inventory will serve as the baseline record for restoration and will guide decisions about large woody debris reuse, planting configurations, and grade restoration. The pre-construction inventory will include the following:

- Photographic documentation of existing conditions within each vernal pool and immediately adjacent disturbed areas, including pool boundaries, water levels, vegetation communities, and distribution of large woody debris;
- Inventory of large woody debris within each vernal pool, including approximate size, location, and condition of each piece, to support determination of reuse suitability;
- Survey of trees and shrubs (species and size) within and adjacent to work areas, to be conducted following finalization of access road and staging area footprints; and
- Identification and flagging of desirable vegetation to be preserved.

4.4.3 Restoration of Removal-Based Vernal Pools

Restoration of excavation-based vernal pools (5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57) will commence following CM approval of backfill placement and final grade verification. All planting and seeding will be performed under direct supervision of the CM and in accordance with the Design Drawings and specifications. Restoration equipment operated within and adjacent to the vernal pools will be low-ground-pressure equipment and/or will be operated from construction mats.

[11] Eventual restoration of primary access roads used during the pilot study implementation and again for Reach 5A remediation will be addressed in accordance with Sections 8.4 and 8.5 of the Reach 5A Restoration Plan that was submitted in April 2026

Prior to seeding and planting, the Contractor's licensed surveyor will verify that final grades in each restored vernal pool conform to Design Drawing requirements and recreate the shallow basin features that support seasonal ponding. Fine grading will be performed as needed to restore subtle depressions and ensure positive drainage in adjacent upland transition zones. Survey results will be documented and submitted to the CM for approval before planting commences.

Following backfill placement and grade verification, large woody debris that was not in contact with the removed soil and that was previously staged for reuse will be incorporated into the near-surface topsoil to create microtopographic variability consistent with pre-remediation conditions, or will be placed on the ground surface, as directed by the CM. Each piece will be placed with reference to the pre-construction photographic record to replicate original size, location, and density.

Cut dogwood and other woody shrubs will be set aside during clearing and placed following backfilling along the edges of the vernal pools with branch tips pointing into deeper water, to function as temporary egg attachment sites and cover for developing larvae.

Prior to planting and seeding, the Contractor will lightly scarify the backfilled surface with a shallow rake to break up the soil and improve seed-to-soil contact. Equipment access to prepared seeding areas will be minimized following soil preparation to prevent re-compaction. The Contractor will mark seeded areas with flagging to prevent intrusion from foot traffic and equipment.

The wetland seed mix will be hand-broadcast at the vendor-specified application rates consistent with the specifications throughout the area of the restored vernal pools and directly adjacent disturbed areas. The Contractor will use the New England Wetland Plants ERNMX-122 FACW Meadow Mix "Wetmix" or an equivalent seed mixture approved by the CM. Comparable alternative sources acceptable as per the specifications include the following:

- New England Wet Mix – New England Wetland Plants, Amherst, Massachusetts
- Obligate Wetland Mix – Ernst Seeds, Meadville, Pennsylvania

Trees, shrubs, and herbaceous plants will be installed during the fall planting season (August 15 through November 15) of the same year as other construction activities. All plantings will conform to the species, quantities, sizes, and locations specified in the Design Drawings and specifications, which are consistent with the planting plans in the Final Pilot Work Plan.

Plant material will be inspected when picked up at the nursery and again upon delivery to the restoration areas. Plants not in acceptable condition (showing signs of desiccation, chlorosis, herbivory, or disease) will be rejected. All plant materials will comply with applicable state and federal laws regarding inspection for plant diseases and insect infestations.

An approximately one-inch layer of mulch composed of leaf litter from trees characteristic of the nearby floodplain forest will be applied over the area of the restored vernal pools following planting and seeding. Oak leaves (*Quercus* spp.) will be limited to less than 30% of the mulch composition. The leaf litter to be used will be sourced exclusively from Running Brook's organic farm, where vegetation is actively managed and monitored to prevent the establishment and spread of invasive species. This controlled sourcing minimizes the potential for invasive propagules (seeds, rhizomes, or fragments) to be present. All collected leaf litter will be stored in static composting piles for a minimum of one year prior to use, during which natural decomposition generates elevated temperatures that promote microbial breakdown and create conditions unfavorable for invasive seed and propagule viability. Periodic visual inspections of source materials and compost piles will be conducted to verify the absence of invasive plant material prior to application. The composting process further reduces invasive potential through microbial degradation, sustained heat and moisture exposure, and physical breakdown of organic material, thereby limiting seed viability and vegetative regeneration. The combination of controlled sourcing and extended composting will ensure that the leaf litter is suitable for use in vernal pool restoration. The mulch source and composition will be reviewed and approved by the CM prior to application**.**

Where determined necessary by the CM, coir fiber erosion protection fabric (Coir Mat 700 or approved equivalent) will be installed over seeded areas following seeding acceptance consistent with the Design Drawings and specifications.

Physical guards will be installed for all tree and shrub plantings to protect young plants from wind, deer grazing, and rodents. Guards will be durable, well-ventilated, ultraviolet-stable for at least four years, and either self-supported or supported and anchored to a wooden stake in accordance with manufacturer requirements.

4.4.4 Restoration of Amendment-Based Vernal Pools

In-situ treatment (i.e., placement of an amendment) is anticipated to have minimal long-term impact on the existing ecological conditions within the vernal pools. Therefore, the restoration of the amendment-based pools will be less involved than that at the removal-based pools.

To the extent feasible, woody debris on and embedded within the vernal pool surface will be left in place in the treatment vernal pools during amendment placement. Removal of surface woody debris may be required in vernal pools 5A-VP-9 and 5A-VP-15 to facilitate mechanical mixing of the amendment. Removal may also be required in other pools to allow equipment access; the extent will be determined in conjunction with the CM. Large woody debris that is removed will be placed back into the pool or replaced with new similar large woody debris following amendment application. Woody debris management will follow the same reuse and disposal criteria as for excavation-based pools: woody debris embedded in or contaminated with pool soil will be disposed of off site; large

woody debris from the surface that is free of soil will be replaced in generally the same location and density after amendment placement. .

Cut dogwoods and other woody shrubs removed during clearing will be set aside and replaced following amendment application with branch tips pointing into deeper water along pool edges to function as temporary egg attachment sites and cover for developing larvae. Any vegetation removed from amendment-based pools may also be used as mulch material, subject to CM approval.

Similar to the restoration of excavation-based vernal pools, a one- to two-inch layer of leaf litter mulch consistent with the specifications (with oak leaves limited to 30%) will be applied by the Contractor over the area of the treatment vernal pools following amendment application. Vegetation removed from the amendment-based pools may be incorporated into the mulch layer as supplemental organic material, subject to CM approval.

4.4.5 Adjacent Area Site Restoration Plan

The primary access roads that will be used during implementation of the pilot study will also be used for the upcoming Reach 5A remediation. Therefore, no restoration of these primary access roads will be performed as part of the vernal pool pilot study. The secondary temporary access roads, the temporary staging areas, and additional areas cleared and/or disturbed for access to the vernal pools or to otherwise support the pilot study implementation will be restored following pilot study construction activities. This section, which constitutes GE's Adjacent Area Site Restoration Plan (mentioned in the Final Pilot Work Plan and Reach 5A Restoration Plan), addresses the restoration of those areas.

4.4.5.1 Vegetation Inventory

In May and June of 2026, locations of trees that are four inches or greater in DBH, native shrubs, and other significant vegetation in the 10 planned pilot study staging areas, including the two centralized staging areas, were located using a sub-meter accurate GPS. The results are presented on scaled drawings in Appendix J-1. Trees within or directly adjacent to proposed primary and secondary access roads were also located by GPS during these surveys; however, it is expected that these trees will be avoided through use of temporary construction mats and that no tree removal will be necessary for the construction of access roads.

Appendix J-1 also includes a tabulated listing of trees, shrubs, and herbaceous vegetation observed within each of the planned staging areas, including the two centralized staging areas. Percent cover of shrubs and herbaceous vegetation was estimated as percent of total staging area. Relative abundance of trees was calculated as total basal area in square feet (measured as DBH) of each tree species observed. A total of 51 trees were GPS-located and measured for DBH within the limits of 10 planned staging areas. A total of 70 plant species were identified, including 12 trees, 14 shrubs, 41

herbs, and three woody vines. Of the 70 plant species observed in the staging areas, 16 are listed as invasive species, including two trees, six shrubs, seven herbs, and one woody vine. The most frequently encountered species were American elm (*Ulmus americana*), boxelder maple (*Acer negundo*), Morrow's honeysuckle (*Lonicera morrowii*), silky dogwood (*Cornus amomum*), sensitive fern (*Onoclea sensibilis*) and giant goldenrod (*Solidago gigantea*). Of the top 10 most frequently encountered species, four are listed as invasive.

4.4.5.2 Restoration Implementation

Following completion of all remediation activities, the Contractor will remove all materials used to construct the secondary temporary access roads and staging and support areas and will restore these areas. The restoration of these areas is described in the following paragraphs.

The centralized staging area/pad to be constructed near 5A-VP-15 is approximately 0.26 acre in size. However, the central portion of this staging area (approximately 0.1 acre) overlaps with a primary access road that will be used during the upcoming Reach 5A remediation activities. Therefore, upon completion of the pilot study construction activities, the portion of this staging area located outside of the primary access road footprint (approximately 0.16 acre) will be restored as part of the pilot study restoration. Restoration of this area will include grading and backfilling to pre-construction topographic conditions, placement of topsoil as needed, and planting of native vegetation, following the planting schedule provided in Appendix J-2. This area is mapped as floodplain forest. Consistent with that habitat, the planting schedule includes five trees from three species, 48 shrubs from three species, 19 herbaceous plugs from three species that function as host plants for state-listed lepidopterans, and broadcast seeding with a native seed mix.

Similarly, the approximately 0.22-acre centralized staging area/ pad located adjacent to 5A-VP-57 overlaps with a primary access road that will be used during the upcoming Reach 5A remediation activities. Therefore, the portion of this staging area located outside of the primary access road footprint (approximately 0.07 acre) will be restored as part of the pilot study restoration. Again, this restoration will include grading and backfilling to pre-construction topographic conditions, placement of topsoil as needed, and planting of native vegetation, following the planting schedule provided in Appendix J-2. This area includes scrub-shrub, forested floodplain, forested upland, and open field habitats. Consistent with those habitats, the planting schedule includes four trees from three species, 22 shrubs from four species, eight herbaceous plugs from three species that function as host plants for state-listed lepidopterans, and broadcast seeding with a native seed mix.

Restoration seeding and planting of these two staging areas will follow the same protocols described in Section 4.4.3 for the excavation-based pools with regards to site preparation (e.g., restoring base topography, scarifying the soils surfaces prior to seeding), and timing restrictions for replanting.

For secondary access roads (or other disturbed areas) where construction mat use has caused significant settlement such that the surface water flow or ecological integrity is significantly impacted, topsoil placement may be necessary to restore those areas to pre-construction elevations. The need for such backfilling will be determined by a project wetland scientist in consultation with the CM and will be subject to EPA approval, and the backfilling (if necessary) will be conducted under the oversight of a project wetland scientist. However, because construction mats will be used for the secondary access roads, as well as other staging or support areas that will have minimal disturbance to the ground surface, and the construction mats will be in place for a relatively short period of time, it is expected these areas will revegetate naturally with new growth coming in the following year. Thus, these areas will generally not be planted. However, if areas of excessive compaction or exposed soils surfaces are observed, they will be repaired and seeded with a native seed mix suitable for the habitat types present.

4.4.6 Post-Planting Watering

Plant material and seed will be immediately watered following installation. The Contractor will water seeded areas to promote seed germination and growth, taking care to avoid creating rills and furrows, and will repair and reseed any rills resulting from overwatering. The Contractor will repeat watering weekly for at least four weeks following seeding and planting if natural rainfall is less than one inch per week. Water will be sourced from a CM-approved location.

4.5 Waste Management

The Contractor will manage waste material in accordance with the project requirements, applicable regulations, and BMPs for disposal and recycling. Project waste material quantities will vary based on final means and methods, construction conditions, and material procurement/packaging, as well as different phases of the project.

Any oils, greases, epoxies, or potentially hazardous waste materials associated with the upkeep of construction equipment will be properly disposed of in accordance with Massachusetts's hazardous waste or solid waste disposal requirements as applicable. Office-based waste materials will be disposed of or recycled as appropriate. A local waste hauler will be used to haul recycled and waste products from the site. Properly sized waste containers for each phase of work will be delivered to the site and managed/removed by the local waste hauler(s) as they are filled. Waste packaging materials associated with delivered products will be returned to the suppliers, if feasible, or disposed of or recycled off site.

The anticipated disposal locations and haulers for various types of waste materials identified for off-site disposal or recycling are listed in Table 4-3. Receipts will be obtained for waste materials transported off site. Records documenting the quantity of materials hauled off site for recycling,

reuse, salvage, or disposal, including bills of lading, shipping documents, manifests, weight slips, and receipts, will be submitted monthly to the CM.

Table 4-3
Waste Material Disposal Locations

Disposal Location	Anticipated Hauler	Waste Materials
Casella Transfer Station in Lenox, Massachusetts	Casella	Cardboard, clean dimensional wood, wood pallets, demolition debris, and office and general site solid wastes
Appropriate facility TBD by Republic Services	Republic Services	Batteries
Appropriate facility TBD by Republic Services	Republic Services	Paints, solvents, and other hazardous liquids
Consistent with contaminated soil disposal per Section 4.2.5	Consistent with contaminated soil transport per Section 4.2.5	Contaminated materials such as used PPE and silt fencing

The truck routes anticipated for use by local and regional waste haulers for pickup and off-site transportation of generated waste materials will be those described in Section 5.

4.6 Equipment Cleaning and Decontamination

Equipment that contacts PCB-impacted soil during the pilot study construction activities will be subject to cleaning and inspection. Equipment cleaning will be performed in accordance with Section 3.5 of the Site Management Plan (Attachment C to the *Project Operations Plan* [Arcadis 2024]) as per the specifications. At a minimum, the following equipment cleaning procedures will be performed during the pilot study construction activities:

- During mobilization activities, all heavy equipment (e.g., excavators, loaders, and trucks) to be used on site will be subject to a visual inspection to verify that the equipment is generally clean and free of excess soil. Off-road equipment will be visibly free from invasive plant propagules prior to mobilization to the pilot study work areas, including those at the George L. Darey Housatonic Valley Wildlife Management Area (WMA). Off-road equipment will be thoroughly cleaned and mud, dirt, debris, and plant parts from the exterior, undercarriage, and tires/tracks of the equipment will be removed with a high-pressure washer or similar method prior to mobilization to the work areas, including those at the WMA. Entry to the project work area will be refused until such time that the equipment has been adequately cleaned and subsequent visual inspection indicates satisfactory conditions.
- Primary and secondary access roads constructed to support truck traffic will be designated and maintained as clean travel ways. As such, tire cleaning and track pads will be needed only as a safety measure for incidental contact and to eliminate non-impacted soils. Tracked

equipment will be kept on these clean access roads for the bulk of activities. Nevertheless, as a precautionary measure, equipment cleaning areas will be constructed by the Contractor at each of the work areas and will generally consist of an impermeable barrier that is sloped to a collection sump. Any vehicles and heavy equipment that have come into contact with contaminated soil will be kept on track pads or will be decontaminated at these equipment cleaning areas until visibly clean of sediments or soils before leaving work areas and proceeding onto the temporary access roads.

- Tire cleaning stations will be established at the three locations where the temporary access roads egress onto public roads and at the location where the temporary access road egresses onto the existing gravel roads at the Miss Hall's School property. As discussed in the prior bullet, the temporary access roads will be maintained as clean travel ways. Nevertheless, the tire cleaning stations located at the egresses from the temporary access roads onto public roads will be used as a final assurance that contaminated materials are not tracked onto public roadways. Tire cleaning will be completed on vehicles exiting the work areas onto public roads. The tire cleaning standard is that vehicles will be cleaned sufficiently to remove all visible solids and sediment from the vehicle body, undercarriage, and tires such that no visible tracking of soils onto roadways occurs. Each vehicle will be visually inspected prior to leaving the work area. Soil accumulations on the vehicle tires or other exterior surfaces will be removed manually or by using a high-pressure water spray.
- Material handling equipment that has been used to remove or handle PCB-containing soils will be cleaned in an equipment cleaning area before it: (1) handles non-TSCA materials after having handled TSCA materials; (2) handles "clean" materials (e.g., backfill); or (3) is demobilized from a specific work area. The equipment cleaning standard for equipment that will remain on site and may be used for other operations involving the handing of non-TSCA materials or backfilling is the removal of all visible soil and sediment on the surface of the equipment. The Contractor will determine the extent of decontamination and visually inspect the equipment prior to it being inspected by the CM and its departure from each vernal pool work area.
- Prior to being demobilized from the site, equipment used for handling PCB-impacted materials (e.g., excavators and loaders) will be subject to wipe sampling following final equipment cleaning. The equipment cleaning standard for equipment that will no longer be used on the project is the removal of all visible soil and sediment and power-washing of surfaces so the cleaned surface can be wipe-tested to confirm that PCB levels on the surface of the equipment are less than 10 micrograms per 100 square centimeters. Wipe samples will generally be collected from representative high-contact and difficult-to-clean surfaces where residual contamination is most likely to remain following decontamination. The Contractor will

document the sample locations, equipment identification numbers, date and time of collection, and any relevant field observations.

- All water generated during tire wash and equipment decontamination activities will be contained and managed as contact water as discussed in Section 4.2.6. The Contractor will routinely inspect decontamination areas, containment systems, hoses, and frac tanks to verify proper operation.

4.7 Post-Restoration Activities and Demobilization

Post-construction surveys will be conducted upon completion of construction to document completed construction activities, including post-excavation surveys, post-backfilling surveys, and post-amendment placement surveys; topographic surveys of areas significantly disturbed by construction activities such as temporary staging areas and access roads; and a survey of site features such as structures, features, surface topography, slope break lines, roadways, and drainage features.

Demobilization of construction personnel and equipment will occur over time as work tasks are completed. Any equipment that has come into contact with PCB-contaminated soil will be decontaminated and wipe sampled before demobilizing from the site, as outlined in Section 4.6. The Contractor will perform final cleaning of the work areas and the Tyler Street central facility. Paved surfaces will be broom cleaned, and other surfaces will be cleared of any surplus materials and debris. Debris and sediment will be removed from drainage systems and related features.

Temporary facilities including sanitary facilities, contact water management systems, temporary power sources, and other support facilities supplied by the Contractor will be removed. Temporary pedestrian and vehicle traffic barriers, signs, and temporary security fences installed by the Contractor will be removed. Gates at the entrances to public roadways will remain for subsequent work phases. After vegetation of seeded areas has been established and approved by the CM, erosion and sediment controls will be removed and disposed of off site. Silt fencing from within the boundaries of the vernal pools and from around portions of the pool perimeters will be removed prior to the first post-remediation winter freeze.

The CM will perform final inspections of the site, and the Contractor will resolve any identified punch list items in accordance with the contract requirements at the completion of the project.

5 Traffic Routes for Implementation and Traffic Management

Trucks transporting waste to off-site disposal facilities, as well as trucks transporting backfill to the site and trucks transporting water to the GE water treatment facility for treatment, will follow the prescribed truck routes indicated in Design Drawing C115. These routes are consistent with GE's October 2024 Revised T&D Plan. Waste disposal trucks waiting to be loaded will be staged at a remote location until they are ready to be loaded at the applicable work area to prevent any traffic or safety concerns associated with staging trucks along roadsides adjacent to the work areas.

GE's October 2024 Revised T&D Plan describes the procedures for transporting and disposing of sediment, soil, and debris anticipated to be removed during the implementation of the ROR Remedial Action. The Revised T&D Plan also includes BMPs and temporary controls to minimize potential traffic accidents, such as posting of traffic control signs (e.g., speed and parking areas) in the work areas, and, where appropriate, utilization of traffic control personnel (e.g., flaggers). The pilot study activities will be performed in accordance with these provisions of the Revised T&D Plan and as detailed in Specification Section 02 81 02 – Transportation and Disposal of Waste Material.

The Contractor will use trained flaggers to ensure the safe entrance and egress of vehicles and personnel at each work area. The Contractor will coordinate with local Pittsfield police officers or use laborers as flaggers. A flagger will provide clear, consistent traffic control by directing vehicles, coordinating with equipment operators and truck drivers, and managing pedestrian movement to prevent conflicts and collisions. Positioned at designated access points on Holmes Road and Pomeroy Avenue, the flagger will monitor site conditions, communicate with drivers using standardized hand signals or radio communication, and maintain awareness of changing traffic patterns. This controlled guidance will reduce the risk of accidents, protect workers and the public, and ensure compliance with established traffic control plans and safety regulations.

6 Project Safety Plan

6.1 Health and Safety

Health and safety of on-site personnel, the public, and the environment are of paramount importance to GE and its representatives and contractors. The Contractor's on-site activities will be performed in accordance with a site-specific Health and Safety Plan (HASP) prepared by the Contractor, which is provided in Appendix K. That HASP identifies hazards that may be encountered due to site conditions and/or the expected types of work to be implemented and presents procedures and controls to protect the health of on-site personnel, the public, and the environment from those hazards. Also included in the Contractor's HASP are the names, roles, and responsibilities of individuals employed or subcontracted by the Contractor who will be responsible for the implementation of the HASP. The Contractor's HASP covers its own personnel, its subcontractors, and any visitors associated with the Contractor.

6.2 Site Management and Security

The Contractor will be responsible for security of GE's, the Contractor's, and its subcontractors' work areas, equipment, materials, and supplies within the limits of the work. The Contractor will implement a security program upon mobilization to Reach 5A and will maintain security throughout the work. The Contractor will coordinate and update local first responders and the City for security briefings and traffic control, as necessary.

Active remediation work areas will be secured to deter access by unauthorized persons. Specific details regarding the security measures to be implemented will depend on the location of those activities. Security measures will include the following:

- **Temporary fencing:** Orange safety fencing will be deployed around active work areas, where needed. This will be the primary control to prevent pedestrian access into the work area. Its function is primarily for safety. Temporary fencing, gates, or other appropriate barriers will be installed and used at the entrances to the temporary access road to discourage public access.
- **Site access and asset security:** Gates will be closed during the day when not actively being used to prevent unauthorized access. Areas affected by the construction activities will be secured daily prior to workers leaving the area. Gates, trailers, supply boxes, and equipment will be locked, and equipment keys will be removed from the vehicle after operations each day.
- **Signage:** Warning signs will be installed at the entrances to each of the temporary access roads. In addition, because the pilot study vernal pools and the access routes to the pools are located along a cleared path at the sanitary sewer easements, descriptive panels (designed by GE in coordination with EPA) will be installed at entrances to each of the temporary access

roads to describe the remediation activities and to inform the public how to find additional information on the project website and how to receive relevant notifications.

- **Sign-in/sign-out system:** For the duration of construction activities, a sign-in/sign-out system will be administered by the Contractor at a designated location. All on-site personnel and visitors will be required to sign in upon entering the work area and sign-out upon leaving.
- **Traffic control measures:** Traffic control measures will be implemented at access points to work areas along public roadways, including Pomeroy Avenue and Holmes Road, where construction support vehicles will enter the work areas. The Contractor will install signs to warn oncoming traffic of the construction entrance. Where work is required within the public roadways (e.g., to construct work zone entrances), a police detail will be required in accordance with Massachusetts law. Flaggers will be used, as needed, to control traffic when trucks or delivery vehicles have the potential to disrupt traffic along public roadways. The Contractor will work closely with the City to coordinate traffic control at work zone entrances. The CM or the Contractor will obtain any necessary traffic control approvals and make any required notifications prior to initiating traffic control measures.
- **Work area inspections:** During construction activities, inspections of the active work area will be performed by the Contractor and CM on each day of construction. The inspections will be performed to note and, if necessary, respond to any changes to the conditions of the work area.

The need for additional security measures during the pilot study will be evaluated throughout construction and added if necessary.

6.3 Spill Prevention, Control, and Countermeasures

The Contractor will implement SPCC procedures and controls to prevent and, if necessary, control spills of materials that are potentially harmful to on-site personnel, the public, and/or the environment (spill examples include fuel, oil, hydraulic fluid, and decontamination chemicals). The Contractor has developed an SPCC Plan that describes its storage and handling procedures and provides response measures for potential spills and discharges resulting from construction and remedial activities, including the handling, storage, and transfer of potentially harmful or contaminated materials. The substantive components of the SPCC Plan are summarized herein. A copy of the full SPCC Plan (including any updates) will be maintained in the Contractor's and CM's trailers and will be available to EPA on request.

Potential spills or discharges of particular concern during construction include releases of fuel, oil, lubricants, hydraulic fluids, and other petroleum products from vehicles, vessels, and equipment;

releases from fuel storage tanks or contact water storage tanks or their associated pipes or hoses; spills of contaminated sediment or debris; and spills of decontamination chemicals.

The Contractor's SPCC Plan identifies potential spill or discharge locations and describes the preventive measures that will be implemented to prevent spills. In the event of a spill, the plan describes the secondary containment and response measures to prevent spilled material from entering surrounding waterbodies or the ground.

The Contractor will not install any storage tanks for petroleum, oil, and lubricants that exceed 1,320 gallons or any single storage container that exceeds 660 gallons. The Contractor will comply with applicable federal, state, and local requirements governing stationary aboveground storage tanks.

The Contractor will implement the following spill prevention procedures:

- Secondary containment will be provided at locations where spills or discharges could reasonably reach surrounding waterbodies or the ground. Secondary containment measures will include, as appropriate, double-walled containers, containment basins sufficiently sized to hold the full volume of containers that are not double walled, spill pans placed beneath stationary equipment, plastic sheeting or containment membranes installed under equipment or material storage areas, and steel troughs or channel sections installed beneath hydraulic fittings and hoses.
- Stored fuel will be covered or enclosed to prevent exposure and releases, and appropriate spill controls will be implemented during fueling operations. Fueling nozzles will be equipped with automatic shutoff devices to avoid overfilling and drips, and fueling operations will not be left unattended at any time.
- Vessels, vehicles, and equipment will be inspected each day on which they are in use to identify leaks or conditions that could result in a spill. Any equipment found to be leaking will be repaired immediately or removed from the work area until repairs are completed.
- Absorbent spill cleanup materials and fully stocked spill kits will be available in fueling areas and adjacent to any chemical storage area(s). Project personnel will promptly address small spills using absorbent materials and will properly containerize and dispose of used spill response materials in accordance with approved waste management procedures. Berms and dikes will be installed and maintained at fueling locations as necessary to prevent runoff and to contain incidental spills.
- The Contractor will make arrangements with a qualified spill response contractor to be available on an on-call basis for the duration of project operations.

If a spill occurs, the Contractor will implement the following SPCC procedures:

- The Contractor will be responsible for providing the resources needed to respond to a spill, including methods, means, facilities, materials, equipment, and trained personnel (including emergency response subcontractors).
- In the event of a spill or discharge, the Contractor will immediately notify the CM and implement measures to control and contain the contamination. Response actions may include isolating the affected area; recovering free liquids where feasible; absorbing spilled liquids; and removing, isolating, and covering contaminated soil or debris. If the spill exceeds reportable quantities or concentrations, GE will make the required notifications to the appropriate regulatory authorities.
- The Contractor may be required to implement decontamination procedures to remove spilled materials from previously uncontaminated structures, equipment, or materials and to reduce contaminant concentrations to levels acceptable to the CM. Contaminated materials that cannot be effectively decontaminated will be containerized appropriately, labeled, and stored for off-site disposal. Personnel decontamination procedures will include the cleaning or disposal of contaminated clothing, tools, and personal protective equipment.
- Contaminated soils, absorbent materials, solvents, and other materials generated during spill cleanup activities will be properly containerized, labeled, stored, transported, and disposed of in accordance with applicable regulations.

6.4 Contingency Plan

This Contingency Plan addresses contingencies associated with exceedances of the quality-of-life standards, general emergencies involving potential injuries, and weather-related emergencies, as described below.

Contingency actions associated with exceedances of the quality-of-life standards are discussed in Section 7 and in the *Second Revised Quality of Life Compliance Plan* (QOL Compliance Plan; Anchor QEA and Arcadis 2025), which was approved by EPA on May 28, 2025.

Section 11 of the Contractor's HASP, provided in Appendix K, provides an Emergency Contingency Plan that addresses the following:

- Emergency vehicular access/egress;
- Procedures for evacuation of personnel from the work site;
- A list of all contact personnel, with phone numbers and procedures for notifying each;
- Routes to local hospitals; and

- Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch contractor personnel and equipment in the event of an emergency situation.

Specific contingency measures will be implemented to address weather-related emergencies. In order to prepare for such potential emergencies, the daily and weekly forecasts will be reviewed for each work day, and that information will be provided at daily morning meetings. In the event that severe weather is expected, a decision will be made as to whether a late start, early end, or other scheduling change for workers is appropriate.

If a weather alert is received from a government agency or other public service, the information will be communicated to site workers and weather reports will be monitored to determine the estimated arrival of the weather. If it is deemed necessary, workers will be called back to a central meeting point to meet and plan on whether to shelter in place or whether a full evacuation is necessary. If no sufficient warning is given regarding severe weather, workers will shelter in place immediately. Specifically, workers will be ordered to find shelter in office trailers, vehicles, or the nearest sturdy, grounded structure. While in shelter, workers will wait to receive further instruction on when and where to move to.

If flooding or high-water conditions are expected, the Contractor in conjunction with the CM will establish control measures to prevent worker exposure to flood waters. These controls will be communicated to the affected workers. General controls to be implemented may include removing personnel from areas that may become flooded, restricting activity in certain areas, revising activity hazard analyses with the new hazard conditions and mitigation measures, and establishing a rescue plan if the water depth or current calls for it. In these instances, vehicular traffic will also be limited until the ground is verified as stable enough to be driven on. Additional measures may be implemented such as moving of equipment to areas not expected to be flooded, ensuring that all soil piles are covered, and conducting other measures to protect equipment and the integrity of the work areas as necessary.

7 Project Quality Plan

7.1 Quality of Life Protection Measures

The pilot study construction activities will be performed in compliance with the QOL standards for air quality, visible dust, noise, odor, and lighting that were established in the approved QOL Compliance Plan, as detailed in the specifications.

7.1.1 Project Work Hours

The Contractor's active construction work is planned to be conducted between the hours of 7:00 a.m. and 6:00 p.m. on Monday through Friday unless otherwise approved by the CM and EPA. Some pre-work activities may be conducted at the vernal pool pilot study areas between 6:30 and 7:00 a.m., such as pre-construction safety tailgate meetings, equipment startup and inspections, equipment servicing, delivery and offloading of materials from off-site vendors, servicing of on-site facilities, and vehicle entry to and from the site by oversight and construction personnel. Noise monitoring will be conducted during this period in accordance with the QOL Compliance Plan. Noise levels measured at residential receptors between 6:30 and 7:00 a.m. will be compared, as a one-half hour value, to the residential nighttime standard described in Section 7.1.3. The Contractor will attempt to stage equipment that may be started before 7:00 a.m. in locations away from receptors, when practicable. In addition, the performance of sweeps for wood turtles on foot and without mechanized equipment may be conducted at any time before 7:00 a.m.

Equipment maintenance may occur on Saturdays. In the event that it becomes necessary to perform active construction work on Saturdays, GE will discuss this with EPA and request its concurrence before proceeding.

7.1.2 Airborne PCB and Dust Control

Construction activities to be performed during the pilot study could result in the generation of airborne particulates (i.e., dust) or PCB emissions. Activities that could result in PCB and airborne particulate emissions include soil excavation, soil staging and handling, application of amendments, mechanical mixing of amendments with vernal pool soils, and vehicle traffic along temporary access roads. Additional activities that could result in generation of airborne particulates include management and placement of backfill material, handling and placement of amendments, and vehicle traffic on temporary access roads and on the existing gravel roads that will be used for access on the Miss Hall's School property.

Air monitoring will be performed during pilot study construction activities by the QOL Monitoring Contractor retained by GE. Air monitoring and compliance will be consistent with the QOL Compliance Plan and the Ambient Air Monitoring Plan (Appendix D to the revised *Project Operations*

Plan). Specific procedures for ambient air sampling are provided in Appendix G (Standard Operating Procedure for Ambient Air Monitoring for Particulate Matter and Polychlorinated Biphenyls) to GE's 2023 *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP) (Arcadis 2023).

The Contractor's airborne PCB and dust control measures and BMPs include, but are not limited to, the following:

- Minimizing open disturbed areas at any one time;
- Sequencing earthwork so that stripping, excavation, stockpiling, loading, and backfilling occur in compact work zones rather than across broad exposed areas;
- Applying water, tarps, or other approved dust-suppression measures to disturbed surfaces, temporary access roads, staging areas, loading areas, and amendment application and mixing areas as conditions warrant;
- Reducing material drop heights during loading, unloading, and stockpiling;
- Promptly covering soil during transport and staging;
- Maintaining haul roads and disturbed travel surfaces in stable condition;
- Limiting vehicle speeds on non-public access roads and work areas to a maximum of 15 miles per hour to reduce dust generation;
- Cleaning up tracked soil and incidental spills promptly so material is not redistributed along access roads;
- Suspending or modifying dust-generating work during unfavorable weather, including high winds or other unsafe conditions;
- Inspecting decontamination, water management, and staging operations so that secondary impacts such as dried sediment, wheel tracking, or residual fines do not become dust sources; and
- Applying the sand/PAC as a slurry rather than as dry material.

Water for dust suppression will be sourced from off-site sources, brought to the work areas, and applied with a water truck. Visible dust will be controlled through continuous field observation by the Contractor. If visible dust emissions are observed leaving the immediate work area, the Contractor will implement immediate corrective actions such as increasing suppression, reducing production rate, revising traffic patterns, temporarily halting loading, shrinking the active work force, or stabilizing exposed surfaces. Daily housekeeping and perimeter inspection will be used to confirm that access roads, staging areas, and truck egress points remain free of accumulations that can later become fugitive dust sources.

The compliance point for attainment of the ambient air standards will be at the closest downwind receptor. Ambient air monitoring will be conducted by the QOL Monitoring Contractor at representative locations near the closest receptor to the remediation activities or between the active work areas and the closest receptor. During active remediation activities, ambient air monitoring will be performed at a minimum of three locations around the work area. Where remediation activities occur across a larger work area or where multiple remediation activities occur simultaneously, air monitoring will be performed at additional locations. Specific air quality monitoring locations have been developed based on the above-referenced documents and are shown in the Design Drawings. Specifically, air monitoring locations have been identified for three areas of the project, as shown in Design Drawings AM01 through AM03:[12]

- North Project Area, containing six vernal pools with seven proposed monitoring locations;
- Central Project Area, containing two vernal pools with four proposed monitoring locations; and
- South Project Area, containing two vernal pools with three proposed monitoring locations.

Actual monitoring locations may vary further from those shown in the Design Drawings in response to site conditions, property access, property owner request, or the locations of active operations.

The monitoring locations to be utilized for a given work activity will be determined by the CM in consultation with EPA based upon the proximity to the active remediation activities and the number of activities occurring simultaneously in an area. As an example, if SediMite™ placement activities at vernal pool 5A-VP-12 located at the Miss Hall's School property are the only active remediation activities occurring in the North Project Area, three to five monitoring locations may be used instead of all seven proposed locations for that project area.

During implementation of the vernal pool pilot study construction activities, the primary constituent subject to ambient air monitoring will be particulate matter smaller than 10 micrometers in diameter (PM_{10}). Air monitoring for PM_{10} will be conducted during all construction activities that may generate particulate matter. Ambient air monitoring of PM_{10} will be conducted daily during construction activities for a minimum of 10 hours when construction is ongoing and throughout the duration of daily construction activities. If construction activities are ongoing for longer than 10 hours, particulate monitoring will continue until daily activities are complete. As described in the QOL Compliance Plan and Ambient Air Monitoring Plan, particulate monitoring will be performed using

[12] The monitoring locations shown these drawings are consistent with the locations shown on the drawings provided to EPA on February 20, 2026, as part of supplemental information except that two of the monitors in the North Project Area, AML-1 and AML-3, have been moved slightly south due to lack of access permission or as discussed with EPA to accommodate a residential property owner.

real-time meters with dataloggers to obtain continuous readings for determining the 10-hour average, which will be compared with the PM_{10} Notification and Action Levels.

Ambient air monitoring for PCBs will be conducted during construction activities that may result in generation of PCB emissions, as listed previously in this section. PCB monitoring will be conducted in accordance with EPA Method TO-10A, which is a low-volume method used in locations when there is no site power available. Baseline ambient air monitoring for PCBs will be conducted to assess conditions prior to implementation of remediation activities. A minimum of two baseline monitoring events will be conducted for PCBs within a few weeks of each other prior to the start of the vernal pool pilot study construction activities. The following locations will be used for baseline PCB air monitoring:

- North Project Area: VPN-1, VPN-3, VPN-5, and VPN-7 (shown on Drawing AM01);
- Central Project Area: VPC-1 and VPC-3 (shown on Drawing AM02); and
- South Project Area: VPS-1, VPS-2, and VPS-3 (shown on Drawing AM03).

At the start of pilot study construction activity that may generate PCB emissions and each new type of such activity, sampling for PCBs will be conducted for two sequential 24-hour periods (i.e., back-to-back). New types of construction activities include initiation of soil excavation and handling activities at each of the five removal-based vernal pools; initiation of significant construction vehicle traffic in the north, central, or south project areas; and initiation of amendment mixing.

If monitoring indicates that air levels are acceptable (i.e., are below the PCB Notification Level specified in the QOL Compliance Plan), the monitoring frequency will be reduced to one 24-hour monitoring event weekly for each area of active construction or work activity for the duration of that activity. If monitoring indicates that air levels are not acceptable (i.e., are above the Notification or Action Level specified in the QOL Compliance Plan), the actions specified in Section 4.3.3.1 (for a Notification Level exceedance) and/or Section 4.3.3.2 (for an Action Level exceedance) of the QOL Compliance Plan will be implemented.

If the total duration of active construction or work activity is less than one week, then one sampling event will be completed. Monitoring for two sequential 24-hour periods will be reinstituted when a new type of pilot study construction activity (defined previously in this section) occurs in an area.

7.1.3 Noise Control

As noted in Section 7.1.1, the Contractor is planning to perform active construction work between the hours of 7:00 a.m. and 6:00 p.m. on weekdays so as not to disturb the neighboring community during nighttime hours. To minimize unnecessary noise during those active construction work hours,

the Contractor will implement routine control measures and BMPs to control noise impacts. Such measures and BMPs will include the following:

- Scheduling the loudest tasks for mid-day periods, when practicable, rather than at the start or the end of the workday;
- Maintaining equipment in good working order, including mufflers, engine enclosures, back-up alarms, and vibration components;
- Minimizing simultaneous operation of multiple high-noise equipment units in the same area where that combination is not operationally necessary;
- Reducing unnecessary engine run time through strict idling control;
- Using quacker-style broadband back-up alarms on all applicable construction vehicles and equipment;
- Using approved haul routes and minimizing truck traffic during school commuting periods on Pomeroy Avenue north of Preston Avenue;
- Maintaining speed controls on non-public roads and in work areas;
- Locating stationary equipment, generators, pumps, and support activities within approved staging areas;
- Using sound-shielding equipment for noise suppression around temporary generators and mufflers on applicable construction vehicles and equipment; and
- Training personnel on awareness of noise-reduction techniques during equipment operation, such as techniques to avoid slamming tailgates on dump trucks.

As appropriate, based on monitoring results (as discussed below in this section), additional control measures and BMPs (e.g., modification of construction methods and use of sound-attenuating barriers) may be implemented to further minimize noise impacts.

The approved QOL standards for noise are set forth in Section 4.4.1 of the QOL Compliance Plan. These standards include a residential daytime noise standard (which is applicable from 7:00 a.m. to 9:00 p.m. and includes both Notification and Action Levels), a residential nighttime noise standard, and a non-residential noise standard (applicable at any time), measured as maximum hourly average decibel levels. Noise monitoring will be conducted during active work hours at representative locations near the closest receptor to the work activities or between the active work areas and the closest receptor. The selected noise monitoring locations for the pilot study construction activities will generally be co-located with the air monitoring stations established for the project, discussed in Section 7.1.2 and shown in the Design Drawings.

Noise monitoring locations may be adjusted in the field during construction activities based on the following site conditions:

- Location of construction activities;
- Location of nearest potential receptor(s);
- Property access;
- Proximity to other noise sources (e.g., roads and commercial operations); and
- Location-specific conditions, including, but not limited to, topography and vegetation density.

Additionally, if noise monitoring is performed in response to a noise complaint, it will be performed at a location situated to evaluate that noise complaint.

During construction work, the QOL Monitoring Contractor will perform initial noise monitoring at the beginning of active construction on a day that is representative of full-scale operations. If that initial monitoring indicates that noise levels meet the applicable noise standards, subsequent monitoring will be performed every other week during site construction activities. Additional monitoring will be performed when a new activity, equipment, or reduced distance to receptors has the potential to increase noise levels, as well as in response to noise complaints (if any).

In addition to this QOL monitoring, the construction Contractor will perform noise monitoring near equipment that generates noise to verify that the specifications are satisfied. The Contractor will monitor noise daily at each operation for the first two weeks of work. If that initial monitoring indicates that noise levels meet the applicable noise standards, subsequent monitoring will be performed once per week at each operation for any changes in equipment, procedures, or conditions. The Contractor will notify the CM should its monitoring suggest a potential for an exceedance of the noise standards.

On each day of noise monitoring, monitoring will be conducted continuously during active construction work hours, so that one-hour averages can be computed throughout the entire construction day for use in comparison to the applicable noise standard. See also Section 7.1.1 regarding the monitoring to be conducted between 6:30 and 7:00 a.m., which will be a one-half hour average.

The noise monitoring during the construction work will be conducted in accordance with Section 3.7 of the revised Construction Monitoring Plan, which is Attachment G of the revised *Project Operations Plan*. In general, the point of compliance for these standards will be at the closest receptor location, but noise monitoring may be performed closer to the source(s) for ease of implementation and to conservatively demonstrate compliance.

In the event of an exceedance of the noise standards, the Contractor will investigate the cause of the exceedance and determine whether modifications or additional measures are necessary and can be implemented. Written records of exceedances will be kept, documenting the date and time of exceedances and the type of activities occurring on site at the time. Further details on the QOL noise standard and responses to exceedances of that standard (including notifications and contingency measures) are included in Section 4.4 of the QOL Compliance Plan.

7.1.4 Lighting Control

Generally, most of the Contractor's active work activities will be performed during daylight hours, as discussed in Section 7.1.1, and will be conducted outdoors where natural light should be sufficient. Supplemental lighting may be used at the beginning and end of shifts later in the construction season or in support and/or equipment laydown areas as necessary. Supplemental lighting may also be used for exterior work occurring before sunrise or after sunset with prior approval of such work activities by the CM. Supplemental lighting may include portable LED light towers, equipment-mounted lights, light towers with self-contained generators, balloon glare-free 360-degree light systems, and/or task-specific lights. Power sources for supplemental lighting could include portable generators, electrical supply from vehicles (for fixtures mounted to vehicles), solar panels, and/or batteries. To the extent practicable, supplemental lighting will be directed away from nearby properties and will be positioned to avoid creating traffic hazards. Depending on the position and direction of supplemental lighting, additional provisions may be implemented to avoid disturbing neighboring properties. These provisions could include limiting the height at which lights are positioned, reducing the brightness of lighting, and using shields to control where light is cast.

The QOL standard for lighting, as set forth in Section 4.6.1 of the QOL Compliance Plan, is to mitigate nuisance project-related lighting impacts based on any complaints from nearby receptors. In the event of any lighting complaint, the Contractor will investigate the complaint to determine whether the lighting issue is related to the pilot study construction activities. If the lighting complaint is related to that project, GE will evaluate whether the lighting can be adjusted or mitigative measures can be implemented in a manner that does not compromise public safety or the safety of project workers and in a manner compliant with applicable safety regulations. Written records of complaints will be kept, documenting the date and time of the complaint and the type of activities occurring on site at the time. Further details on the QOL lighting standard and responses to complaints are included in Section 4.6 of the QOL Compliance Plan.

7.1.5 Odor Control

Nuisance odors are not anticipated as a result of construction activities associated with the vernal pool pilot study. The QOL standard for odor, as set forth in Section 4.5.1 of the QOL Compliance Plan, is to mitigate the presence of uncomfortable project-related odors identified by project

workers, GE, or EPA or via an odor complaint from the public. The standard will be considered to be not met if uncomfortable project-related odors are identified frequently and recurrently or if such objectionable odors are not mitigated in a timely manner.[13] If project workers, GE, or EPA identify an objectionable odor or if an odor complaint is received from the public, GE will investigate the presence and source of the odor to determine whether the odor is related to the pilot study construction activities. If so, the documentation, evaluation, and notification procedures described in Section 4.5.3 of the QOL Compliance Plan will be implemented.

If mitigation measures are deemed necessary to address an odor report or complaint, the Contractor may apply odor mitigation agents such as BioSolve Pinkwater, Atmos Shield 645 (AC-645) Foam Concentrate, or ConCover 180 spray-on cover. Other methods for odor suppression may be used, such as clean dirt cover, woodchips, or tarps. The use of these odor mitigation measures will be dependent on the nature and source of the odor and will be subject to CM review and approval prior to use.

7.2 Construction Quality Control

The Contractor will be responsible for the establishment of an effective QC system to be used for laboratory services provided in support of the field sampling and analysis programs and for work conducted in the field by the Contractor during construction. This responsibility includes surveillance of project activities to ensure conformance with the design documents and safety requirements, conducting and documenting certifying tests and qualifications, and documenting QC work, including the occurrence of deficiencies and corrective actions (if they occur). To ensure construction QC, the following activities will be conducted by the Contractor:

- All relevant design documents and related plans will be reviewed by site personnel and sampling-testing service providers prior to starting work.
- Data sheets and/or analytical testing results for any required materials (e.g., soils and aggregates, baseliner materials, and utility components) will be reviewed by the Contractor and submitted to the CM prior to material delivery to the site.
- Materials will be inspected for conformance upon delivery to the site and before installation.
- Delivery tickets will be obtained to track and document materials brought to or taken from the site during construction.

The CM will also be responsible for the establishment of an effective QA system to be used to ensure that the QC system is working effectively.

[13] In addition, the QOL standards include a specific one-hour standard for hydrogen sulfide, as described in Section 4.5.1 of the QOL Compliance Plan. That standard will be applied during the vernal pool pilot study construction activities if an odor resembling rotten eggs is reported.

Further description of laboratory-based and field-based construction QA/QC is provided in the following subsections.

7.2.1 Laboratory QA/QC

The Contractor will use laboratory services for chemical and geotechnical analytical testing of imported fill materials, waste characterization sampling, contact water and pre-treatment system sampling, and decontamination sampling. All field sampling and laboratory-based testing will be conducted in accordance with relevant requirements in the FSP/QAPP and the specifications. These testing requirements will apply to field sampling activities, laboratory testing work, test data management and review, and data documentation reporting.

Analytical testing laboratories to be used by the Contractor for chemical and geotechnical analyses associated with construction-related activities will be selected from the list provided in the FSP/QAPP or, if other laboratories are considered necessary to meet scheduling requirements, EPA will be notified of proposed use of those laboratories. Prior to the start of work, the required qualifications, inspection reports, and calibration certificates will be submitted to the CM.

7.2.2 Construction QA/QC

Construction QA/QC will include activities, procedures, inspections, and controls implemented during the pilot study construction activities to ensure that quality-impacting activities are implemented and recorded in the Contractor's document control system, and that the construction activities are performed in accordance with the project construction specifications and requirements. Construction QA/QC will involve both on-site and off-site Contractor work as well as work by subcontractors, fabricators, suppliers, and vendors. Contractor personnel include on-site staff responsible for implementing, overseeing, and documenting QC activities on a daily basis.

Various QA/QC activities to be conducted during construction are described throughout Sections 3 and 4. It will be necessary to gain EPA acceptance of several key QA/QC components during active construction. This acceptance will provide assurance that ongoing and newly completed construction work meets project specifications and requirements and will facilitate EPA's subsequent timely approval of the Vernal Pool Pilot Completion Report (described in Section 9.2). Provided below is a listing and summary description of the key QA/QC components to be provided to EPA for review and concurrence during construction.

Earthen Materials

Laboratory testing of the topsoil to be used for backfilling and restoration and of aggregate materials to be used for temporary road construction will be performed as per the specifications. The results will be provided to EPA for concurrence prior to importation of material to the site.

Excavation

In conjunction with soil removal activities, the vernal pools will be surveyed in accordance with Section 4.2.2 to verify that the specified excavation depth of one foot has been achieved in each removal area within the established tolerances as detailed in the specifications. The required survey points within each removal-based vernal pool to be used to survey pre-construction, post-excavation, and post-construction elevations are shown in Appendix G. Verification of removal depth will be based on comparison of pre- and post-excavation elevations at each survey point to confirm that the specified one-foot removal depth has been achieved within the specified tolerances. Results of the surveys will be provided to EPA for concurrence prior to backfilling in each removal area.

Backfill

Verification of backfill elevations in the removal-based vernal pools will be performed in accordance with Section 4.2.2 using the same survey points established for the pre- and post-excavation measurements to verify final post-placement elevations have been achieved. Verification of backfilling will be determined by comparing post-backfill elevations at each survey point to pre-excavation elevations to confirm that final grades are restored within the specified tolerances as detailed in the specifications. Results of the post-backfill surveys will be provided to EPA for concurrence prior to restoration in each backfilled area.

Amendment Placement

Material quantity tracking by ACU will be the primary means of verifying that the required amendment quantities are placed within each ACU, as shown in the ACU table included in Appendix F and detailed in Section 4.1.2.5. Following amendment placement in each ACU, the Contractor and CM will perform visual inspections and photographic documentation to verify that amendments have been uniformly distributed in accordance with project requirements. The Contractor will also use catch pans within the amendment placement areas as part of the amendment placement verification process. All verification documentation will be provided to EPA for concurrence prior to demobilization from each amendment-based vernal pool.

8 Pilot Study Monitoring and Evaluation

Pilot study monitoring (other than the QOL monitoring described in Section 7.1) will include monitoring before, during, and after implementation of the pilot study. This monitoring was described in Section 8 of the Final Pilot Work Plan and Appendix I to that plan (the Vernal Pool Pilot Study Performance Monitoring Plan). Monitoring to be done during construction is also described in the following subsections. The post-construction monitoring program is detailed further in the Revised Vernal Pool Pilot Study Performance Monitoring Plan provided as Appendix L. That appendix describes the pilot study performance criteria and provides details on the post-construction performance monitoring. It includes updates consistent with the Pilot SIP and changes in response to the conditions in EPA's December 22, 2025, conditional approval letter that relate to the June 2025 Performance Monitoring Plan, as well as other appropriate updating.[14]

In addition to the monitoring discussed in this section, if a major flood event were to occur during the pilot study implementation period, additional monitoring may be performed (beyond the during-construction monitoring described herein) to evaluate any impacts on the pilot study implementation. The type of monitoring to be performed would be dependent on the severity and duration of the flood event and would be discussed with EPA. Further, in connection with or based on the results of such monitoring, GE would discuss with EPA potential options for addressing any impacts of the flood given the severity and duration of the flood event.

8.1 During-Construction Screening for Rare Species

During construction, impacts to wood turtles will be minimized through continued telemetry-informed management, pre-construction screening and clearance sweeps in affected habitats., and construction oversight by a qualified herpetologist or other appropriately trained personnel. Additional wood turtle surveys are being conducted in 2026 with the primary objective of outfitting as many wood turtles as possible with radio-transmitters. This will further refine active-season use areas, habitat use and home range, seasonal pattern shifts in habitat use, and critical habitat features such as nesting and hibernation locations, which will shape requirements for targeting or species protective measures. As noted in Section 3.2.2, prior to work in suitable habitats, qualified biologists will conduct additional screening and clearance sweeps, and construction oversight will be provided in habitats where direct encounter risk is elevated.

Work area controls and encounter procedures will be used to reduce the potential for direct wood turtle mortality, injury, or displacement during vernal pool pilot study construction and support activities. These measures will include clearly marked limits of disturbance, restricted access to

[14] That plan also describes supplemental baseline monitoring of PCBs in porewater in the amendment-based vernal pools, as noted in Section 4.3 of the Final Pilot Work Plan.

sensitive areas where practicable, species awareness training for field crews, temporary stop-work requirements in the event of a turtle encounter in active work areas, and implementation of handling or relocation measures only by appropriately qualified personnel under the applicable protocol. As noted in Section 3.2.2, a Wood Turtle Management Plan is provided in Appendix D. It provides more detailed information on wood turtle presence and habitat in Reach 5A, as well as pre-construction and construction-phase measures to be implemented for minimizing impacts to wood turtles and associated habitat.

As described in Section 3.2.2, state-listed plants encountered within pilot pools or support areas will be assessed for potential relocation into suitable nearby habitats. If state-listed plants are observed near work areas, they will be protected with barriers or fencing sufficient to prevent accidental disturbances. No further oversight regarding state-listed plants will be necessary during the construction period.

Similarly, plant species functioning as hosts for eggs, developing larvae, and pupae of the state-listed lepidopterans will be surveyed prior to construction, as described in Section 3.2.2. No further oversight during the construction period will be necessary.

Pre-construction surveys of trees located within pilot pool staging areas and pre-construction site walks with the Contractor will be conducted to adjust staging area limits and avoid cutting trees to the extent possible. As described in Section 3.2.2, assuming that tree cutting is performed during the bats' active season (i.e., before November 1), trees that will need to be cut will be assessed for bat roosting habitat. If potential habitat is observed in a particular tree, and bats are detected flying to and from that tree, attempts will be made to further adjust the limits of the staging area away from the bat roosting tree. If the tree must be removed and bats are observed in or flying to or from the tree, GE will consult with EPA prior to tree removal about the appropriate action to take. It is anticipated that, in such a case, the tree will be felled just before dark or as soon as possible immediately following sunrise to minimize the potential for bats being present in the tree when it is felled.

All encounters with or observations of state-listed faunal or plant species during construction will be documented and reported to MNHESP using its online portal, Heritage Hub, within the time frame specified in the Data Release Agreement between GE and MNHESP.

8.2 Amendment-Based Pool Monitoring During Construction

As noted in Section 8.2.1 of the Final Pilot Work Plan, construction monitoring during amendment application will focus on amendment placement verification and vegetation monitoring to evaluate the effects of amendment-based construction activities. Verification monitoring will be completed during and immediately following the amendment placement in each pool to verify achievement of

the target amendment dose, as discussed in Section 4.1.2.5 and detailed in Specification Section 03 90 01 – Amendment Placement-Vernal Pools.

In addition, visual observation of vegetation conditions will be conducted prior to, during, and immediately following application of amendments. This visual monitoring will be conducted to document effects on vegetation in the amendment application area.

8.3 Removal-Based Pool Monitoring During Site Preparation and Construction

During the site preparation phase for removal-based pools, as noted in Section 8.3.1 of the Final Pilot Work Plan, any specific habitat features that are to be avoided and preserved (e.g., trees, downed woody debris, or standing dead trees) will be identified, and procedures to afford their protection will be reviewed and implemented prior to initiating any clearing or excavation activities.

During construction, verification of the vernal pool soil removal and backfilling operations will be performed as discussed in Section 3.3.2 and detailed in Specification Section 31 23 00 – Excavation and Fill (Appendix A). During excavation, surveying will be performed to verify that removal is completed in accordance with the design requirements. Imported soil materials to be used as backfill will be subject to testing and visual examination to verify compliance with the specifications. Surveying and visual examination of the work area will also be conducted to verify that backfilling operations adequately re-establish the pre-excavation topography to preserve the original configuration of depressional areas and swales within and near the vernal pool that contribute to surface water conveyance to the pool, soil moisture, and overall habitat conditions.

During restoration, monitoring will be conducted of seeding and planting and other restoration activities to verify compliance with the design requirements. This will include counts of planted shrub and tree species and verification of seeding content and rates.

9 Project Schedule and Construction Completion Report

9.1 Construction Schedule

The vernal pool pilot study construction work tasks and the Contractor's planned implementation schedule are presented in Table 9-1. The project schedule shown in Table 9-1 is based on the following assumptions and qualifications:

- The schedule is based on information available at the time of schedule preparation. Any changes to project scope or site conditions may impact the project schedule.
- The schedule assumes the following:
  - Weather conditions (e.g., frost conditions, rain amounts, ambient temperature limitations, and typical wind velocities) meet average seasonal limitations for construction in the western Massachusetts work area.
  - Actual site conditions are consistent with site condition data that have been previously obtained and relied upon for the basis of design and construction.
  - The different project team representatives (GE, EPA, CM, and Contractor) are available as needed for review, coordination, and approval.
  - Sufficient materials that meet the project design requirements are available, and there are no delays in the supply of key long-lead items.
  - Property access permission is granted by the owners of all properties where construction, support activities, and monitoring activities will occur.
- All durations are based on typical productivity rates and working five days per week, up to 10 hours per day.
- The schedule assumes EPA approval of the site preparation components of this SIP (Section 3.2) no later than July 13, 2026.
- The schedule assumes EPA approval of this entire SIP no later than August 3, 2026.
- The sequence of activities is subject to change based on site conditions.

9.2 Vernal Pool Pilot Study Construction Completion Report and Subsequent Reporting

Once GE has determined that the vernal pool pilot study construction activities are complete, GE will schedule and conduct a pre-certification inspection with EPA. After completion of the pre-certification inspection, GE will proceed with the development and submittal of a Vernal Pool Pilot Study Construction Completion Report, as provided in the Final Pilot Work Plan, to summarize

and document the scope of the completed pilot study construction activities. That report will include the following items:

- Background information and a description of pre-construction activities;
- A description of the construction activities performed;
- A description of any deviations from the design submittals approved by EPA and any other difficulties and problems encountered;
- Results of QA and QC testing performed prior to and during construction;
- As-built record construction drawings signed and stamped by a professional engineer;
- Representative project photographs; and
- Demonstration of achievement of the applicable Performance Standards and other requirements in Section II.B.3.b of the Revised Permit relating to the vernal pool pilot study construction activities.

As described in the Final Pilot Work Plan, GE will submit the Vernal Pool Pilot Study Construction Completion Report within 120 days after the post-construction pre-certification inspection with EPA.

Subsequently, as also provided in the Final Pilot Work Plan, following the completion of post-construction monitoring for a period of three years, GE will prepare and submit the Vernal Pool Pilot Study Summary Report. This report will be submitted within 60 days after receipt and validation of the final data collected as part of those three years of monitoring. It will summarize the overall results of the pilot study and provide recommendations regarding the method of remediation for the remaining the vernal pools in Reach 5A that require remediation. Within 90 days following EPA approval of that report (or sooner if possible), GE will submit an addendum to the Final RD/RA Work Plan for Reach 5A that provides remediation design details for those remaining vernal pools in Reach 5A. Prior to that time, GE will discuss with EPA a schedule for GE's submittal and EPA's review and approval of the Pilot Study Summary Report and the subsequent Final RD/RA Work Plan Addendum that will allow remediation of the remaining vernal pools in Reach 5A to begin in the upcoming construction season (anticipated to be 2030). Finally, after five years of ecological monitoring, GE will submit an addendum to the Vernal Pool Pilot Study Summary Report that summarizes those five years of ecological monitoring and implications for vernal pool remediation in reaches other than Reach 5A.

10 References

AECOM, 2024. *Revised Housatonic River Reach 5A Baseline Restoration Assessment Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. February 2024.

AECOM, 2026. *Housatonic River Reach 5A Restoration Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. April 29, 2026

Anchor QEA, 2022. *Addendum to Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. January 2022.

Anchor QEA, 2025. *Supplemental Data Collection Work Plan Addendum*. Prepared for General Electric Company, Pittsfield, Massachusetts. February 3, 2025.

Anchor QEA and AECOM, 2025. *Final Revised Vernal Pool Pilot Study Work Plan*. Prepared for General Electric Company. June 2025.

Anchor QEA and Arcadis, 2025. *Second Revised Quality of Life Compliance Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. May 2025.

Arcadis, 2023. *Field Sampling Plan/Quality Assurance Project Plan, GE-Pittsfield/Housatonic River Site*. Prepared for the General Electric Company, Pittsfield, Massachusetts. December 2023.

Arcadis, 2024. *Project Operations Plan, GE-Pittsfield/Housatonic River Site*. Prepared for the General Electric Company, Pittsfield, Massachusetts. Revised January 2024.

Beckingham, B., D. Buys, H. Vandewalker, and U. Ghosh, 2013. "Observations of Limited Secondary Effects to Benthic Invertebrates and Macrophytes with Activated Carbon Amendment in River Sediments." *Environmental Toxicology and Chemistry* 32(7):1504–1515.

Cornelissen, G., M.E. Krusa, G.D. Breedveld, E. Eek, A.M.P. Oen, H.P.H. Arp, C. Raymond, G. Samuelsson, J.E. Hedman, O. Stokland, and J.S. Gunnarsson, 2011. "Remediation of Contaminated Marine Sediment Using Thin-Layer Capping with Activated Carbon—A Field Experiment in Trondheim Harbor, Norway." *Environmental Science and Technology* 45:6110–6116.

ESTCP, 2016. *Evaluating the Efficacy of a Low-Impact Delivery System for In situ Treatment of Sediments Contaminated with Methylmercury and Other Hydrophobic Chemicals*. Prepared for the Department of Defense. ESTCP Project Number ER-200825. July 2014.

Janssen, E.M.L., and B.A. Beckingham, 2013. "Biological Responses to Activated Carbon Amendments in Sediment Remediation." *Environmental Science and Technology* 47:7595–7607.

Kupryianchyk, D., M.I. Rakowska, J.T. Grotenhuis, and A.A. Koelmans, 2012a. "In Situ Sorption of Hydrophobic Organic Compounds to Sediment Amended with Activated Carbon." *Environmental Pollution* 161:23–9.

Kupryianchyk, D., M. Rakowska, T. Grotenhuis, and A.A. Koelmans, 2012b. "Modeling Trade-Off Between PAH Toxicity Reduction and Negative Effects of Sorbent Amendments to Contaminated Sediments." *Environmental Science and Technology* 46(9):4975–4984.

Tables

Table 9-1
Project Work Schedule

ID	Task Name	Start	Finish
1	SIP Submittal by GE	6/19/26	6/19/26
2	EPA Approval of Site Preparation Portions of SIP	7/13/26	7/13/26
3	EPA Approval of Remainder of SIP	8/3/26	8/3/26
4	Mobilization	7/20/26	7/22/26
5	Clearing and Construction of Access Roads and Support Areas	7/23/26	8/31/26
6	Completion of Removal-Based Vernal Pools	8/5/26	9/24/26
7	Completion of Amendment-Based Vernal Pools	8/10/26	9/22/26
8	Seeding, Planting, and Restoration	9/22/26	10/7/26
9	Pre-Certification Inspection with EPA	10/2/26	10/2/26
10	Demobilization	10/5/26	10/9/26
11	Construction Completion Report Submitted by GE	1/29/27	1/29/27
12	EPA Approval of Construction Completion Report	3/30/27	3/30/27



Legend

Item	Symbol
Activity	
Milestone	

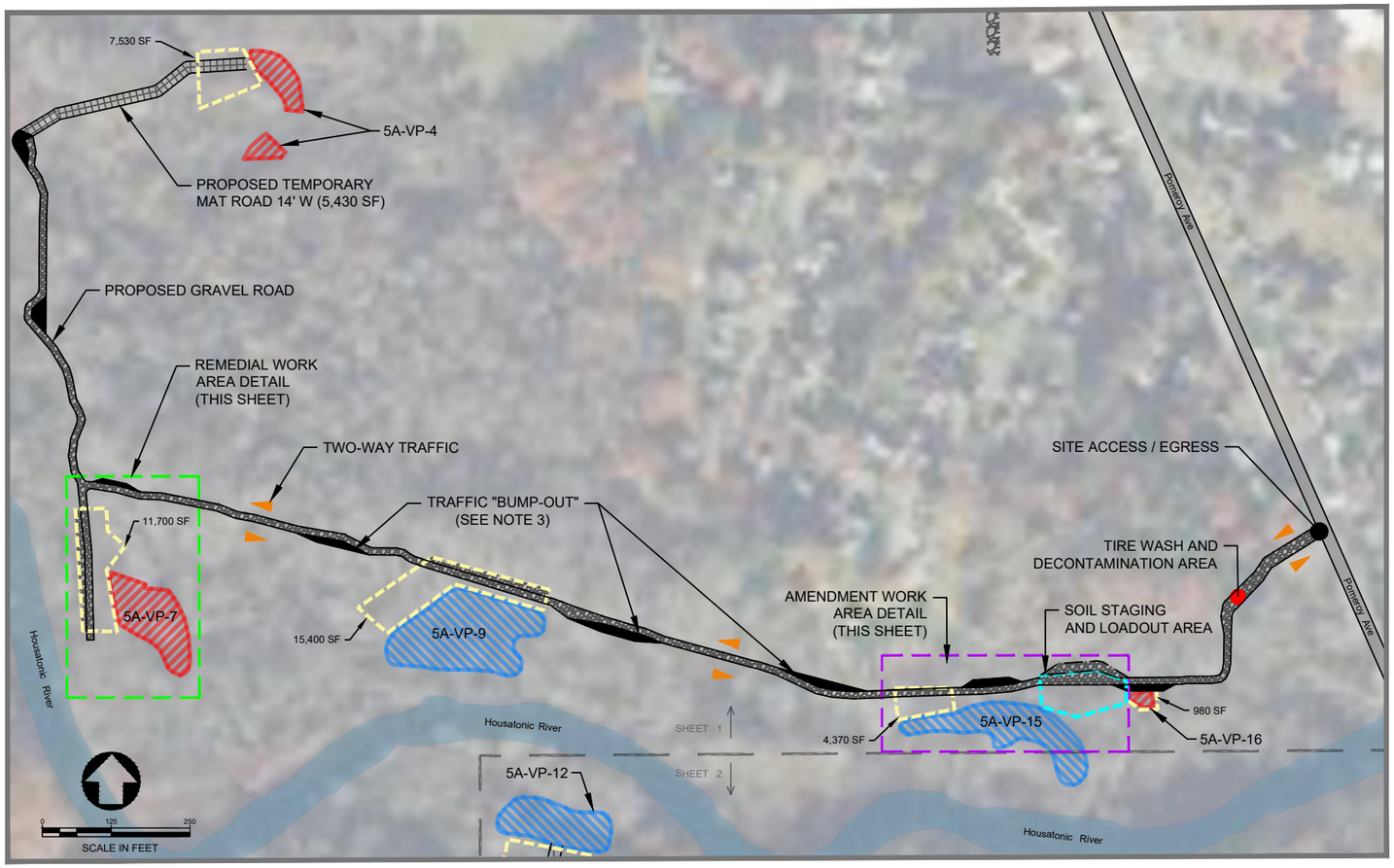
Figures

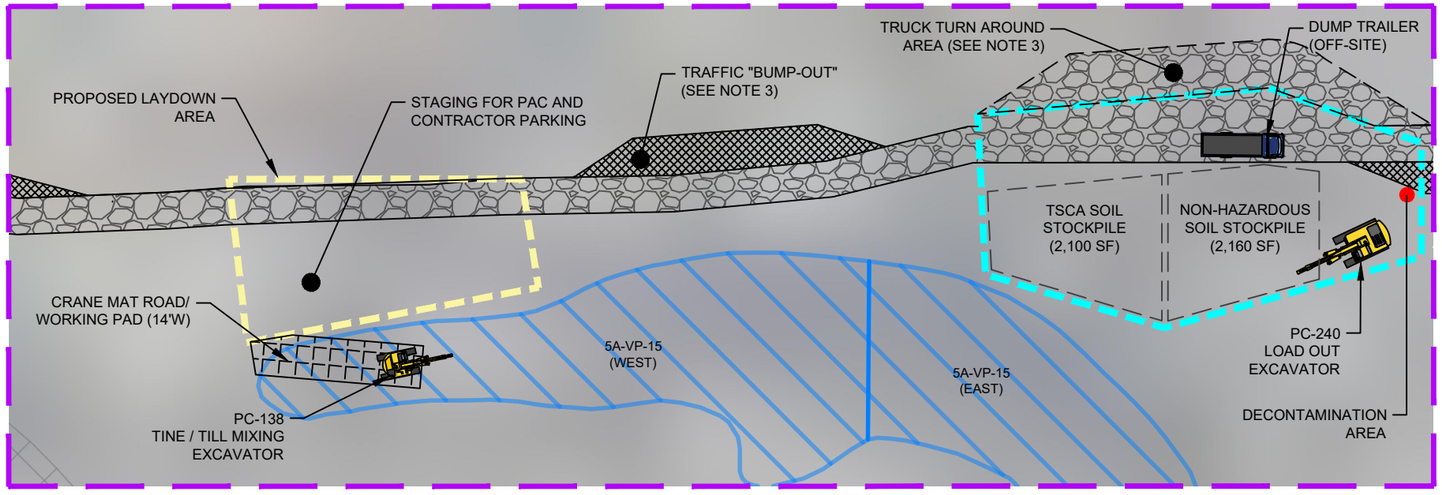
LEGEND

- EXCAVATION / RESTORATION AREA
- AMENDMENT AREA
- PROPOSED LAYDOWN AREA (SEE NOTE 1)
- SOIL STAGING AREA
- LINED STOCKPILE
- PROPOSED GRAVEL ROAD
- PROPOSED TEMPORARY MAT ROAD
- TRAFFIC "BUMP-OUT" (SEE NOTE 3)

NOTES:

1. PROPOSED LAYDOWN AREAS TO BE CONSTRUCTED USING CRANE MATS OR SIMILAR AND ALLOW FOR CONTRACTOR PARKING.
2. SOIL STOCKPILES PLACED ON 20 MIL HDPE LINER WITH CONTAINMENT. TO BE COVERED AT END OF DAY WITH 10 MIL (MIN) POLY SHEETING.
3. TRAFFIC "BUMP-OUT" , PROPOSED GRAVEL ROAD, AND TRUCK TURN AROUND AREA LOCATIONS ARE APPROXIMATE AND WILL BE FIELD FIT

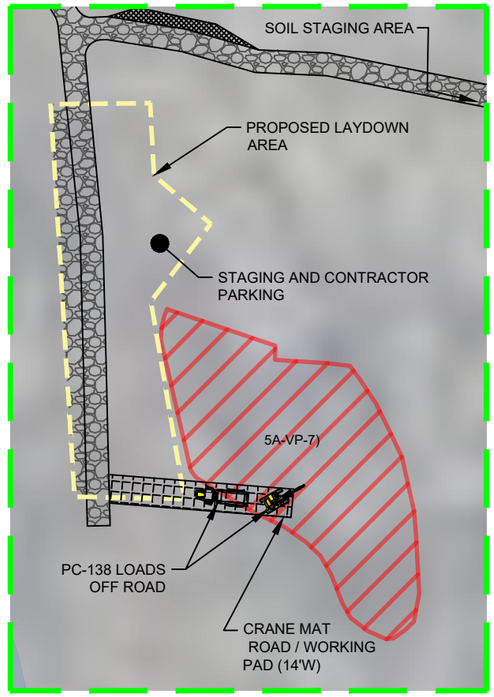




AMENDMENT WORK DETAIL

0 25 50

SCALE IN FEET



REMEDIAL WORK DETAIL

0 40 80

SCALE IN FEET

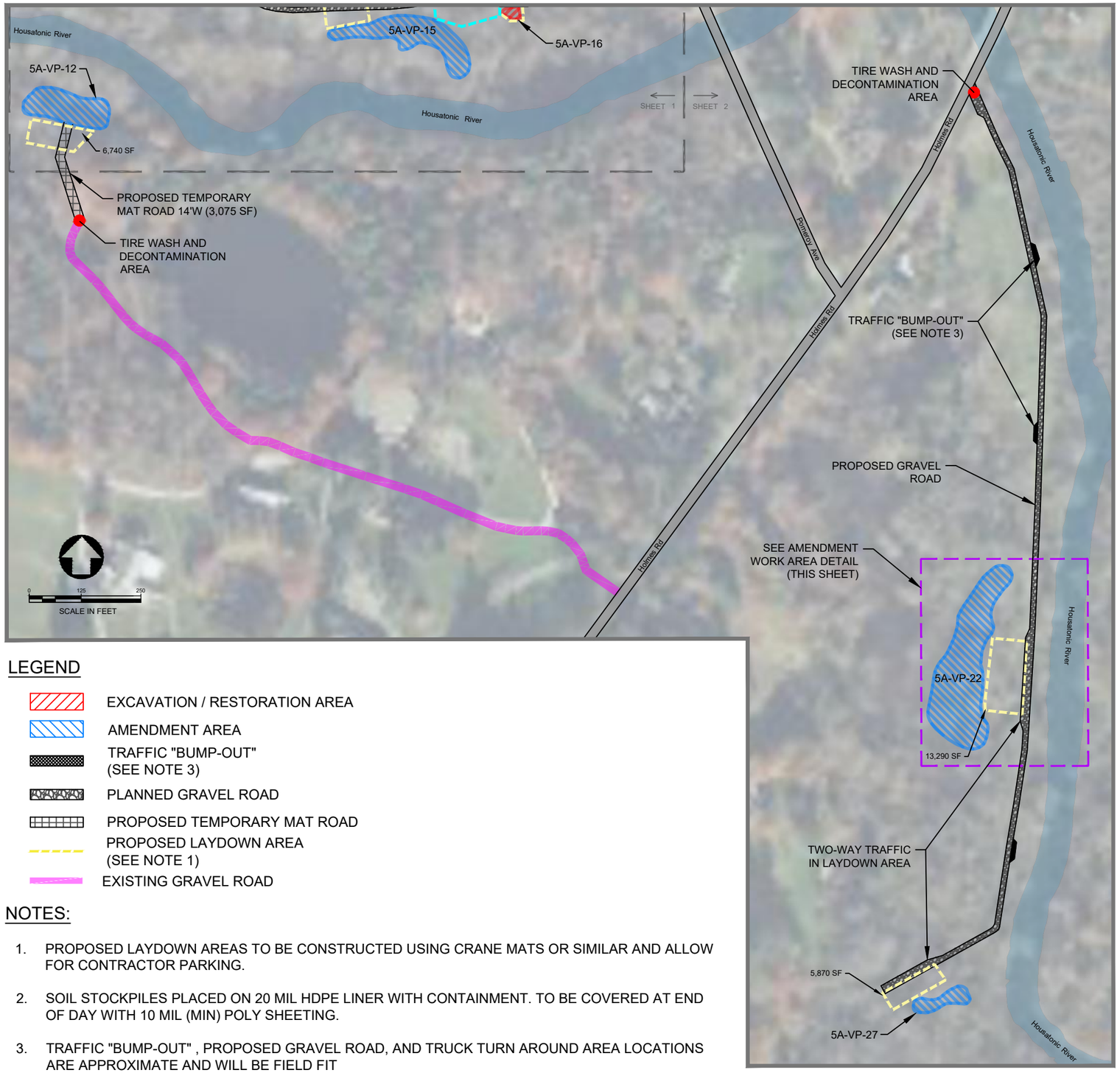
SEVENSON STAGING & ACCESS POMEROY AVENUE AREA

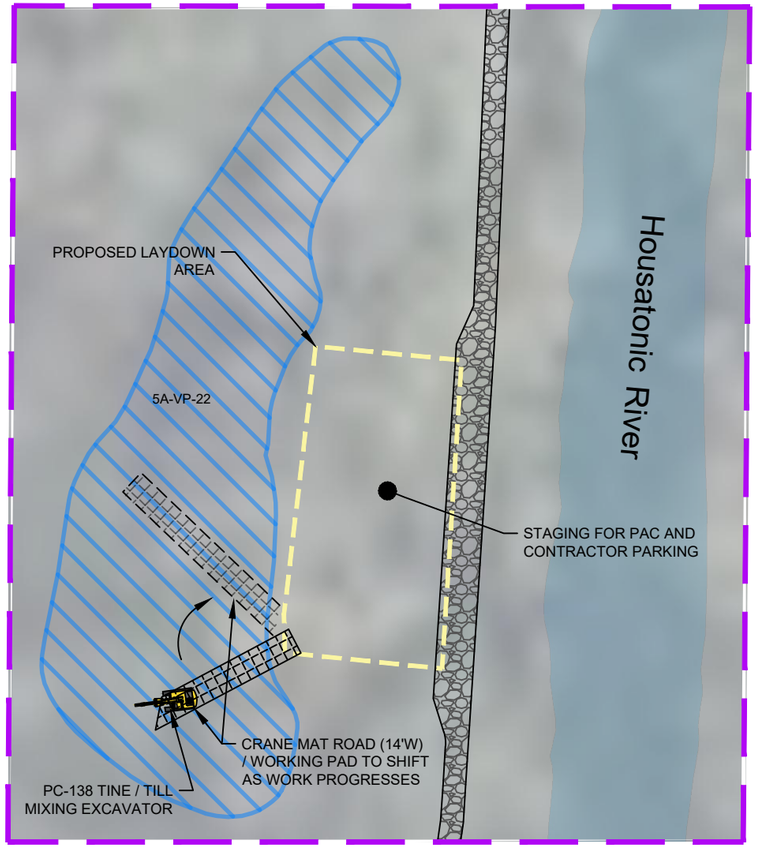
GENERAL ELECTRIC COMPANY
HOUSATONIC RIVER
VERNAL POOL PILOT STUDY
PITTSFIELD, MA

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE 3-1

DATE:	6.10.2026
DRAWN BY:	J. CHIODO
CHECKED BY:	MW
CAD FILE:	STAGING & ACC REV3.DWG
SCALE:	AS SHOWN





AMENDMENT WORK DETAIL

0 40 80
SCALE IN FEET

LEGEND

- EXCAVATION / RESTORATION AREA
- AMENDMENT AREA
- TRAFFIC "BUMP-OUT" (SEE NOTE 3)
- PLANNED GRAVEL ROAD
- PROPOSED TEMPORARY MAT ROAD
- PROPOSED LAYDOWN AREA (SEE NOTE 1)
- EXISTING GRAVEL ROAD

NOTES:

1. PROPOSED LAYDOWN AREAS TO BE CONSTRUCTED USING CRANE MATS OR SIMILAR AND ALLOW FOR CONTRACTOR PARKING.
2. SOIL STOCKPILES PLACED ON 20 MIL HDPE LINER WITH CONTAINMENT. TO BE COVERED AT END OF DAY WITH 10 MIL (MIN) POLY SHEETING.
3. TRAFFIC "BUMP-OUT" , PROPOSED GRAVEL ROAD, AND TRUCK TURN AROUND AREA LOCATIONS ARE APPROXIMATE AND WILL BE FIELD FIT

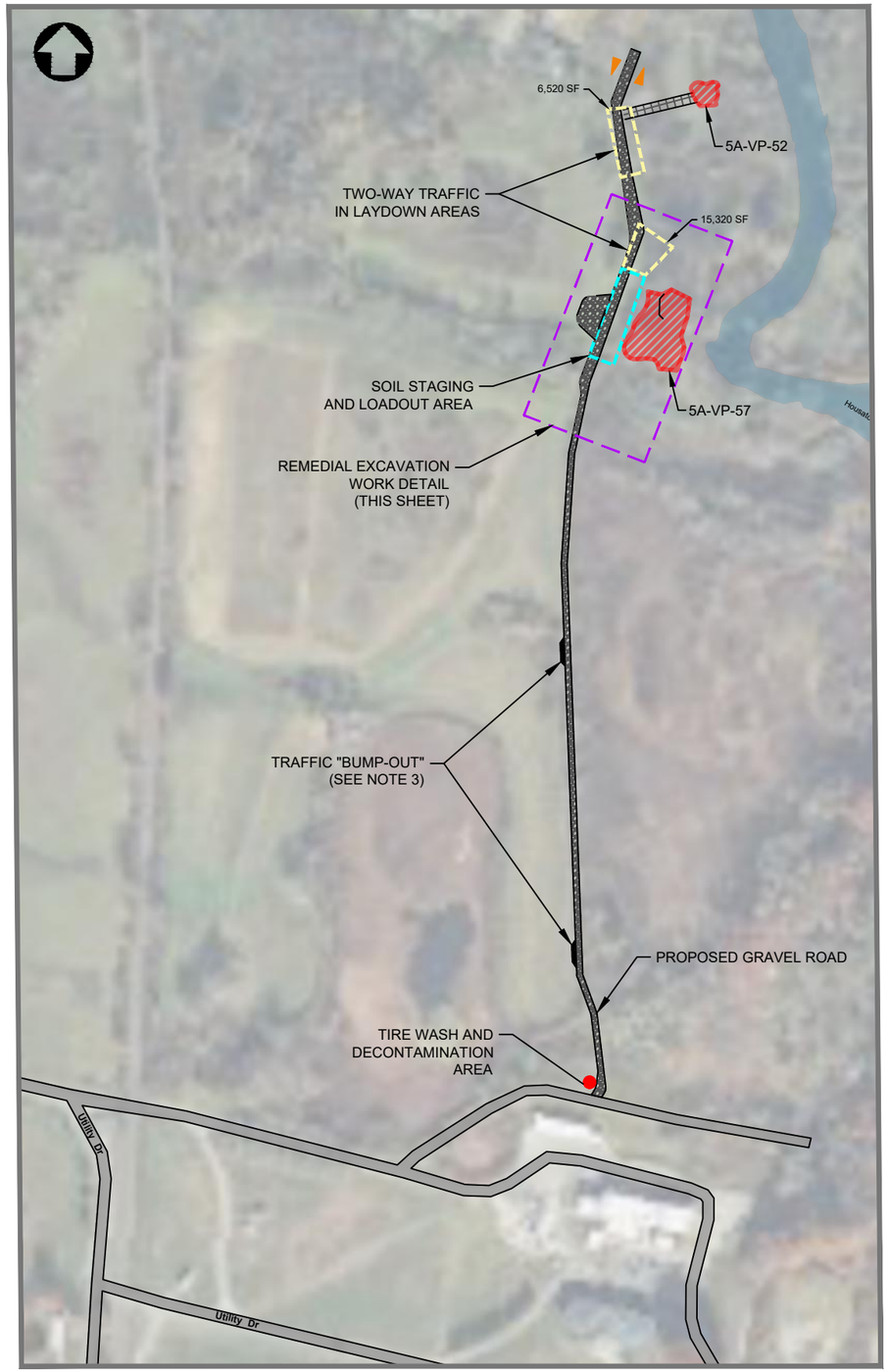
SEVENSON STAGING & ACCESS HOLMES ROAD AREA

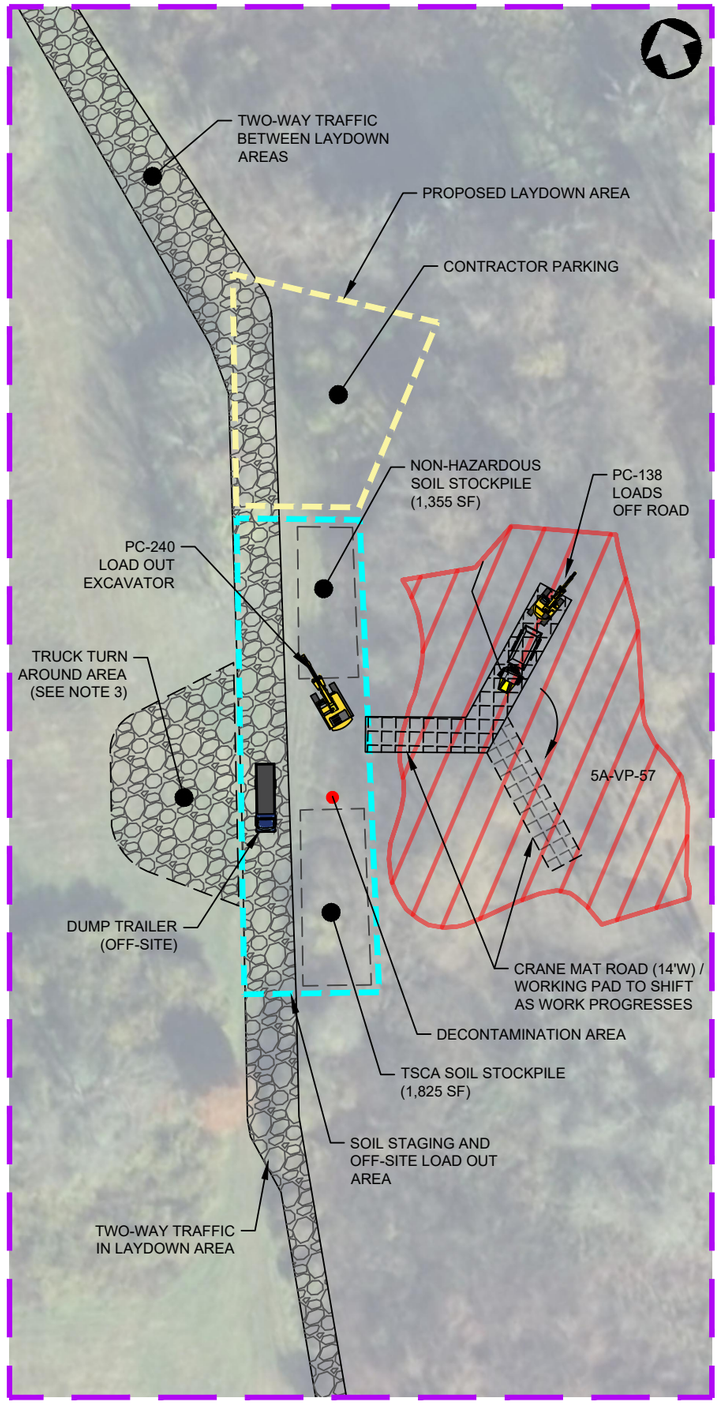
GENERAL ELECTRIC COMPANY
HOUSATONIC RIVER
VERNAL POOL PILOT STUDY
PITTSFIELD, MA

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE 3-2

DATE:	6.10.2026
DRAWN BY:	J. CHIODO
CHECKED BY:	MW
CAD FILE:	STAGING & ACC REV3.DWG
SCALE:	AS SHOWN





REMEDIAL WORK DETAIL

LEGEND

- EXCAVATION / RESTORATION AREA
- PROPOSED LAYDOWN AREA (SEE NOTE 1)
- SOIL STAGING AREA
- LINED STOCKPILE
- PROPOSED GRAVEL ROAD
- PROPOSED TEMPORARY MAT ROAD
- TRAFFIC "BUMP-OUT" (SEE NOTE 3)

NOTES:

1. PROPOSED LAYDOWN AREAS TO BE CONSTRUCTED USING CRANE MATS OR SIMILAR AND ALLOW FOR CONTRACTOR PARKING.
2. SOIL STOCKPILES PLACED ON 20 MIL HDPE LINER WITH CONTAINMENT. TO BE COVERED AT END OF DAY WITH 10 MIL (MIN) POLY SHEETING.
3. TRAFFIC "BUMP-OUT" , PROPOSED GRAVEL ROAD, AND TRUCK TURN AROUND AREA LOCATIONS ARE APPROXIMATE AND WILL BE FIELD FIT

SEVENSON STAGING & ACCESS PITTSFIELD WWTP AREA

GENERAL ELECTRIC COMPANY
HOUSATONIC RIVER
VERNAL POOL PILOT STUDY
PITTSFIELD, MA

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE 3-3

DATE:	6.10.2026
DRAWN BY:	J.CHIODO
CHECKED BY:	MW
CAD FILE:	STAGING & ACC REV3.DWG
SCALE:	AS SHOWN

Appendix A
Technical Specifications

HOUSATONIC RIVER – REST OF RIVER
PITTSFIELD, MASSACHUSETTS
CONTRACT 40 – VERNAL POOL PILOT STUDY

TECHNICAL SPECIFICATIONS

DATE: MAY 8, 2026

PREPARED FOR: GENERAL ELECTRIC COMPANY

PREPARED BY: ANCHOR QEA
IN CONJUNCTION WITH AECOM

SECTION 01571 – OPERATIONS ENVIRONMENTAL RESTRICTIONS AND CONTROLS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section is applicable to Rest of River (ROR) construction Work that involves active remediation or handling of polychlorinated biphenyl (PCB)-containing materials. Section 01572 – Construction Environmental Restrictions and Controls addresses Work involving construction work that does not involve active remediation of handling of PCB-containing materials
2. The Contractor shall conduct all Work in compliance with the ROR Quality of Life (QOL) Standards established for air quality, noise, odor, and lighting. The QOL Standards were established in the U.S. Environmental Protection Agency (EPA)-approved Second Revised Quality of Life Compliance Plan (QOL Compliance Plan; Anchor QEA and Arcadis 2025[1]). The QOL Standards are listed below in Part 1.01.B.
3. The Contractor shall conduct all Work in compliance with the Surface Water Action Levels established in Section 3.9 of the Project Operations Plan (POP; Arcadis 2025[2]). The Surface Water Action Levels are listed below in Part 1.01.C.
4. The Contractor shall supply and maintain all labor, equipment, tools, methods, controls, materials, temporary construction, and mitigation measures necessary to ensure that all Work is compliant with the QOL Standards.
5. The Construction Manager, or a third party under the direction of the Construction Manager or the Owner, will perform monitoring to demonstrate compliance with the applicable QOL Standards and Surface Water Action Levels and as warranted in response to project-related complaints. Monitoring for compliance with the QOL Standards will be conducted in accordance with the QOL Compliance Plan and the POP, including Attachment D (Ambient Air Monitoring Plan) and Attachment G (Construction Monitoring Plan). Monitoring for compliance with the Surface Water Action Levels will be conducted in accordance with Section 3.9 of the POP. The Contractor may choose to conduct its own monitoring; however, the monitoring conducted by the third party shall form the basis for decisions regarding compliance with the QOL Standards and Surface Water Action Levels.
6. If any QOL Standards and Surface Water Action Levels are exceeded or a project-related complaint is received that requires corrective action, the Contractor will be notified by the Construction Manager, and the Contractor shall implement controls and any necessary mitigation measures to address the exceedance or complaint. If such an exceedance or complaint occurs, the Contractor shall assist the Construction Manager in investigating the cause of the exceedance and determining any additional engineering or operational controls needed.

[1] Anchor QEA and Arcadis, 2025. *Second Revised Quality of Life Compliance Plan. Housatonic River – Rest of River.* Prepared for General Electric Company, Pittsfield, Massachusetts. May 2025

[2] Arcadis, 2025. *Project Operations Plan GE-Pittsfield/Housatonic River Site.* Prepared for the General Electric Company, Pittsfield, Massachusetts. May 2025.

B. QOL Standards

1. Air Quality QOL Standards
   a. Air Quality QOL Standard for Particulate Matter
      1) The QOL Standard for Particulate Matter applies to particulates smaller than 10 micrometers in diameter (PM_{10}) and includes both a Notification Level and an Action Level.
      2) PM_{10} Notification Level: 10-hour average PM_{10} concentration of 120 micrograms per cubic meter ($\mu g/m^3$)
      3) PM_{10} Action Level: 10-hour average PM_{10} concentration of 150 $\mu g/m^3$
      4) Compliance with the QOL Standard for Particulate Matter will be determined based on PM_{10} monitoring by the Construction Manager or a third party in accordance with the QOL Compliance Plan, Ambient Air Monitoring Plan (Attachment D of the POP), and Construction Monitoring Plan (Attachment G of the POP). PM_{10} monitoring will occur for a minimum of 10 hours when construction is ongoing and throughout the duration of construction activities. If the duration of construction activities on a particular day is longer than 10 hours, the data collected over the full monitoring period will be averaged and compared to the PM_{10} Notification Level and Action Level.
      5) If the workday average PM_{10} Notification Level is exceeded at any time, the Contractor shall implement additional engineering or operational controls, as necessary, to reduce dust generation and prevent a PM_{10} Action Level exceedance from occurring.
      6) If the workday average PM_{10} Action Level is exceeded at any time, the Contractor shall implement additional engineering or operational controls, as necessary, to reduce dust generation and prevent another exceedance of the PM_{10} Action Level.
      7) If the workday average PM_{10} Action Level is exceeded on two consecutive days, the Contractor shall temporarily stop dust-generating Work in the vicinity of the location where the exceedance was observed. The stop-work requirement will continue until directed by the Construction Manager based on EPA approval of appropriate response actions to prevent another exceedance of the Action Level from occurring.
   b. Air Quality QOL Standard for PCBs
      1) The QOL standard for PCBs includes both a Notification Level and an Action Level for total PCB concentrations.
      2) The PCB Notification Level is 0.05 microgram per cubic meter ($\mu g/m^3$) based on a 24-hour average.
      3) The PCB Action Level is 0.1 $\mu g/m^3$ based on a 24-hour average.
      4) Compliance with the QOL Standard for PCBs will be determined based on PCB air monitoring by the Construction Manager or a third party in accordance with the QOL Compliance Plan, Ambient Air Monitoring Plan (Attachment D of the POP), and Construction Monitoring Plan (Attachment G of the POP).
      5) During construction, PCB monitoring will initially be performed in the vicinity of potential sources of PCB emissions for two sequential 24-hour periods (i.e., two back-to-back daily events) at the start of each new type of construction activity in each construction season to confirm that representative airborne concentrations for PCBs do not exceed the designated standards.
      6) If the initial PCB monitoring indicates that air PCB levels are acceptable, one 24-hour monitoring event will then be conducted weekly for each area of active

construction for the duration of that construction activity. In addition, monitoring will be reinstituted when a new type of remediation activity occurs in an area.

7) If the 24-hour average PCB concentration exceeds the PCB Notification Level, additional response actions will be implemented, in consultation with EPA, to prevent exceedances of the Action Level. The actions to be considered in such circumstances include the types of measures described in Section 4.3.4 of the QOL Compliance Plan.
8) If the 24-hour average PCB concentration exceeds the PCB Action Level, the Contractor shall temporarily stop PCB-generating Work in the vicinity of the location where the exceedance was observed. The stop-work requirement will continue until directed by the Construction Manager based on EPA approval of appropriate response actions to prevent another exceedance of the Action Level from occurring.

c. Air Quality QOL Standard for Visible Dust
   1) The QOL Standard for Visible Dust is to mitigate project-related visible dust from leaving the Work area.
   2) The Construction Manager will investigate, with assistance by the Contractor, the cause of visible dust if observed leaving the Work area. If warranted, the Construction Manager will notify the Contractor if corrective action is required to address observations of visible dust.

2. Noise QOL Standards
   a. The primary objective of the Noise QOL Standards is to limit potential impacts of noise generated by the project on the surrounding communities.
   b. For residential areas, separate Noise QOL Standards were established for daytime and nighttime periods, and the residential daytime noise standard includes both a Notification Level and an Action Level. The residential nighttime noise standard and non-residential noise standard (applicable any time of day) are both Action Levels.
   c. The Noise QOL Standards are listed on the table below. All sound levels are presented in decibels on an A-weighted scale (dBA).

Type	Numerical Standard (Maximum Hourly Average)
Notification Level: Residential Daytime (7:00 a.m. to 9:00 p.m.)	75 dBA
Action Level: Residential Daytime (7:00 a.m. to 9:00 p.m.)	80 dBA
Action Level: Residential Nighttime (9:00 p.m. to 7:00 a.m.)	65 dBA
Action Level: Non-Residential (Day or Night)	80 dBA

   d. When nighttime work occurs in an area adjacent to both residential and non-residential receptors, the residential nighttime noise standard will apply.
   e. Compliance with the Noise QOL Standards will be determined based on noise monitoring conducted by the Construction Manager or a third party in accordance

with the QOL Compliance Plan and the Construction Monitoring Plan (Attachment G of the POP).

3. Odor QOL Standard
   a. The primary objective of the odor QOL standard is to protect the surrounding communities from nuisance odors that unreasonably interfere with the comfortable enjoyment of life and property or the conduct of business.
   b. For general odors, the Odor QOL Standard is to mitigate the presence of uncomfortable project-related odors identified by project workers, the Owner, EPA, or via an odor complaint from the public. The standard will be considered to not be met if uncomfortable project-related odors are identified frequently and recurrently or if such objectionable odors are not mitigated in a timely manner.
   c. For hydrogen sulfide (H_2S) odors, a numerical QOL Standard is triggered in the event that a complaint or report is received from a worker, the public, or EPA that is related to the distinct rotten-egg smell of H_2S.
   d. The numerical Odor QOL Standard for H_2S is a 1-hour average concentration of 0.01 part per million (ppm; 14 $\mu g/m^3$).
   e. Compliance with the numerical Odor QOL Standard for H_2S will be determined based on monitoring by the Construction Manager or a third party in accordance with the QOL Compliance Plan and Construction Monitoring Plan (Attachment G of the POP).

4. Lighting QOL Standard
   a. The Lighting QOL Standard is to mitigate nuisance project-related lighting impacts based on any complaints from nearby receptors.
   b. The Lighting QOL Standard will be considered to be not met if frequent, recurrent lighting complaints related to project activities occur or if project-related nuisance lighting impacts are not mitigated in a timely manner.
   c. The Lighting QOL Standard does not supersede worker health and safety lighting requirements established by the Occupational Safety and Health Administration (OSHA) and U.S. Coast Guard (USCG), where applicable.

C. Surface Water Action Levels
   a. Turbidity Action Level
      1) Turbidity Action Level:

$$\text{Turbidity}_{\text{Downstream}} > \text{Turbidity}_{\text{Upstream}} + 50 \text{ NTU}$$

      2) Compliance with the Turbidity Action Level will be determined based on turbidity monitoring within the river by the Construction Manager or a third party in accordance with the Construction Monitoring Plan (Attachment G of the POP). For each active work area in the river, two continuous turbidity monitors will likely be deployed, one upstream of the active work area and one downstream of the active work area (and downstream of erosion and sedimentation control measures, such as turbidity curtains). At each monitoring location, turbidity will be monitored in real time and reported in nephelometric turbidity units (NTU). Turbidity levels will be logged a minimum of every 15 minutes and downloaded and reviewed at least once per day to assess potential changes in water column turbidity.
      3) In the event that any of the 15-minute readings recorded at the downstream location exceeds the above Turbidity Action Level, a number of site assessment

activities will be initiated under the direction of the Construction Manager or the Owner, including, but not limited to, the following:

a) Review of the ongoing removal and/or other construction activities and the potential need for modification of the condition or performance of the existing erosion and sedimentation control measures.
b) Continued monitoring at the downstream location to determine whether the exceedance was an anomaly or whether the elevated reading was a short-duration event.

4) If it is determined that the Turbidity Action Level exceedance was not an anomaly or short-duration event (e.g., if an exceedance is observed for two or more consecutive 15-minute readings), evaluative water column samples will be collected at both the upstream and downstream locations for analysis of total PCBs and total suspended solids (TSS). The resulting data will be compared to the upstream and downstream turbidity data to assess whether the elevated downstream turbidity reading is also reflected in the PCB and TSS data. This additional, evaluative water column sampling will be continued daily until the Turbidity Action Level is no longer exceeded.
5) If these assessment activities indicate that the elevated downstream turbidity reading reflects a water quality impact that could persist or recur and that it is related to the removal or other construction activities, the Construction Manager will direct the Contractor to modify construction activities to the extent feasible and/or to implement additional controls. These measures shall remain in place until compliance with the Turbidity Action Level is achieved and until directed by the Construction Manager.

b. PCB Action Levels

1) PCB water sampling data will be reviewed during construction to assess potential impacts to the water column within the river. Upstream and downstream PCB data collected from within the river will be compared with the following PCB action level:

$$PCBs_{Downstream} > PCBs_{Upstream} + 5 \text{ micrograms per liter } (\mu g/L)$$

2) Compliance with the PCB Action Level will be determined based on water sampling within the river by the Construction Manager or a third party in accordance with the Construction Monitoring Plan (Attachment G of the POP). The water samples will be analyzed for PCB congeners and TSS.
3) In the event that the PCB Action Level is exceeded, a number of site assessment activities will be initiated under the direction of the Construction Manager or the Owner, including, but not limited to, the following:
   a) Review of the ongoing removal activities and the potential need for modification of the condition or performance of the existing control measures; and/or
   b) Collection of additional, evaluative water column samples from various locations within or adjacent to the removal area in an effort to identify the potential source(s) of the elevated PCB result.
4) If these assessment activities indicate that the elevated downstream PCB result reflects a water quality impact that could persist or recur and that it is related to removal activities, the Construction Manager will direct the Contractor to modify the construction activities to the extent feasible and/or to implement additional response measures. These measures shall remain in place until compliance with

the PCB Action Level is achieved and until directed by the Construction Manager.

c. Surface Water Visual Observation
   1) The Contractor and other project personnel will visually observe the water surface for the presence of turbidity and/or sheens during in-water construction activities (i.e., intrusive remediation activities in the river and along the riverbanks, including sediment removal and riverbank soil removal, and intrusive remediation activities in backwaters or any other waterbody with a hydraulic connection to the Housatonic River).
   2) If water quality impacts are observed, the observer will notify the Construction Manager and the Owner, and turbidity monitoring data will be reviewed.
   3) The Owner will make any notifications required by law. In addition, if a visible sheen is observed to be generated during remediation activities, the Owner will notify EPA. If EPA issues a stop-work order after such a notification, the Construction Manager will direct the Contractor to implement corrective actions to mitigate the observed conditions. The correction actions shall remain in place until directed by the Construction Manager.

D. References

1. Second Revised Quality of Life Compliance Plan (Anchor QEA and Arcadis 2025)
2. Project Operations Plan (Arcadis 2025), including Ambient Air Monitoring Plan (Attachment D) and Construction Monitoring Plan (Attachment G)
3. 29 *Code of Federal Regulations* (CFR) 1926.52

1.02 SUBMITTALS

A. Pre-Construction

1. The following plans may be submitted separately or as part of the Contractor's Operations Plan.
2. Submit a Dust and PCB Emissions Control Plan that, at a minimum, includes: a description of routine control measures, methods, and best management practices (BMPs) that will be implemented by the Contractor during each phase of the Work to control on-site dust and PCB emissions generation and migration from Work areas and to prevent an exceedance of the Air Quality QOL Standards; identification of the water source(s) to be used by the Contractor for dust suppression and control; a contingency plan that details the procedures, additional controls, and mitigation measures that will be followed if there is an exceedance of the PM_{10} Notification Level, PM_{10} Action Level, PCB Notification Level, PCB Action Level or QOL Standard for Visible Dust; and a description of any air quality sampling or monitoring that the Contractor will perform at its own discretion.
3. Submit a Noise Control Plan that, at a minimum, includes: a description of routine control measures, methods, and BMPs that will be implemented by the Contractor during each phase of the Work to prevent an exceedance of the Noise QOL Standards and nuisance to neighboring properties; specific controls, methods, and mitigation measures that will be employed to control or reduce noise during sheet-pile installation (if applicable); an inventory of noise levels for noise-generating equipment that will be used by the Contractor during the Work; a contingency plan that details the procedures, additional controls, and mitigation measures that will be followed if there is an

exceedance of the Noise QOL Standards or if a noise complaint is received that is determined by the Construction Manager to require mitigation; and a detailed description of noise monitoring that will be performed by the Contractor, including the monitoring equipment, procedures, frequency, and locations.

4. Submit an Odor Control Plan that, at a minimum, includes: a description of routine control measures, methods, and BMPs that will be implemented by the Contractor during each phase of the Work to mitigate and minimize odor emissions into the air during the Work as necessary to maintain compliance with the Odor QOL Standard; specific controls, methods, and mitigation measures that will be employed to control or reduce odors during management of sediments and decaying organic matter (e.g., aquatic plants and other organisms), if applicable; a contingency plan that details the procedures, additional controls, and mitigation measures that will be followed if there is an exceedance of Odor QOL Standard or if an odor complaint is received that is determined by the Construction Manager to require mitigation; and a description of any sampling or monitoring that the Contractor will perform at its own discretion.
5. Submit a Lighting Control that, at a minimum, includes: the types and locations of lighting to be used by the Contractor along with the energy sources to power the lighting; a description of routine control measures, methods, mitigation measures, and BMPs that will be implemented by the Contractor during each phase of the Work to prevent an exceedance of the Lighting QOL Standard and nuisance to neighboring properties, to minimize impacts from lights to neighboring properties, and to protect against potential light impacts on traffic safety; a contingency plan in the event of power outages or if certain lights fail to operate; and a contingency plan if the Lighting QOL Standard is exceeded, including potential contingency response actions and mitigation measures.
6. Submit a Turbidity/Sheen Control Plan that, at a minimum, includes: a description of the methods that will be implemented by the Contractor to comply with the water quality requirements; proposed methods and equipment to be used for turbidity control; proposed manufacturer's specification sheets detailing any material and equipment to be used for any turbidity control systems; proposed plan for performing visual inspections of the water surface for turbidity and sheens; proposed maintenance plan to ensure adequate performance of any turbidity control systems; a description of response actions and procedures to be implemented in the event that sheens are observed during active construction operations, including the equipment, materials, and procedures that will be used and procedures for the management, storage, and disposal of materials used for sheen containment and control; and a contingency plan if any Surface Water Action Levels are exceeded and require corrective action or if a surface water visual observation requires corrective action, including potential contingency response actions and mitigation measures to be implemented in the event of an exceedance.
7. Submit manufacturer's product data, specifications, storage requirements, and application instructions for any proposed dust, PCB emissions, and/or odor mitigation agents.
8. Submit shop drawings, material data, and other applicable details for any structures, barriers, or enclosures identified to control noise (e.g., temporary noise barriers, acoustic barrier enclosures, or other noise suppression devices).

B. During Construction and Operations

1. Submit the results for any monitoring conducted by the Contractor in a format acceptable to the Construction Manager.

2. Submit Corrective Action Reports within 24 hours of notification by the Construction Manager for any exceedance of a QOL Standard, Surface Water Action Level, or for any project-related complaint that requires corrective action. Corrective Action Reports shall include a description of the exceedance or complaint, causes of the exceedance or complaint, and actions taken or to be taken to mitigate the exceedance or complaint and to prevent the incident from recurring.

PART 2 – PRODUCTS

2.01 DUST AND PCB EMISSIONS CONTROLS

A. Clean, potable water.

B. Mitigation agents selected by the Contractor to control site-specific dust and PCB emissions generated during the Work. Specific dust mitigation agents shall be identified by the Contractor in the Dust Control Plan and in any Corrective Action Reports.

C. Application measures and equipment applicable for water and any other selected dust mitigation agents, including for proper mixing, storage, and application.

2.02 NOISE CONTROLS

A. Noise monitoring equipment.

B. Engineering controls (e.g., temporary noise barriers, acoustic barrier enclosures, mufflers, or other noise suppression devices) for use as necessary.

C. Specific noise control measures shall be identified by the Contractor in the Noise Control Plan and in any Corrective Action Reports.

2.03 ODOR CONTROLS

A. Mitigation agents selected by the Contractor to control site-specific odors generated during the Work. Specific odor mitigation agents shall be identified by the Contractor in the Odor Control Plan and in any Corrective Action Reports. Any selected odor control agents shall be compatible with the Contractor's water treatment system (if any).

B. Odor mitigation agents may include but are not limited to: BioSolve® Pinkwater (by The BioSolve Company), Atmos Shield 645 (AC-645) Foam Concentrate (by Atmos Technologies), or ConCover 180 spray-on cover (by New Waste Concepts, Inc.).

C. Application measures and equipment applicable for selected odor mitigation agents, including for proper mixing, storage, and application.

2.04 LIGHTING CONTROLS

A. Engineering controls (e.g., light shrouds, temporary light barriers, or other light control devices) for use as necessary

B. Specific lighting control measures shall be identified by the Contractor in the Light Control Plan and in any Corrective Action Reports.

2.05 SURFACE WATER CONTROLS

A. Sorbent booms and pads

B. Specific turbidity control measures shall be identified by the Contractor in the Turbidity/Sheen Control Plan and in any Corrective Action Reports.

PART 3 – EXECUTION

3.01 GENERAL

A. If a QOL Standard or Surface Water Action Level is exceeded or a project-related complaint is received that requires corrective action, the Contractor will be notified by the Construction Manager. In the event of an exceedance or a project-related complaint that requires corrective action, the Contractor shall:

1. Assist the Construction Manager in the investigation and evaluation of the cause of the exceedance or complaint and the need for additional and modified engineering or operational controls.
2. Document the project and non-project events that were occurring at the time and location of the exceedance or complaint.
3. Submit a Corrective Action Report describing the exceedance or complaint, causes of the exceedance or complaint, and actions taken to mitigate the exceedance or complaint and to prevent the incident from recurring.
4. Implement additional or modified engineering controls, operational controls, or other mitigation measures, as appropriate, to address such exceedance and prevent another exceedance from occurring.

B. If the Contractor receives a complaint related to dust, odor, noise, or light, the Construction Manager shall be notified immediately.

3.02 DUST AND PCB EMISSIONS CONTROL

A. The Contractor shall implement appropriate methods, engineering controls, operational controls, or other mitigation measures, as needed, to conduct Work in compliance with the QOL Standards for Particulate Matter, PCBs, and Visible Dust listed in Part 1.01.B, and to prevent dust from becoming a nuisance to nearby properties.

B. Provide positive means to prevent airborne dust and PCB emissions from dispersing into the atmosphere. Use only potable water when a water misting system is to be used for dust and particulate control.

C. Water applications shall be applied as frequently as required without creating nuisances such as excessive mud and ponding of water.

D. Do not use chemical means for dust, PCB emissions, or particulate control without the Construction Manager's prior approval.

E. Employ construction methods, routine control measures, and BMPs throughout the duration of the Work, including during nonworking periods, to control on-site dust and PCB generation and dust particulate matter migration from Work areas during each phase of the Work. Construction methods, control measures, and BMPs to control dust and PCB emissions may include, but are not limited to:

1. Removing, placing, handling, loading, and unloading soils and materials using methods that minimize the generation of and PCB emissions.
2. Applying water to control the generation of airborne and PCB emissions.
3. Applying a temporary cover on exposed soil or material stockpiles.
4. Using temporary vegetative cover on disturbed soil areas, where appropriate.
5. Controlling the speed of construction vehicles.
6. Using covers on trucks hauling fine or dusty material.
7. Preventing tracking of soils onto haul routes.
8. Modifying haul routes or surfaces to control and reduce dust generation.
9. Assessing wind conditions to determine if construction methods or operational controls warrant modification to control and PCB emissions generation.

F. Apply water to haul routes, open excavations, soil-covered areas, material staging piles, and loading and unloading areas as needed during Work activities, as needed during nonworking periods, and if requested by the Construction Manager to minimize dust and PCB emissions generation.

G. Ensure that potential dust-generating and PCB-generating areas are thoroughly wetted at the end of each working day, unless precipitation is occurring, to prevent the generation of dust during nonworking periods. Apply mulch, wetting, or other methods approved by the Construction Manager prior to long Work stoppages to prevent the generation of dust and PCB emissions during nonworking periods.

H. The Construction Manager may stop Work at any time if the Contractor's control measures are inadequate for the wind conditions or if the Contractor's control measures are not sufficient for controlling the release of Work-related dust, PCB emissions, or particulates. Any stop-work order shall remain in effect until directed by the Construction Manager.

3.03 NOISE CONTROL

A. The Contractor's activities shall minimize noise emissions to greatest degree practicable.

B. The Contractor shall provide all equipment, controls, and mitigation measures to conduct Work in compliance with the Noise QOL Standards in Part 1.01.B and to minimize nuisance to adjacent properties.

C. The Contractor shall comply with OSHA regulations related to occupational noise exposure (29 CFR 1926.52).

D. The Contractor shall obtain written approval from the Owner prior to performing noise-generating Work between 9:00 p.m. and 7:00 a.m. or on weekends or state or federal holidays, except in the case of emergencies (in which case the Owner and Construction Manager shall be notified of such Work as soon as practicable).

E. When Work is performed during overnight hours (i.e., between 9:00 p.m. and 7:00 a.m.) near residential receptors, activities that generate or have the potential to generate loud or disruptive noise shall be minimized to the extent practicable, except where necessary to address an emergency condition. Loud equipment operation, sheet-pile driving, and stone material handling shall not be conducted when working near residential receptors during overnight hours.

F. Use properly muffled equipment and conduct routine preventive maintenance on equipment and exhaust systems to minimize the noise generated by the Contractor's equipment and to reduce the potential for exceedance of the Noise QOL Standards or nuisance to neighboring properties.

G. Employ proactive construction methods, routine control measures, and BMPs throughout the duration of the Work, including during nonworking periods, to control noise during each phase of the Work. Construction methods, control measures, and BMPs to control noise may include, but are not limited to, the following:

   1. Using shrouds, barriers, or other sound-attenuating walls around stationary equipment (e.g., generators and pumps) or between noise sources and receptors.
   2. Scheduling the Work to minimize or avoid equipment use that might result in prolonged or excessive elevated noise levels during early morning or overnight hours
   3. Controlling the speed at which equipment is operated
   4. Using broadband/white noise backup alarms on construction equipment that frequently operate in reverse (e.g., front-end loaders and dump trucks)
   5. Using electric- or battery-powered vehicles or equipment, where practicable.

H. The Contractor shall perform noise monitoring near equipment that generates noise to verify that the specifications are satisfied. Monitoring shall be conducted daily at each operation for the first 2 weeks of Work. After the initial 2 weeks of monitoring, the Contractor shall conduct monitoring at least once per week at each operation or for any changes in equipment, procedures, or conditions. Should noise monitoring by the Contractor suggest a potential for an exceedance of the specification requirements, the Contractor shall immediately inform the Construction Manager. Submit all noise monitoring data in a format acceptable to the Construction Manager.

I. If the Construction Manager notifies the Contractor that any of the Noise QOL Standards were exceeded or that a complaint has been received that requires corrective action, the Contractor shall implement operational controls, engineering controls, or other sound mitigation measures as quickly as possible but no longer than 4 hours after notice by the Construction Manager.

3.04 ODOR CONTROL

A. The Contractor shall implement appropriate methods, engineering controls, operational controls, or other mitigation measures, as needed, to conduct Work in compliance with the Odor QOL Standard listed in Part 1.01.B and to minimize nuisance to adjacent properties.

B. The Contractor must proactively employ odor controls during the Work and evaluate and modify construction techniques and site management practices, as necessary and appropriate, to control objectionable odors caused by the Work, the Contractor's operation of vehicles and equipment, and other actions.

C. The Construction Manager may stop Work at any time if the Contractor's control measures are not sufficient for controlling Work-related odors as specified in this Section. Any stop-work order shall remain in effect until directed by the Construction Manager.

3.05 LIGHTING CONTROL

A. The Contractor shall provide all equipment, controls, and mitigation measures to conduct Work in compliance with the Lighting QOL Standard in Part 1.01.B and to minimize nuisance to adjacent properties.

B. Lighting shall be maintained such that it is not a nuisance to the neighboring properties or the community.

C. All Work shall be conducted in compliance with regulations set by the OSHA and the USCG, where applicable. The Lighting QOL Standard shall not supersede lighting requirements established by OSHA or USCG.

D. The Contractor shall supply sufficient lighting to Work areas to provide safe conditions during low-light and nighttime operations.

E. Fixed lighting shall be installed where necessary for safe illumination of frequent access areas, such as walkways, temporary office facilities, and equipment staging areas.

F. Lighting shall be directed toward Work areas and away from adjacent properties.

G. Measures shall be implemented to protect against potential lighting impacts on traffic safety on public or private roadways.

H. The Contractor shall employ routine control measures and BMPs to minimize or limit potential off-site nuisance impacts generated by lighting. Routine control measures and BMPs may include, but are not limited to, proper positioning of lights, proper setting of beam direction, adjusting the brightness of lights, limiting the heights of light masts, and shielding.

I. The Contractor shall provide engineering controls (e.g., light shrouds, balloon lights, temporary light barriers, or other light-control devices) for use, as necessary, to minimize impacts from lights to neighboring properties.

3.06 WATER QUALITY CONTROL

A. The Contractor shall implement appropriate methods, engineering controls, operational controls, or other mitigation measures, as needed, to conduct Work in compliance with the Surface Water Action Levels specified in Part 1.01.C.

B. The Contractor shall employ routine control measures and BMPs to minimize or limit potential releases to the water column.

C. The Contractor shall furnish, install, deploy, inspect, relocate, and maintain any turbidity control systems in accordance with the manufacturer's recommended procedures, consistent with the layout and design provided with the Contractor's Turbidity/Sheen Control Plan and to the satisfaction of the Construction Manager.

D. The Construction Manager reserves the right to suspend Work at any time as necessary if there is a water quality concern that may cause contamination of adjacent areas.

3.07 SHEEN RESPONSE AND CONTROL

A. The Contractor shall have a vessel and crew for monitoring and deploying oil sheen control and oil sorbent booms and pads to address observed oil sheens at the direction of the Construction Manager.

B. At all times, the Contractor shall have sufficient sheen response personnel, booms, sorbents, vessels, and all other necessary equipment and materials on site to respond to oil sheens in accordance with this Specification. When oil sheens are present, the response crews shall be actively engaged in sheen control actions. Sheen response personnel may perform other activities when sheen response activities are not required but shall be available at the Project Site to respond quickly if sheens are observed, and they shall be dedicated to sheen response activities while sheens are present.

C. The Contractor shall monitor the water surface for the presence of oil sheens using available vantage points from ongoing Work to inspect for the presence of oil sheens and identify their development, location, appearance, drift direction, and rate of movement.

D. If the Contractor observes one or more oil sheens on the water surface, the Contractor shall immediately notify the Construction Manager. The Construction Manager will also monitor for the presence of oil sheens and will notify the Contractor if any oil sheen is observed.

E. If one or more oil sheens are observed on the water surface by the Contractor or the Construction Manager, the Contractor shall, at a minimum, implement the following responses:

   1. The Contractor shall deploy and maintain oil containment booms, oil sorbent booms, and oil sorbent materials to intercept and control the sheen. The oil sorbent booms and oil sorbent materials shall be deployed, adjusted, and maintained in a configuration that will allow continued in-water Work within the contained area. The oil sorbent boom and oil sorbent material shall extend for the same length as the oil containment boom and shall be located on the side of the oil containment boom closest to the operation. The ends of oil containment boom(s), oil sorbent booms, and oil sorbent materials shall be secured or

otherwise connected in a manner that provides continuous coverage where deployed but does not adversely impact or hinder the construction operation.

2. Once sheens are observed and the oil containment boom(s) and oil sorbent materials are deployed, the Contractor shall visually inspect and verify the condition and effectiveness of the position of the deployed booms and oil sorbent materials at least once every hour. The Contractor shall adjust the boom(s) and oil sorbent materials so as to maximize the potential to oil containment oil sheens.
3. The Contractor shall sweep areas where oil sheens are observed with oil sorbent material if necessary to minimize the escape of sheens downstream.
4. If oil sheens are observed to have collected behind the oil containment boom(s) or other stationary locations, the Contractor shall actively collect the sheens and any other floating debris in contact with the sheen.
5. The Contractor shall perform maintenance of all deployed oil containment booms and oil sorbent materials at least once per shift, including, but not limited to, removing any trapped floating material and sheens along the boom system; and replacing ineffective, oil-laden, or worn sorbents to ensure that oil containment booms and sorbent materials function as intended. Sorbent materials shall be replaced following the requirements of this Specification, every 5 days of continuous deployment, or at the request of the Construction Manager, whichever occurs first.
6. When deployed, oil sorbent booms and oil sorbent materials shall remain in place at all times, except as necessary to allow vessels or equipment access. Prior to opening or removing oil sorbent booms and oil sorbent materials, the Contractor shall visually inspect the opening for the presence of sheens.
7. If sheens are observed, sweep or actively collect the sheens prior to opening the booms. If the materials must be moved to facilitate access, the time period when the oil sorbent booms and oil sorbent materials are open shall be kept to an absolute minimum and be closed immediately after the vessel(s) passes.
8. If no oil sheens have been observed within 48 hours of performing an oil sheen response, the Contractor may suspend the use of oil containment booms and oil sorbent materials. The oil sorbent booms and oil sorbent materials shall be redeployed immediately in accordance with this Specification if oil sheens are observed in that location.

F. All used sorbent materials, sorbent booms, and other materials generated during the collection, control, and containment of sheens shall be removed for proper disposal by the Contractor.

END OF SECTION

SECTION 02 21 00 – SURVEYS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall provide survey control sufficient for verifying existing grades, excavation and treatment horizontal limits, post-excavation depths and elevations, and final (restored) elevations and to document the performance of the work to the satisfaction of the Construction Manager as specified herein.
2. The Contractor shall employ or subcontract a Professional Land Surveyor licensed in the Commonwealth of Massachusetts to provide the surveying functions necessary for the proper construction and documentation of the work. All survey-related work products shall be sealed and signed by a registered Massachusetts Professional Engineer or Licensed Surveyor. All references to the Contractor herein include the Surveyor.
3. Horizontal Datum shall be based on Massachusetts State Plane, Mainland Zone, North American Datum of 1983 (NAD83), U.S. feet.
4. Vertical Datum shall be based upon North American Vertical Datum (NAVD88), U.S. feet.
5. Survey control for construction and documentation purposes shall be the responsibility of the Contractor. The Contractor shall safeguard all survey points and benchmarks.
6. The Contractor shall furnish and/or provide all supervision, labor, tools, materials, equipment, services, and appurtenances necessary for, or incidental to, completing all work necessary for performing the surveying activities described herein and preparing required as-built survey data and drawings of pre-construction, interim, and post-construction grades.

B. Related Sections

1. Section 13 80 01 – Temporary Access Roads and Staging Areas
2. Section 13 90 01 – Amendment Placement – Vernal Pools
3. Section 31 23 00 – Excavation and Fill

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS (NOT USED)

1.03 SUBMITTALS

A. Prepare and submit a Survey Plan as part of the Contractor's Operations Plan for review and approval by the Construction Manager prior to the start of any survey-related field work. The Plan shall include the following:

1. Name, address, telephone number, and qualifications, including licensure and/or certification, of the Surveyor, crew chief, superintendent, and all other persons proposed to perform surveys or survey related activities

2. Survey equipment, methods, and procedures
3. Figures showing the survey grid points per the spacing required herein
4. Survey schedules and crew
5. All milestone and other field survey activities for the project
6. A listing of the control points to be used during survey operations
7. A description of recordkeeping procedures during surveying
8. A proposed survey deliverable format, including example electronic files

B. Survey Data Records

1. The Contractor shall furnish the Construction Manager with copies of project field notes, computations, any records relating to the layout of the work, and information on any computer software required to interpret the finished data and records for review and approval prior to the final progress payment. The Owner and Construction Manager will use them as necessary to verify completion of the project work prior to submittal of the final payment. The Contractor shall retain copies of all such material furnished to the Construction Manager.
2. Survey data shall be provided in x, y, z, d (easting, northing, elevation, description) format. Each data file shall include a descriptive header including, but not limited to, software and equipment information, project name and client, horizontal and vertical datums, units, survey type, alignment, and stations surveyed.
3. The Contractor shall maintain a complete, accurate log of survey work as it progresses at the Site.
4. The accuracy of the Contractor's survey and other furnishing of data to the Construction Manager do not constitute a transfer of responsibility for verifying accuracy.

C. As-Built Drawings. Upon completion of major phases of Work, the Contractor shall submit a copy of the associated survey drawing with relevant as-built data in a format compatible with AutoCAD Civil 3D (2023 or later) and in PDF. At a minimum, the as-built drawings shall include the following information:

1. Surveyed elevations of the grid points specified in Part 3.01.D of pre-construction, constructed final excavation, and post-backfill elevations.
2. General site conditions, including access roads, restored support areas, drainage features (basins, culverts, and stormwater management areas), berms, fences and gates, buildings, tanks, and manholes.

1.04 PERFORMANCE CRITERIA/QUALITY ASSURANCE

A. The Professional Land Surveyor shall have a minimum of 5 years of experience in land surveying under license. The qualifications of the Contractor's Surveyor shall be submitted in the Survey Work Plan outlined herein. The Construction Manager reserves the right to disallow the person(s) proposed by the Contractor for surveying. If, in the Construction Manager's

opinion, the person is not qualified to do the work, the Contractor shall select another surveyor and submit qualifications until a qualified person is approved.

B. All survey data acquisition, layout, and related work shall be performed and signed by a licensed Surveyor.

C. The Contractor shall conduct and document the quality control procedures recommended by the survey equipment manufacturer for the equipment used.

D. Surveying shall be conducted to meet the requirements specified herein; including, but not limited to, documenting the completed construction work with accuracy sufficient to allow for evaluation and confirmation the project work is being completed in conformance with the Contract Documents.

E. When applicable, the Contractor shall regularly resurvey benchmarks for comparison with original elevations and positions. Where the Contractor uses a laser for control, the Contractor shall periodically check the grade and alignment during each day's operation. The Contractor shall promptly notify the Construction Manager if changes in elevations or positions from what is shown in the Design Drawings are identified.

F. For quality assurance purposes, GE will provide a third-party surveyor to witness the surveys completed by the Contractor. The Contractor shall provide at least three working days advance notice to the Construction Manager before any surveys.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall exercise care during the execution of the work activities specified herein to minimize any disturbance to existing property and to the landscape and waters in the areas surrounding the work areas. Survey crews shall not traverse into controlled areas or private property without first obtaining approval by the Construction Manager.

B. The Contractor shall reference survey points to the provided survey control points and record all survey locations, with horizontal and vertical data, on project record documents.

C. Survey controls shall be established at the start of the work and maintained throughout the construction activities. The Construction Manager or Engineer will provide survey benchmarks so that the Contractor's licensed Surveyor can establish appropriate horizontal and vertical control consistent with the existing survey data.

D. The Contractor shall make all necessary measurements of length, depth, and area necessary to calculate quantities of the work performed consistent with the Specifications and as shown on

the Drawings. The results of these survey measurements and all relevant backup calculations shall be provided to the Construction Manager for review and approval.

E. Survey procedures, including, but not limited to, positioning modes, calibration, data reduction, adjustment, processing, and plotting, shall conform to recognized industry standards.

F. Vernal pool perimeter survey points are shown on the design drawings. Prior to construction, the Construction Manager will provide to the Contractor the required survey grid points within each vernal pool remediation area to be used to survey pre-construction, post-excavation, and post-construction elevations. The grid survey points will be positioned at the centers of the cell established based on a 10-foot grid within each remediation area and along the perimeter of the remediation areas The Contractor shall complete all elevation measurements at the provided survey point locations for the duration of the project (i.e., the same control points will be used to measure elevations prior to and following soil removal activities, as well as to document final post-backfilling limits and elevations), unless otherwise approved by the Construction Manager. Surveying shall be performed to verify that the required horizontal and vertical limits of removals have been obtained and that the required surface grade has been achieved.

G. LiDAR survey methods may be proposed by the Contractor. If LiDAR survey methods are employed, the Surveyor shall perform all required system calibration and accuracy-validation surveys in accordance with current industry standards, including applicable American Society for Photogrammetry & Remote Sensing (ASPRS) Positional Accuracy Standards and U.S. Geological Survey (USGS) Lidar Base Specification. All calibration, ground control, and checkpoint validation activities shall be conducted using survey-grade methods sufficient to demonstrate that the resulting LiDAR data meet the project's specified horizontal and vertical accuracy requirements. If Lidar survey methods are used, the average elevation of the LiDAR data within each grid will be used to document compliance with the project requirements.

H. Amendment Application Certification Unit (ACU) boundaries shall be established by the Contractor and approved by Construction Manager, as detailed in Section 13 90 01 – Amendment Application – Vernal Pools.

3.02 PRE-CONSTRUCTION SURVEY

A. The Contractor shall perform pre-construction surveys at the survey points specified above of the following:

1. Elevations on a 10-foot grid of the entire area of the vernal pools subject to excavation and amendment placement.
2. Perimeters of the areas to be excavated
3. Perimeters of the areas to be treated, including Amendment Certification Unit (ACU) boundaries established within each vernal pool.
4. Elevations on a 10-foot grid within other areas that may be significantly disturbed by construction activities, such as temporary staging areas and access roads

B. Pre-construction survey data and drawings shall be submitted for approval to the Construction Manager prior to commencing any excavation or media placement activities in the surveyed areas, unless otherwise allowed by the Construction Manager.

3.03 POST-EXCAVATION SURVEY

A. The Contractor shall perform post-excavation surveys on the established 10-foot grid and at the perimeter locations to document that the target removal depth has been achieved at all survey points.

B. The Contractor shall provide survey results associated with post-excavation conditions to the Construction Manager for approval prior to initiating backfilling.

3.04 POST-CONSTRUCTION SURVEY

A. The Contractor shall perform post-construction (i.e., post-backfilling) surveying on the established 10-foot grid and perimeter locations to document the completed work and to confirm restoration to pre-construction elevations as detailed in Section 31 23 00 – Excavation and Fill.

B. The Contractor shall perform post-construction surveying of all amendment pool areas subject to mixing on a 10-foot grid and at perimeter locations to document the completed work, to document as-built conditions, and to confirm restoration to pre-construction elevations as detailed in Section 13 90 00 – Amendment Application – Vernal Pools.

C. The Contractor shall perform post-construction surface topography measurements on a 10-foot grid and at any additional established measurement locations within other areas significantly disturbed by construction activities, such as temporary staging areas and access roads.

D. The Contractor shall perform post-construction surface topography measurements on a 10-foot grid and at any additional established measurement locations within areas where topsoil has been placed as part of the restoration activities associated with adjacent impacted areas significantly disturbed by construction activities, such as staging areas and secondary temporary access roads.

E. The Contractor shall survey and identify drainage features (e.g., culvert pipes, subsurface pipes, manholes, catch basins, ditches, swales, pipe inlets/outlets, riprap protection, check dams, and berms) potentially impacted by the Work. Include descriptions of items including material types, pipes and sizes, manholes, and catch basins.

3.05 CONTROL OF WORK

A. Reference Points

1. Established reference points damaged or destroyed by the Contractor shall be re-established by the Contractor.

2. From established reference points, establish lines, grades, and elevations necessary to control the Work. Obtain measurements required for executing the Work to the tolerances specified.

3. Establish, place, and replace as required any survey stakes, markers, and other reference points necessary for control, intermediate checks, and guidance of construction operations.

B. Accuracy:

1. For topographic land surveys:
   a. Horizontal accuracy shall be ±0.1 foot unless otherwise specified or approved by the Construction Manager.
   b. Vertical accuracy shall be ±0.05 foot unless otherwise specified or approved by the Construction Manager.
   c. Survey calculations shall include an error analysis sufficient to demonstrate required accuracy.

END OF SECTION

SECTION 02 51 00 – DECONTAMINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall furnish all materials, equipment, and labor necessary to construct, maintain, and operate decontamination areas associated with decontamination of vehicles, equipment, materials, and personnel, as well as to collect, characterize, and dispose of decontamination fluids.
2. The Contractor is responsible for decontamination of all vehicles, equipment, and personnel that come into contact with contaminated materials at the site prior to handling clean materials or prior to demobilization from the Site.
3. Track and report the decontamination status of equipment on a daily basis.

B. Related Sections

1. Section 02 72 00 – Water Management
2. Section 31 23 00 – Excavation and Fill
3. Section 13 80 01 – Temporary Access Roads and Staging Areas
4. Section 13 90 01 – Amendment Placement – Vernal Pools
5. Section 35 20 24 – Excavated Material Processing and Handling

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (October 1985), as prepared by the National Institute of Occupational Safety and Health, Occupational Safety and Health Administration (OSHA), and U.S. Environmental Protection Agency (USEPA).

B. Code of Federal Regulations 40 CFR 761.

1.03 SUBMITTALS

A. The Contractor shall include Safety Data Sheets (SDSs) for all cleaning and decontamination solutions in the Contractor's Health and Safety Plan. SDSs shall be provided for review by the Construction Manager prior to being brought on site.

B. The Contractor shall prepare and submit a Project-specific Decontamination Plan as part of the Contractor's Operations Plan for review and approval by the Construction Manager that outlines the facilities, measures, and controls to manage and prevent contamination outside of the work area limits and includes, at a minimum, the following:

1. Methods and procedures for equipment and personnel decontamination (e.g., bulk material removal, high-pressure water sprays, manual brushing, and boot washes) and methods of storage, transport, and disposal for decontamination wastes
2. Method, frequencies, and locations for conducting wipe sampling of equipment prior to it leaving the site
3. Any decontamination products to be used
4. Planned locations of decontamination activities and methods to reduce contact with impacted materials
5. Describe the locations where equipment and personnel decontamination will be conducted.
6. Identify methods to track and report the daily decontamination status of all equipment.

C. The Contractor shall submit an Equipment Decontamination Documentation Report to the Construction Manager to certify decontamination has been completed on all equipment before it is demobilized.

PART 2 – PRODUCTS

A. The Contractor shall use only those cleaning and decontamination materials that will not create hazards to health or property and will not damage surfaces.

B. The Contractor shall use only those cleaning and decontamination materials and methods recommended by the manufacturer of the surface material to be cleaned.

C. The Contractor shall use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

D. SDSs shall be kept on site at all times for all cleaning products in accordance with the Contractor's Health and Safety Plan (HASP).

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. All non-disposable equipment that comes in contact with polychlorinated biphenyl (PCB)-containing material shall be decontaminated by the Contractor prior to handling clean materials or prior to demobilization from the Site.

B. The Contractor shall decontaminate all vehicles leaving the work area associated with each vernal pool to prevent the tracking of soil material outside of the limits of work and onto temporary access roads and local roads. Vehicles and equipment that come into contact with impacted materials shall be visually inspected and decontaminated to the satisfaction of the Construction Manager. Any visible soil or other debris shall be promptly removed and

appropriately disposed of, in accordance with the specifications of this Section and to the satisfaction of the Construction Manager.

C. Primary and secondary access roads shall be constructed to support truck traffic and be designated and maintained as clean travel ways. Equipment that has contacted floodplain soils shall not return onto the primary or secondary access road surface until tires or tracks have been decontaminated. All vehicles requiring decontamination shall be washed sufficiently to remove all visible soil from the vehicle body, undercarriage, and tires. The Contractor shall ensure no visible tracking of soils onto temporary or public roadways occurs, as visually confirmed by the Construction Manager.

D. Any incidental tracking or spills of contaminated soils or water on the primary or secondary access road surfaces shall be cleaned up so as not to be spread further on access roads.

E. Tire cleaning stations located at the egresses onto public roads shall be used as a final measure to eliminate tracking of nuisance non-impacted soils onto public roads.

F. The Contractor is responsible for the cleaning and off-site removal of non-disposable equipment that has been used during implementation of the Project and has come in contact with impacted materials or otherwise become soiled.

G. The Contractor is responsible for post-cleaning wipe sampling for PCBs with oversight by the Construction Manager and analysis of those wipe samples for any equipment that has been in contact with impacted materials prior to demobilization. The equipment will not be allowed to leave the Site until wipe sample results verify PCB results are less than 10 micrograms per 100 square centimeters (cm^2).

H. The decontamination standard for equipment that will remain on site and be dedicated to future potential Project use and may be used for other operations (such as backfilling) is the removal of all visible sediment/soil on the surface of the equipment, to be confirmed by the Construction Manager.

I. The decontamination standard for equipment that will no longer be used on the Project is the removal of visible material and power washing of surfaces so the cleaned surface can be wipe tested to show that equipment surfaces contain PCBs at concentrations less than 10 micrograms per 100 cm^2. Wipe test locations and frequencies are subject to approval by the Construction Manager. The results of this initial wipe testing must show that equipment surfaces contain PCBs at concentrations less than 10 micrograms per 100 cm^2. If this initial testing verifies that decontamination procedures were effective (i.e., less than 10 micrograms per 100 cm^2), future decontamination of equipment that will remain on site and be dedicated to future potential Project use shall be confirmed by visual inspection that all visible sediment/soil on the surface of the equipment has been removed. If this initial testing indicates decontamination procedures were not effective, the Contractor shall adjust its decontamination procedures and conduct additional wipe testing with oversight by the Construction Manager to demonstrate effective decontamination.

J. Wipe samples shall be collected using a hexane-soaked gauze pad provided by an approved analytical laboratory following USEPA's standard wipe test methodology (i.e., using a 10- by 10-

centimeter template and wiping the surface with the gauze pad while applying uniform pressure from left to right and then top to bottom within the template). The wipe samples shall be submitted to an approved analytical laboratory by the Contractor for analysis for PCBs in accordance with USEPA SW-846 Method 8082.

K. The decontamination process shall be performed in such a manner that all water used and sediment removed during decontamination is captured and managed in accordance with Section 02 72 00 – Water Management and all applicable laws and regulations.

L. The Contractor shall take precautions to limit contact between the vehicle/equipment, personnel performing the decontamination activities, and any decontamination liquids that may accumulate in the decontamination area. Personal protective equipment, including disposable clothing for personnel engaged in decontamination activities, shall be used as required by the Contractor's HASP.

3.02 DECONTAMINATION AREAS

A. Construct and maintain decontamination area(s) in accordance with the Contract Documents to accommodate all loads, vehicles, equipment, and migration scenarios.

B. Construct the decontamination area at locations approved by the Construction Manager prior to construction. This will include decontamination areas local to each pilot test vernal pool, as well as tire wash stations at the egress from temporary access roads to public roadways, as shown in the Design Drawings.

C. Construct and maintain appropriately sized decontamination areas for personnel. Locate personnel decontamination areas within the contamination-reduction zone and include facilities necessary to decontaminate personnel upon exiting the work area (exclusion zone) in accordance with the Contractor's HASP and local, state, and federal laws and regulations.

END OF SECTION

SECTION 02 72 00 – WATER MANAGEMENT

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall furnish all labor, equipment, materials, power, and appurtenances necessary to manage Construction Water generated during the Project. Construction Water includes, but is not limited to, the following:
   a. Water generated during excavation operations
   b. Water generated from soil dewatering and processing activities
   c. Water generated from wheel washing and other decontamination activities
   d. Stormwater that accumulates in the excavation and staging areas
2. The Contractor shall collect Construction Water, temporarily containerize Construction Water within the staging areas in fractionation tanks, and dispose of Construction Water off site at GE's Building 64G Water Treatment Facility (WTF) at the GE-owned facility in Pittsfield (Building 64G WTF) or at an off-site facility in accordance with this Section.
3. The Contractor shall provide, maintain, and remove as necessary any tanks, piping, and pumps necessary to containerize Construction Water and temporarily store the Construction Water as needed prior to on-site disposal at the Building 64G WTF or at an off-site facility.
4. Water that has not been impacted by solidification/stabilization agents or detergents and decontamination additives or other additives may be disposed of at the Building 64G WTF following pre-treatment to achieve a total suspended solids (TSS) content of 25 milligrams per liter (mg/L).
5. Water that has been impacted by solidification/stabilization agents or detergents and decontamination additives or other additives shall be disposed of by the Contractor at a GE-approved off-site disposal facility.
6. The Contractor shall furnish all labor, equipment, and materials necessary to power, operate, and maintain a temporary water pre-treatment system (PTS) to successfully pre-treat Construction Waters generated during performance of the Work to be treated at the Building 64G WTF. The Contractor shall design the temporary PTS to meet all applicable performance requirements and Technical Specifications.
7. The Contractor shall plan and be prepared to conduct Construction Water management 7 days per week, 24 hours per day as necessary based on field conditions as determined by the Construction Manager.

B. RELATED SECTIONS

1. Section 02 51 00 – Decontamination
2. Section 02 81 02 – Transportation and Disposal of Waste Material
3. Section 13 80 01 – Temporary Access Roads and Staging Areas
4. Section 31 23 00 – Excavation and Fill

5. Section 35 20 24 – Excavated Material Processing and Handling

1.02 SUBMITTALS

A. The Contractor shall prepare and submit a Water Management Plan as part of the Contractor's Operations Plan for review and approval by the Construction Manager prior to mobilization. At a minimum, the Water Management Plan shall include the following:

1. A description of the water management components, treatment equipment, and storage tanks, including the types, sizes, quantities, arrangements, power sources, and capacities of each component
2. Shop Drawings showing proposed layout and details of the system to collect, containerize, convey, and pre-treat Construction Waters, including manufacturer make and model of equipment, tanks, pumps, piping, manifolds, valves, gauges, instrumentation, connections, materials, supports, controls, appurtenances, and any other necessary items required
3. A complete description of procedures to be followed during installation, location and provision of primary power source (if required), operation, and maintenance and removal in relation to the proposed sequence of the Work
4. Design calculations demonstrating the adequacy of the proposed systems and equipment, including all treatment system components. Design calculations and submittals shall be certified by a licensed Professional Engineer registered in Massachusetts
5. Contingency measures to handle additional water volume associated with storm events
6. A detailed description of the transfer system associated with the contingency high surface water elevation transfer system
7. Response actions for impending storms, including steps to secure Site facilities, equipment, and materials

PART 2 – MATERIALS

2.01 GENERAL

A. The Contractor shall be responsible for the selection and provision of all processes, equipment, pumps, piping, manifolds, tanks, valves, gauges, connections, supports, controls, electrical, instrumentation, and appurtenances and other materials related to the Work. Products used in the Work shall be produced by manufacturers regularly engaged in the production of such items and that have a successful history of product acceptability, as interpreted by the Construction Manager.

B. The Contractor shall be fully responsible for inspecting Work performed by all of its subcontractors to ensure the Work complies with the Design Drawings, Specifications, and Contract Documents.

2.02 MINIMUM REQUIREMENTS

A. At a minimum, the water collection and temporary storage system shall include the following components. The Contractor may propose alternate or additional components for approval by the Construction Manager:

1. Water Storage: Adequate water storage capacity shall be provided for all water requiring treatment. The Contractor shall supply and operate all required transfer pumps and piping necessary to transfer influent flow to and from the water storage system.
2. Transfer Pumps and Piping: Transfer pumps and piping shall be provided as necessary to transfer water from portable tanks to the Building 64G WTF. All transfer pumps shall be plumbed and capable of pumping their rated capacity at the total dynamic head required for all system components.
3. Filtration Equipment: Filtration equipment shall be provided sufficient to meet the TSS discharge criteria
4. Sample Ports: Sample ports shall be provided such that water quality samples can be collected before transportation to the Building 64G WTF.
5. Flow Meter: A calibrated flow meter will be provided to measure the quantity of treated water discharged to the Building 64G WTF.
6. Miscellaneous Components: All other miscellaneous components (e.g., valves, piping, controls, and gauges) shall be provided as necessary for a complete and operable water collection and storage system.

2.03 SPARE PARTS

A. The Contractor shall furnish spare parts and accessories for equipment necessary to maintain continuous operation of the water collection, treatment, and temporary storage system.

B. Spare parts for the water collection, treatment, and temporary storage system shall be maintained and stored either on site or within a reasonable distance from the Project Site by the Contractor. Sufficient spare parts shall be provided to ensure operation of the water collection and temporary storage system as needed with minimal downtime.

PART 3 – EXECUTION

3.01 TEMPORARY WATER STORAGE, TREATMENT, AND DISPOSAL

A. The Contractor shall provide all water storage tanks, piping, filters, and pumps required for collection, temporary storage, treatment, and on-site transport to and disposal at the Building 64G WTF of Construction Water or off site in accordance with this Section.

B. Water to be disposed of off site shall be characterized, transported, and disposed of consistent with Section 02 81 02 – Transportation and Disposal of Waste Material

C. The method(s) by which water is collected, stored, treated, and transferred shall be conducted in a manner that prohibits the spillage, leakage, or other release of water as collected.

D. Equipment, pumps, piping, and tanks shall be maintained in good condition at all times. Any and all leaks shall be immediately and properly repaired.

E. The Contractor shall size storage tanks, piping, filters, and pumps to provide sufficient capacity to prevent downtime and to account for applicable storm events.

F. Management of on-site storage tank capacity, on-site treatment, transport and/or disposal of temporary water is solely the Contractor's responsibility. Any power requirements shall be the responsibility of the Contractor to provide by means of a temporary connection to available power (complete with ground-fault and overcurrent protection) or an electrical generator.

G. The Contractor shall clearly mark all storage containers to indicate the known or suspected contents, source area(s), and date(s) of generation.

3.02 PRE-TREATMENT SYSTEM PERFORMANCE REQUIREMENTS

A. The temporary PTS and associated storage shall be in the designated staging areas indicated on the Contract Drawings.

B. The Contractor shall design the temporary PTS to meet the following discharge criteria:

1. TSS shall be less than 25 mg/L.
2. Discharge flow rate shall be determined by the Contractor within the limits of the Building 64G WTF, can accept a feed rate from the transport tankers of up to approximately 20 to 30 gallons per minute.

C. The daily discharge rate may be decreased or temporarily halted at the discretion of the Owner based on field conditions and the operating capacity of the Building 64G treatment system. For planned events, GE shall provide the Contractor with 24 hours' notice.

D. The Contractor shall not transfer any water to the Building 64G WTF without prior approval and coordination with the Construction Manager.

E. The Contractor shall dispose of the waste solids generated from the temporary PTS in accordance with Section 02 81 02 – Transportation and Disposal of Waste Material.

3.03 TESTING, STARTUP, OPERATION, AND REPORTING

A. After mobilization and setup of the temporary PTS, the Contractor shall perform system startup and testing activities and troubleshooting prior to initiating full-scale (normal) operations in accordance with the manufacturer's recommendations. The test shall demonstrate to the satisfaction of the Construction Manager that the Contractor's systems are adequate to meet PTS performance requirements identified in this Technical Specification.

B. During operations and prior to transfer of pretreated water to the Building 64G WTF, all batched water shall be tested for TSS at a minimum rate of 1 sample per 5,000 gallons of water.

C. If the effluent TSS exceed the criteria outlined in this Technical Specification, the Contractor shall suspend the discharge operations immediately and undertake appropriate remedial measures to bring the discharge in compliance with the criteria.

D. The Contractor shall monitor and record the volume of water transferred to the Building 64G WTF.

E. The Contractor shall submit the representative water samples for analysis for TSS. All laboratory analytical results shall be provided to the Construction Manager prior to transport to the Building 64G WTF.

3.04 CONTINGENCY FOR HIGH-WATER CONDITIONS

A. Pilot study construction is planned for late summer or autumn when the vernal pools are not flooded and during relatively dry conditions. In the event that there is significant standing water in the pilot study pools, and it is not anticipated that the pools will dry out in a time frame that will allow for completion of the pilot test construction in the construction season, the Contractor shall work collaboratively with the Construction Manager to develop a plan to pump the standing water in the vernal pools to the Housatonic River in a manner that minimizes entrainment of sediments at the suction end to avoid impacts to the river. If pumping of standing water to the river is required, the Contractor shall prepare a pumping and discharge plan that will be subject to approval by the Construction Manager before implementation. Prior to the Construction Manager approval of the plan, U.S. Environmental Protection Agency (EPA) approval of the proposed pumping and discharge approach will be required.

B. During any pumping to the river, measures shall be implemented to minimize entrainment of sediments at the suction end. Any water pumped to the Housatonic River shall be filtered to remove suspended solids prior to discharge.

C. The Contractor shall provide, install, and operate the required pumps, piping, and other equipment required for this water transfer.

END OF SECTION

SECTION 02 81 02 – TRANSPORTATION AND DISPOSAL OF WASTE MATERIAL

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall furnish all labor, materials, tools, vehicles, containers, markings, documentation, and equipment necessary for the transportation of waste materials to Owner-approved off-site disposal facilities. Waste materials generated during the vernal pool pilot study are anticipated to include, but are not limited to, excavated material, debris, removed vegetation that will not remain at the Site, personal protective equipment (PPE), and spent filter media and solids generated from water treatment.
2. Because the Upland Disposal Facility (UDF) and the Utility Drive Rail Transload Area are not expected to be fully constructed and operational when the vernal pool pilot study is implemented, waste materials generated during the vernal pool pilot study shall be transported off-site by truck or as otherwise approved by the Construction Manager and Owner.
3. The Contractor shall characterize waste for off-site disposal as specified herein and in accordance with the Contract Documents.
4. The Contractor shall conduct transportation and disposal of waste materials as specified herein and in accordance with the Contract Documents.
5. The Contractor shall implement best management practices (BMPs), controls, and other measures necessary to maintain compliance with the project environmental and quality of life criteria described in Section 01571 – Operations Environmental Restrictions and Controls.

B. Related Sections

1. Section 01140 – Work Restrictions
2. Section 01571 – Operations Environmental Restrictions and Controls
3. Section 02 51 00 – Decontamination
4. Section 13 80 01 – Temporary Access Roads and Staging Areas
5. Section 35 20 24 – Excavated Material Processing and Handling

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. 40 *Code of Federal Regulations* (CFR) 258 through 268 and 40 CFR 761

B. 49 CFR 107, 171, and 177

C. 310 Code of Massachusetts Regulations (CMR) 30

D. Applicable U.S. Department of Transportation (USDOT) and Massachusetts Department of Transportation (MassDOT) regulations

E. USEPA SW 846 Method 9095B – Paint Filter Liquids Test

F. Revised Final Resource Conservation and Recovery Act Corrective Action Permit (USEPA, September 2020[1])

G. Revised On-Site and Off-Site Transportation and Disposal Plan (Revised T&D Plan; Arcadis 2024[2])

H. Project Operations Plan (Revised T&D Plan; Arcadis 2025[3])

I. Revised Quality of Life Compliance Plan (QOL Plan) (Anchor QEA and Arcadis 2025[4])

J. National Manual on Uniform Traffic Control Devices for Streets and Highways

K. If there is a conflict or overlap of any of the above references applicable to the Work, the most stringent provision will be controlling. In the event any requirement of this Technical Specification contradicts any such applicable regulatory requirement, immediately notify the Construction Manager of such conflict or contradiction.

1.03 SUBMITTALS

A. The Contractor shall prepare and submit to the Construction Manager for review and approval a Waste Transport/Disposal Plan as part of the Contractor's Operations Plan containing all pertinent information relating to the transport and disposal of materials specified herein. The Waste Transport/Disposal Plan shall include, at a minimum, the following:

1. A summary of waste materials anticipated to be generated along with estimated quantities.
2. Details for all waste transporters to be used including, but not limited to, the following:
   a. Name, title, and telephone number of contact person for each transporter to be used.
   b. MassDOT Transporter Identification Number and expiration date.
   c. Proof of permit, license, or authorization to transport hazardous material in Massachusetts and any other applicable state.
3. Details for all recycling and treatment/disposal facilities that the Contractor proposes to use including, but not limited to, the following:

[1] EPA (U.S. Environmental Protection Agency), 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.
[2] Arcadis, 2024. *Revised On-Site and Off-Site Transportation and Disposal Plan*. Prepared for the General Electric Company, Pittsfield, Massachusetts. October 2024.
[3] Arcadis, 2025. *Project Operations Plan GE-Pittsfield/Housatonic River Site.* Prepared for the General Electric Company, Pittsfield, Massachusetts. May 2025.
[4] Anchor QEA and Arcadis, 2025. *Second Revised Quality of Life Compliance Plan. Housatonic River – Rest of River.* Prepared for General Electric Company, Pittsfield, Massachusetts. May 2025

a. Facility name and address.
b. Name, title, and telephone number of contact person for each facility.
c. Lists of materials that each facility will accept for this Work, as well as whether the facility is a recycling, treatment, storage, or disposal facility.
d. Estimated quantities of waste materials that are expected to be transported to each facility-specific location.
e. Written confirmation from the facility that they will accept the type and quantities of materials, the daily maximum and minimum quantities (cubic yards or tons per day), and the dates and times (including days of the week) they will accept materials from this Work.
f. Documentation that the facility possesses all permits and approvals necessary to accept and dispose of the waste materials.
g. Trucking routes to the facility.

4. Details, procedures, and methods for characterizing waste materials, as required by the Owner-approved disposal facilities. Information must include, but not be limited to, methodology for sample collection, chemical and physical analyses, sampling and testing frequencies, and applicable criteria.

5. Identification of the Contractor's Waste Transport Manager

6. A description of the procedures, materials, methods, and equipment to be used for loading and transporting waste materials to the Owner-approved off-site disposal facilities including, but not limited to, the following:
   a. Traffic control procedures.
   b. Truck inspection and decontamination procedures.
   c. Coordination with the disposal facility(ies).
   d. Recordkeeping procedures and submittal of daily transport reports and trucking logs.
   e. An estimated number of truckloads to be transported to the Owner-approved off-site disposal facility(ies) each week, along with the maximum truckload weights.
   f. Means and methods for lining and covering trucks.
   g. Means, methods, and locations for loading material onto trucks at the excavation areas and staging areas.
   h. A description of the means and methods to estimate the weight of each truckload.
   i. A description of the bills of lading, waste manifest, and chain-of-custody procedures.
   j. A template for bills of lading and waste manifests.
   k. Means and methods for unloading material at the Owner-approved off-site disposal facility(ies).
   l. Transportation routes, consistent with the provisions detailed in Section 01140 – Work Restrictions.
   m. Provisions for responding to transportation emergencies such as accidents, spills, releases, or other incidents.

B. The Contractor shall submit copies of all waste profiles established with the selected and approved disposal facilities.

C. The Contractor shall submit a copy of all waste manifests and bills of lading for each truckload transported from the Project Area to the Owner-approved off-site disposal facility(ies). At a minimum, each waste manifest or bill of lading shall contain the following information:

1. Load number (sequential).
2. Hazardous waste manifest or bill of lading number.
3. Truck ID number (e.g., license plate number of the truck and/or trailer used).
4. Type of material transported (e.g., dewatered/processed soil, debris, and vegetation).
5. Disposal location.
6. Date and time of loading at the removal area or staging area.
7. Approximate volume and weight of the material.
8. The 24-hour number at which Owner personnel will be contacted as soon as practicable in case of an accident.
9. Signature of the Owner (or their authorized representative) and the truck driver prior to departing the Project Area.
10. Date and time of departure from the Project Area.
11. Date and time of unloading at the Owner-approved off-site disposal facility.
12. Signature of the truck driver and Disposal Facility representative when the materials are unloaded at the Owner-approved off-site disposal facility

D. The Contractor shall submit daily disposal tracking logs to the Construction Manager. The disposal tracking log shall include date, waste type, transporter, disposal facility identification and location, manifest number, vehicle number, driver, and approximate volume and weight of waste.

E. The Contractor shall submit final weight/scale tickets for all waste shipments.

F. The Contractor shall document final disposal of the waste at the designated facility by submitting disposal receipts and/or Certificates of Disposal from the disposal facility. Such certificates and receipts shall bear the printed name of the facility operator and shall specify the date of delivery, quantity and type of material delivered, and weight tickets, and must be signed by a representative of the facility operator. The disposal receipts will be submitted to the Construction Manager on a weekly basis.

1.04 REGULATORY REQUIREMENTS

A. Applicable federal, state, and local laws, codes, and ordinances that govern or regulate hazardous materials and wastes, shall apply to the work of this Technical Specification, including the Massachusetts Hazardous Waste Regulations, USEPA Resource Conservation and Recovery Act (RCRA) regulations in 40 CFR 258 through 268, and polychlorinated biphenyl (PCB) regulations at 40 CFR 761.

B. Trucks used to transport excavated material shall be inspected and certified by USDOT. The Contractor shall obtain all federal, state, and local permits as required for the transport of waste material. The Contractor shall adhere to all permit requirements.

C. The Contractor shall comply with the requirements of 310 CMR 30 – Hazardous Waste, specifically 30.4 – Requirements for Transporters of Hazardous Waste.

D. The Contractor personnel shall be trained in accordance with USDOT requirements for handling and shipping hazardous materials, with such training to include general safety, emergency response, exposure protection, accident prevention, preparation of shipping papers, and securing loads.

E. Each waste transporters shall have a Commercial Driver's License with a Hazardous Materials Endorsement.

PART 2 – PRODUCTS

A. Polyethylene sheeting, minimum 10-mil thickness

PART 3 – EXECUTION

3.01 GENERAL

A. All waste materials generated shall be transported and disposed of off-site at an Owner-approved disposal facility in accordance with all applicable federal, state, and local laws and regulations. In addition, the Contractor shall comply with the procedures and requirements described in the Revised T&D Plan (Arcadis 2024), including Section 6.2 (Off-Site Transportation Requirements), Section 6.3 (Tracking and Recordkeeping), and Section 8 (Off-Site Disposal Destination Screening and Selection), and Section 9 (Community Assessment and Mitigation).

B. The Contractor shall propose an appropriate and licensed off-site disposal facility(ies) for each waste stream generated during the Work. The Contractor's proposed disposal facilities shall be subject to approval by the Owner.

1. Bulk waste with a PCB concentration greater than or equal to 50 mg/kg shall be disposed of in a TSCA chemical waste landfill or hazardous waste landfill permitted by EPA under Section 3004 of RCRA or by a state authorization under Section 3006 of RCRA. Potential Subtitle C disposal facilities for disposal of such waste are listed in Table 8-1 of the Revised T&D Plan (Arcadis 2024). These Subtitle C landfills are also potential disposal options for RCRA-regulated hazardous waste (if any) that is non-TSCA-regulated or waste that is both TSCA-regulated and RCRA-regulated.
2. Non-TSCA/non-RCRA material shall be disposed of at RCRA Subtitle D (solid waste) disposal facilities as long as the acceptance criteria of the individual facility permits are met. Potential Subtitle D landfills for the disposal of non-TSCA/non-RCRA waste are listed in Table 8-1 of the Revised T&D Plan (Arcadis 2024).
3. Excavated material, including impacted woody debris, will be classified as TSCA and Non-TSCA consistent with the TSCA and Non-TSCA areas delineated on the Design Drawings.

C. The Contractor shall coordinate the schedule and transport of materials with the approved disposal facilities.

D. The Contractor shall be responsible for ensuring that all materials to be disposed meet the requirements of the selected disposal facilities.

E. The Contractor shall assign at least one Waste Transport Manager to coordinate the loading, transport, and unloading of waste shipments with the Owner-approved off-site disposal facilities. The Waste Transport Manager shall be trained in accordance with the requirements of 49 CFR Part 172 Subpart H. The Waste Transport Manager shall ensure that the Owner-approved transport haul routes and chain-of-custody requirements are followed. The Waste Transport Manager or their appropriately trained designee shall prepare, review, and sign the bills of lading for each truck prior to departing the Project Area. The Waste Transport Manager shall be responsible for properly marking, labeling, and placarding each shipment. The Waste Transport Manager shall also be responsible for tracking the location of each truck transporting materials from the Project Area to the Owner-approved off-site disposal facilities and shall be capable of communicating directly with the truck driver by phone or radio.

F. For containers or transport vehicles used for off-site transport that contain material with PCB concentrations of 50 mg/kg or greater or that contain greater than the Reportable Quantity of PCBs (1 pound), the container or transport vehicle shall be marked as containing PCBs in accordance with EPA's TSCA regulations (40 CFR 761.40) and applicable USDOT regulations. Specifically, large PCB mark labels shall be affixed to each such container or transport vehicle on all sides. If it is determined that the waste constitutes RCRA hazardous waste, applicable placarding would accompany the loads based on the predominant hazard identified during RCRA characterization. These marking, labeling, and placarding requirements are not applicable to transportation of material with PCB concentrations less than 50 mg/kg and containing less than 1 pound of PCB.

G. The Contractor shall implement traffic control measures to minimize potential traffic impacts, including potential accidents. The traffic control measures shall include those specified in Section 9 – Community Assessment and Mitigation of the Revised T&D Plan (Arcadis 2004).

H. The Contractor shall be responsible for removal of solid waste and debris at the Project Area throughout the duration of the Work. At all times, the Contractor shall ensure that the area within the Limits of Work and the adjoining areas, including roadways, access areas, and storage areas used, are free of solid waste and debris and shall clean up the Project Area and remove all solid waste and debris as Work progresses.

3.02 WASTE CHARACTERIZATION

A. The Contractor shall be responsible for all waste characterization necessary to the extent required by the selected off-site treatment, storage, and disposal facility (TSDF).

B. Characterization of waste for off-site disposal shall be completed consistent with the Waste Characterization Plan included as Appendix A of GE's Project Operations Plan (POP) (Arcadis 2025). In accordance with the Waste Characterization Plan, excavated soils from the vernal pools may fall into three categories: 1) material containing PCB concentrations at or above 50

milligrams per kilogram (mg/kg), for which the disposal is regulated under USEPA's Toxic Substances Control Act (TSCA) regulations; 2) material that constitutes characteristic hazardous waste under USEPA's RCRA regulations (if any); and 3) material for which disposal is not regulated under the TSCA regulations and which does not constitute hazardous waste under RCRA regulations.

C. A portion of the material to be excavated has been determined to have in-situ PCB concentrations greater than 50 milligrams per kilogram (mg/kg) and thus shall be disposed of off-site as TSCA-regulated waste.

D. Existing analytical data from previous Rest of River (ROR) sediment and floodplain soil sampling for non-PCB constituents were evaluated to determine whether sediments and soils designated for removal may be considered hazardous waste under RCRA. This screening evaluation was performed using the "20 times rule." This screening of the ROR data indicate that characteristic RCRA hazardous waste would not be expected in the ROR.

E. Existing soil analytical data have or will be provided to the Contractor for use in establishing waste profiles with the selected disposal facilities. If additional waste characterization is required by the off-site TSDF operator, the Contractor shall be responsible for all waste characterization sampling, analytical testing, reporting, and data validation. All waste characterization data shall be submitted to the Construction Manager within 7 days of receipt from the analytical laboratory.

F. The Contractor shall notify the Construction Manager at least 3 business days prior to sampling for waste characterization for offsite recycling or treatment/disposal. The Construction Manager may elect to observe any sampling performed by the Contractor.

3.03 WASTE PROFILES AND SHIPPING DOCUMENTS

A. The Contractor shall be responsible for establishing waste profiles with the selected disposal facilities.

B. For off-site transport to off-site disposal facilities, manifests shall be used to track waste shipments to the selected disposal facilities. Non-hazardous waste manifests shall be used for shipments of non-TSCA/non-RCRA waste to Subtitle D facilities. The Uniform Hazardous Waste Manifest (UHW Manifest) form (EPA Form 8700-22 and, if necessary, continuation sheet Form 8700-22S) shall be used for shipments of TSCA-regulated waste and/or RCRA hazardous waste (if any) to Subtitle C facilities.

C. Waste manifests shall accompany the off-site transported material and be signed by the generator (GE) or its authorized representative, the transportation vendor(s), and the final receiving facility. The Contractor shall be responsible for coordinating signatures for all waste manifests. Copies of all final waste manifests shall be submitted to the Construction Manager.

D. The Contractor shall work with the relevant off-site disposal facility to prepare and print unique and appropriate shipping documents for each off-site shipment. The shipping documents shall include all transporters used during transportation to the disposal facility. Each transporter shall

sign its section of the shipping document until it reaches the disposal facility. The disposal facility shall return shipping documents to the Contractor to close out the process.

E. The Contractor shall obtain weight tickets for each off-site shipment and provide copies of the tickets to the Construction Manager with the associated waste manifest.

3.04 WASTE PHYSICAL PROPERTY REQUIREMENTS

A. All excavated soils and debris shall pass the Paint Filter Test (USEPA Test Method 9095B) prior to loading and transport to the Owner-approved off-site disposal facilities. The Paint Filter Test shall be performed by the Contractor in accordance with Section 35 20 24 – Excavated Material Management and Processing.

B. The Contractors shall process waste materials as needed to achieve all acceptance criteria by the disposal facility.

3.05 TRANSPORT AND DISPOSAL

A. Transport of materials to off-site disposal facilities by truck shall be performed by licensed haulers in accordance with appropriate local, state, and federal regulations.

B. Waste shall be transported in lined and covered USDOT-approved containers. Containers shall meet all USDOT shipping requirements. Shipping containers shall be filled to within legal weight and height limits for shipping. Waste shall be contained to comply with all approved disposal facility requirements.

C. The Contractor shall be responsible for segregating, processing, and sizing debris and vegetation as necessary to meet the Owner-approved off-site disposal facility's criteria prior to transport.

D. The Contractor shall be responsible for providing adequate measures to prevent the development of free liquids (as determined by the Paint Filter Test) during transport and to prevent spillage or discharge of waste from the transportation vehicle during waste hauling operations.

E. Trucks transporting material from the Project Area to the Owner-approved off-site disposal facilities shall follow the haul route(s) as shown on the Design Drawings and detailed in Section 01140 – Work Restrictions.

F. The Contractor shall retain custody of each waste shipment until accepted at the appropriate disposal site. Acceptance of the materials at the applicable disposal facility shall occur when the waste hauling procedures and unloading requirements as outlined in the Owner-approved off-site disposal facility's Operations and Maintenance Manual (or their applicable procedures) have been confirmed by the facility operator. If the applicable requirements are not fulfilled, the Contractor shall retain custody of the materials, and the Construction Manager shall be notified immediately.

G. The Contractor shall delivery and unload the waste materials at the Owner-approved off-site disposal facility within 180 days of excavation.

H. For the transport of excavated materials from the project Site by truck to the off-site disposal facility(ies) or to an off-site railroad loading area for further transport by rail, the Contractor and the transporters (as applicable) shall comply with all off-site transportation and disposal requirements.

I. The transport of excavated materials from the staging areas (or from the removal areas if material can be directly loaded) by truck to the appropriate off-site disposal facility(ies) or to an off-site rail loading area shall be conducted in accordance with the following guidelines:

1. After a safety check of the truck, the truck bed shall be lined with polyethylene sheeting.
2. Excavated soil and debris shall then be placed in the truck and the load shall be covered.
3. An appropriate waste manifest or bill of lading shall be prepared and signed.
4. After another safety check of the vehicle and placarding, the truck shall leave the staging areas and proceed to the off-site disposal facility(ies) (or loading area) using the pre-approved route.

J. All trucks leaving on public roads shall meet MassDOT and U.S. DOT weight limits.

K. If rail is used to transport waste materials to an off-site disposal facility, the Contractor and its rail transporter (as applicable) shall:

1. Comply with federal and state requirements for such transport using appropriate waste manifests or bills of lading and other appropriate railroad shipping documents.
2. Placard railroad cars in accordance with USDOT and Federal Railroad Administration requirements.
3. Employ qualified personnel trained in accordance with USDOT requirements for handling and shipping hazardous materials, with such training to include general safety, emergency response, exposure protection, accident prevention, preparation of shipping papers, and securing loads.
4. Transport material in USDOT-approved shipping containers that are covered (e.g., intermodal boxes, gondolas).
5. Have detailed provisions for responding to transportation emergencies such as accidents, spills, releases, or other incidents.
6. Maintain transportation and disposal records, including the number of loads of materials sent to the disposal facilities on a daily basis and copies of the final manifests, weight tickets, and certificates of disposal.

END OF SECTION

SECTION 13 80 01– TEMPORARY ACCESS ROADS AND STAGING AREAS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall furnish all supervision, labor, tools, materials, equipment, services, and appurtenances necessary for the construction, stability, maintenance, and repairs of temporary access roads to allow for the transit of equipment, materials, and personnel throughout the site as required in execution of the Work.
2. Planned primary temporary access roads as shown in the Design Drawings are defined as temporary roads to be constructed by the Contractor using geotextile and gravel. Portions of these roads follow existing cleared pathways as shown in the Design Drawings. The Contractor shall be responsible for clearing the routes and construction of these roads. Removal of primary temporary access roads following construction is not required.
3. Planned secondary temporary access roads as shown in the Design Drawings are defined as temporary roads to be constructed by the Contractor using constructing matting. The Contractor shall be responsible for clearing the routes, construction of these roads, and road removal and restoration following completion of construction.
4. The Contractor shall construct, and maintain the planned temporary access roads, as shown in the Design Drawings, of width and load-bearing capacity to support the safe and efficient transit of vehicles, equipment, and all other appurtenances necessary for the performance of the Work.
5. The Contractor shall construct primary and secondary access roads and staging areas to minimize disturbance of existing trees greater than 8 inches in diameter at breast height (DBH), under oversight by the Construction Manager.
6. The Contractor shall construct secondary access roads and staging and access areas to minimize impacts to the subgrade elevation and vegetation, under oversight by the Construction Manager. For any wetland areas and areas adjacent to the vernal pools with soft organic soils, the Contractor shall use methods to avoid, to the extent practicable, excessive soil compaction that could result in detrimental impacts to restoration. This shall include use of construction matting and low-ground-pressure construction equipment. The Contractor's proposed means and methods shall be detailed in the Contractor's Operations Plan and must be approved by the Construction Manager prior to the start of work associated with these features.
7. The Contractor shall construct temporary staging areas as necessary to support construction activities, including excavated soil, backfill, and amendment temporary staging, soil dewatering and stabilization as needed, and equipment and personnel decontamination. Staging areas shall be constructed and operated as necessary to allow safe and efficient execution of the project, to minimize habitat impacts to the surrounding area, and to prevent spread of contamination from the vernal pools and adjacent areas to surrounding areas.

8. The Contractor shall anticipate variable surface and subsurface conditions within the roadway alignments and staging areas, including low-lying and wet areas.
9. As shown in the Design Drawings, there are multiple culverts under and adjacent to the temporary access roads. The Contractor shall maintain these culverts in their current condition to avoid impacting surface water hydrology to the surrounding areas and nearby vernal pools (i.e., do not increase or decrease flow capacity through the culverts). To accomplish this, the Contractor shall conduct pre-construction inspection and photo documentation of each culvert prior to construction. Appropriate measures shall be taken by the Contractor to ensure their protection or reconstruction to maintain their current functionality.
10. Preservation of the existing topography adjacent to the vernal pools shall be maintained throughout site access and all other construction activities. The Contractor shall maintain surface water flows to and from the vernal pools consistent with current conditions. In particular, the channels or swales connected to Vernal Pools 5A-VP-4, 5A-VP-7, 5A-VP-52 and 5A-VP-57 shall be maintained in their current condition.
11. The Contractor shall field-verify conditions on its own and improve/construct temporary roadways and staging areas as appropriate.

1.02 RELATED SECTIONS

A. Section 01571 – Operations Environmental Restrictions and Controls

B. Section 02 21 00 – Surveys

C. Section 02 51 00 – Decontamination

D. Section 02 81 02 – Transportation and Disposal of Waste Material

E. Section 31 05 13 – Soils and Aggregates

F. Section 31 11 00 – Clearing and Grubbing

G. Section 31 25 00 – Erosion and Sediment Controls

H. Section 32 30 00 – Site Restoration, Planting, and Seeding

1.03 SUBMITTALS

A. Prepare and submit detailed descriptions of the Contractor's proposed approach for temporary road and staging area construction and usage for review and approval by the Construction Manager as part of the Contractor's Operations Plan.

PART 2 – PRODUCTS

2.01 GENERAL

A. Materials shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall comply with the requirements of all applicable codes and standards and requirements of the Design Drawings and Specifications.

B. Imported materials or components of the temporary access roads and staging areas shall be clean and in good condition to the satisfaction of the Construction Manager and shall meet the requirements of Section 31 05 13 – Soils and Aggregates. If any deficiencies are identified by the Construction Manager upon inspection of the materials, the Contractor shall address such deficiencies as soon as possible.

2.02 MATERIALS

A. Aggregate

1. Aggregate used for construction of temporary access roads and staging areas shall conform to material specified in Section 31 05 13 – Soils and Aggregates.

B. Woven Geotextile

1. Woven geotextile used for construction of temporary access roads and staging areas shall meet AASHTO M288-05 survivability requirements for separation geotextiles.

C. Temporary Matting

1. Temporary matting used for temporary access roads and/or staging areas shall consist of preassembled/premanufactured matting that can be placed directly on existing subgrade and decontaminated following removal. Mats shall be of appropriate stiffness and size to support and distribute loads.
2. Timber matting may be an acceptable alternative. If proposed, contractor must provide details on how the timber matting will be handled following construction, including decontamination and/or disposal methods as appropriate.

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall install temporary access roads and staging areas in a neat and reasonable uniform appearance that is structurally adequate for the required purposes. Temporary access roads shall be kept clear of sediment, refuse, and debris, maintained during execution of the Work and repaired as necessary throughout the duration of Site operations to minimize rutting or other significant deformations.

B. The Contractor shall maintain temporary access roads and staging areas to the satisfaction of the Construction Manager for the duration of the Work for which they are required. If any deficiencies

are noted by the Construction Manager, the Contractor shall address such deficiencies as soon as possible.

C. The Contractor shall obtain required approvals from the Construction Manager regarding the placement of traffic-control devices, which may impact public and private roadways associated with the Work. All approvals shall be in written form. Verbal communications will not be applicable as approval verification. The Contractor shall submit copies of written communications to the Construction Manager for review.

D. Vehicular access within City of Pittsfield sanitary sewer easements shall be restricted to vehicles producing load effects not exceeding AASHTO HL-93 design loading, as defined in the AASHTO LRFD Bridge Design Specifications, 10th Edition (2024). For the purposes of this restriction, HL-93 loading shall be defined by either of the following axle load configurations, exclusive of the design lane load:

1. Design Truck: One front axle with a nominal design load of 8 kips and two rear axles with nominal design loads of 32 kips each.
2. Design Tandem: Two axles with nominal design loads of 25 kips each.

E. In addition to the axle load restrictions described above, the maximum allowable gross vehicle weight for vehicles operating within sanitary sewer easements shall be 80 kips (40 tons). Compliance with the gross vehicle weight limit alone shall not be considered sufficient to demonstrate compliance with the HL-93 load restriction; axle loads and axle group configurations shall govern.

F. Access by construction, maintenance, or service vehicles producing axle loads, axle spacing, axle group configurations, or resulting load effects greater than those represented by AASHTO HL-93 shall not be permitted to operate along or across any sanitary sewer easements unless explicitly approved in writing by the Construction Manager. Vehicles presumed to exceed HL-93 loading include, but are not limited to, tri-axle trucks (three rear axles), multi-axle permit vehicles, and heavy construction equipment.

G. The Contractor shall install and maintain signage at all entrances to temporary access roads within or along sanitary sewer easements indicating the HL-93 vehicular load restriction and the maximum allowable gross vehicle weight.

3.02 CONSTRUCTION OF TEMPORARY ACCESS ROADS AND STAGING AREAS

A. The Contractor shall provide all equipment, materials, and labor to construct and maintain the temporary access roads staging areas, and Pomeroy Avenue entrance and swing gate as necessary to complete the Work and as generally shown on the Design Drawings.

B. The Contractor shall notify the Construction Manager when temporary access road and staging area construction are completed. The Contractor and Construction Manager must conduct a Site walk to verify installation has been completed in accordance with the Specifications and Design Drawings.

C. Access Road locations are approximate and generally intended to follow existing roads and paths when possible. Adjustments to design layout may occur, subject to approval by the Construction Manager, based on field conditions and contractor equipment, and to provide a minimum of 5 feet clearance from delineated vernal pool areas.

D. Staging Areas shown in the Design Drawings represent approximate areas available for use by the Contractor to support tasks including consolidation of excavated material, dewatering, water treatment, loadout of processed materials, import and staging of fill materials, equipment and material storage, office trailers, and parking areas. The Contractor shall identify and develop the area needed and the specific layout of Staging Areas within the available areas indicated based on planned means and methods, subject to approval by the Construction Manager. The entirety of areas indicated need not be disturbed or developed into staging areas if not needed. The Contractor shall provide proposed staging area layout drawings for review and approval by the Owner and Engineer prior to beginning construction.

3.03 RESTORATION OF TEMPORARY ACCESS ROADS AND STAGING AREAS

A. The Contractor shall decontaminate, as appropriate, prior to removal from the Site, materials installed as components of temporary matting. Decontamination activities shall be performed in accordance with Section 02 51 00 – Decontamination.

B. The Contractor shall leave all primary temporary access roads constructed in place following execution of the Work.

C. The Contractor shall remove all material used to construct secondary temporary access roads and local staging areas upon completion of the Work, and the areas shall be restored in accordance with Section 32 30 00 – Site Restoration, Planting, and Seeding.

D. Decontamination of roadway materials such as construction mats prior to moving to a new area of the site or removal from the site shall be completed consistent with Section 02 51 00 – Decontamination.

E. Disposal of any material resulting from removal of temporary access roads and local staging areas shall be completed consistent with Section 02 81 02 – Transportation and Disposal of Waste Material.

END OF SECTION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall furnish all labor, supervision, materials, tools, equipment, services, accessories, and appurtenances necessary for, or incidental to, the placement and mixing (where specified) of amendments within the designated test vernal pools as shown on the Design Drawings and as described in this Technical Specification.
2. The Contractor shall place the amendments throughout the designated vernal pool limits shown on the Design Drawings and in individual Amendment Certification Units (ACUs) established within each vernal pool.
3. Two types of amendment applications will be tested as part of the pilot study – a sand and powdered activated carbon (PAC) mixture (hereafter referred to as "sand/PAC amendment") as described in Part 2.01 and an approved pelletized PAC delivery product as described in Part 2.02. Mechanical mixing will be tested during the pilot study in two amendment pools (vernal pools 5A-VP-9 and 5A-VP-15) that will receive the sand/PAC amendment. In addition to the mixing to be pilot tested in pools 5A-VP-9 and 5A-VP-15, the implementability of both types of mixing (till and tine mixing) will be evaluated for different vegetation types at relatively small plots within other amendment-based pools (including areas of dogwoods, areas of other types of wetland vegetation, and areas where larger tree roots are present). The exact number, areas, and sizes of these test plots will be determined in the field in consultation with the Construction Manager. The amendment type and application approach for each test pool are shown on the Design Drawings.
4. The Contractor is responsible for sourcing and procuring the specified amendment materials; sampling and testing proposed amendment materials prior to delivery to the Site to verify compliance with the specified requirements; transporting the materials to approved temporary staging areas; unloading, staging, and protecting the amendment materials; blending amendments as necessary to achieve specified requirements; transporting the materials to the placement areas; and placing the amendment materials in the designated vernal pools in accordance with the Design Drawings and this Technical Specification to meet the performance requirements detailed in Parts 3.04.B and 3.04.C.
5. The Contractor shall implement best management practices (BMPs), controls, and other measures necessary to maintain compliance with the project environmental and quality of life criteria described in Section 01571 – Operations Environmental Restrictions and Controls.
6. Amendment placement activities within the vernal pools shall be conducted between August 1 and December 31, provided it has been verified by the Construction Manager that amphibian development through metamorphosis has completed prior to initiation of construction activities. In addition, to the extent practicable, amendment placement in the vernal pools shall be performed when there is no or limited standing water in the vernal pools.

B. Related Sections

1. Section 01571 – Operations Environmental Restrictions and Controls
2. Section 02 21 00 – Surveys
3. Section 02 51 00 – Decontamination
4. Section 13 80 01 – Temporary Access Roads and Staging Areas
5. Section 31 05 13 – Soils and Aggregates
6. Section 31 11 00 – Clearing and Grubbing
7. Section 31 25 00 – Erosion and Sediment Controls

1.02 SUBMITTALS

A. The Contractor shall submit an Amendment Placement Plan as part of the Contractor's Operations Plan to the Construction Manager for review and approval prior to the start of any field work relating to amendment placement. The Amendment Placement Plan shall, at a minimum, include the following:

1. Figures showing the proposed layout and extent for each vernal pool and ACU
2. Tables summarizing the areal extent of each vernal pool and each ACU within each vernal pool
   a. The tables shall summarize the area, amendment type, application rate, and application method for each ACU, along with estimated tonnages of amendment materials to be applied to each ACU.
3. Figures showing the proposed sequence for placement of amendments in each vernal pool to prevent disturbance to previously placed amendments and minimize unintended disturbance to the vernal pools, to the extent practicable
4. Electronic files in AutoCAD DWG format showing the proposed vernal pool ACU polygon boundaries
5. Figures showing the location, arrangement, and layout of temporary staging areas, material blending areas, loading areas, equipment locations, and any other details pertinent to the material management operations
6. Identification and locations of all amendment and sand material sources, along with a schedule for procurement, testing, and delivery
7. Written confirmation that the amendment materials meet the requirements in accordance with Parts 2.01 and 2.02, including manufacturer certifications and testing results as applicable
8. The estimated average thickness of the sand/PAC amendment and pelletized PAC delivery product based on the selected materials and their associated densities to achieve the application rate requirements
9. Details for material transport and staging, which include, at a minimum, transportation methods, schedules, and routing; locations of material staging areas; and details for the equipment that will be used (e.g., trucks, backhoes, conveyors, loaders, pumps, hoppers,

and containers) to transport amendment materials from the source locations to the material staging areas and from the material staging areas to the designated vernal pools

10. Procedures, means, and methods for protecting the PAC and pelletized PAC delivery product from precipitation and moisture prior to placement in the designated areas
    a. The plan shall include a description of how the Contractor will isolate the material from degradation, including any proposed covers, desiccants, and monitoring.
11. Procedures, means, and methods for preparing, blending, mixing, and staging of sand/PAC amendment materials, including a description of how the Contractor will verify that the final in-place mixed ratio and homogeneity requirements are achieved
    a. At a minimum, the Contractor shall provide the estimated volume and weight of each type of material to be blended for each designated test vernal pool and ACU and describe how the mix ratios will be measured and optimized in the field.
12. A detailed description and means and methods for mobilizing amendment placement equipment and personnel around and into the treatment test pools, including the use of construction mats for any heavy construction equipment positioned adjacent to or within the lateral extents of the vernal pools
13. Procedures, means, and methods for placement of the sand/PAC amendment materials and pelletized PAC delivery product, including details of the equipment to be used for material placement (e.g., backhoes, metering hoppers, conveyors, loaders, pumps, sources of water [if used], and containers), means of positioning, sequencing, and material placement techniques
14. Details of the estimated or effective ground pressure for any equipment working within the vernal pools, including equipment weights and methods to distribute the equipment loads and minimize disturbance and compaction of the vernal pool soils
    a. These details shall include the proposed types and sizes of construction matting that will be used and describe how the matting will be placed, maneuvered, and removed to facilitate the amendment placement operations.
15. Procedures, means, and methods for mixing of the sand/PAC amendment with the upper 6 inches of soil in vernal pools 5A-VP-9 and 5A-VP-15, following verification of amendment material placement
16. Procedures, means, and methods to achieve uniform distribution of amendments across the placement area and to minimize overplacement
17. Procedures, means, and methods to conduct the ramp-up test as detailed in Part 3.03
18. Procedures, means, and methods to verify accurate amendment placement locations, coverages, and performance requirements that shall, at a minimum, include the following:
    a. Procedures to verify the required lateral extent of placement
    b. Methods of survey or positioning control during placement, including the use of electronic positioning and associated software
    c. Methods to monitor material volumes and weights per unit area during placement
    d. Proposed quality control information (e.g., material volume tracking and physical sampling) to be generated throughout material placement operations to provide feedback on placement operations and document amendment placement
    e. Methods for verification that the amendments have been placed at the specified application rate

19. Procedures, means, methods, and BMPs that will be implemented to minimize dust generation during amendment loading, unloading, blending, transport, and placement.
20. Estimated amendment placement production rates, including the estimated average daily volume, weight, and area placement rate.
21. A detailed schedule and description of the sequence in which the planned amendment placement work will be performed for each vernal pool, accounting for verification and approval by the Construction Manager.

B. Product Data

1. Material specifications for the proposed PAC and pelletized PAC delivery product, as well as the manufacturer's written instructions on material handling, staging, and storage.

C. Material Samples

1. Provide one sample (2-pound minimum) for each proposed amendment for inspection by the Construction Manager, including the proposed PAC and the proposed pelletized PAC delivery product.

PART 2 –PRODUCTS

2.01 SAND/PAC AMENDMENT

A. The sand/PAC amendment shall be produced by blending or mixing sand with PAC at a ratio of 50% by dry weight of each material type.

1. The sand component of the sand/PAC amendment shall meet the geotechnical and chemical criteria included in Section 31 05 13 – Soils and Aggregates.
2. The PAC component of the sand/PAC amendment shall meet the following criteria:
   a. The material shall not have been previously used and subsequently reactivated or regenerated.
   b. The base material shall be bituminous coal.
   c. Steam shall be used as its activation method.
   d. Minimum iodine number is 800 milligrams per gram.
   e. Maximum moisture is 10% by weight.
   f. There is no more than 1% by weight greater than 100 mesh (0.15 millimeter [mm]).
   g. There is no more than 10% by weight greater than 200 mesh (0.075 mm).

2.02 PELLETIZED PAC DELIVERY PRODUCT

A. The pelletized PAC delivery product shall consist of SediMite by Sediment Solutions (Ellicott City, Maryland), or an approved equivalent. Any proposed equivalent shall include details of the material types and composition of the product.

B. The PAC component of the pelletized PAC delivery product shall meet the requirements listed in Part 2.01.A.2.

C. The PAC component of the pelletized PAC delivery product shall be composed of approximately 50% PAC by dry weight.

2.03 AMENDMENT TESTING REQUIREMENTS

A. Sampling of PAC and SediMite™ received at the project site shall be sampled and analyzed for iodine number (ASTM D4607-94) at a minimum frequency of one sample per every 500 tons. Iodine number sample results must meet the minimum value specified in Part 2.01.A.2.d. The Contractor shall coordinate, collect, and submit the sample for laboratory analysis to verify conformance with the Contract Documents.

PART 3 – EXECUTION

3.01 EQUIPMENT

A. The Contractor shall select the means and methods for amendment material blending, placement, and mixing that will achieve the performance requirements for each ACU as required on the Design Drawings and in this Specification. These means and methods shall be detailed in the Amendment Placement Plan and approved by the Construction Manager, as described in Part 1.02.

B. Any heavy construction equipment entering a vernal pool footprint or operating adjacent to a vernal pool shall be positioned on construction mats that distribute the equipment loads and minimize disturbance or compaction of the underlying vernal pool soils, to the extent practicable.

C. Any equipment that contacts polychlorinated biphenyl (PCB)-impacted soils shall be adequately decontaminated per Section 02 51 00 – Decontamination prior to use in amendment material blending or placement operations.

3.02 GENERAL

A. The amendment placement and verification for each vernal pool will be conducted on an ACU basis, with each vernal pool divided into ACUs not to exceed 2,500 square feet (ft^2). Each vernal pool shall be divided into a minimum of three ACUs. The layout and sizing of the ACUs for each vernal pool shall be proposed by the Contractor in the Amendment Placement Plan and will be subject to review and approval by the Construction Manager. Where practicable, the Contractor's ACUs for a vernal pool shall be designated to be a consistent or nearly consistent size.

B. The Contractor shall not proceed with amendment placement operations in a vernal pool until the Construction Manager has provided the Contractor with written notification that amendment placement may commence. The Construction Manager's approval to begin amendment placement will not be provided until the Contractor's pre-placement survey is completed to establish the lateral extent of the vernal pool and the associated ACUs, as detailed in the approved Amendment Placement Plan and in accordance with Section 02 21 00 – Surveys.

C. The Contractor shall schedule and execute the work following the sequence of construction detailed in the approved Amendment Placement Plan or as otherwise approved by the

Construction Manager. The Contractor shall conduct and sequence placement of amendment material such that previously placed amendment material is protected and not disturbed by subsequent movement of equipment.

D. The Contractor shall not commence amendment placement work until erosion and dust control measures are in place to the satisfaction of the Construction Manager.

E. The Contractor shall provide for secure transport and storage of amendment materials, and such materials shall be covered or otherwise secured to the satisfaction of the Construction Manager, during staging and transport. The Contractor shall install erosion control measures in accordance with Section 31 25 00 – Erosion and Sediment Controls surrounding all material staging areas. The Contractor shall designate a clean staging area at the locations depicted in the Design Drawings or in other areas as proposed by the Contractor for approval by the Construction Manager and described in pre-construction submittals per Section 13 80 01 – Temporary Access Roads and Staging Areas.

F. The Contractor shall protect the PAC and pelletized PAC delivery product from precipitation and moisture prior to placement in accordance with manufacturer recommendations.

G. The Contractor shall be responsible for any damage, deterioration, or theft of stored materials, equipment, tools, and supplies. The Contractor shall assume full responsibility for the storage and protection of all materials and equipment brought to the Site. Materials that become damaged, deteriorated, destroyed, or stolen shall be repaired or replaced at the discretion of the Construction Manager.

H. The Contractor shall establish an accurate method of horizontal control before amendment placement commences in accordance with Section 02 21 00 – Surveys and the approved Amendment Placement Plan. The proposed method and maintenance of the horizontal control system is subject to approval of the Construction Manager, and, if at any time the method fails to provide accurate location for the amendment placement operations, the Construction Manager may suspend operations. Any lost time due to suspension of operations will be the sole responsibility of the Contractor. The Contractor may be directed by the Construction Manager to remove misplaced material at the sole responsibility of the Contractor.

I. Vegetation removal within the vernal pools shall be limited to cutting and removal of dogwood shrubs and similar small woody vegetation unless approved by the Construction Manager. Any vegetation removal from the vernal pools shall leave the root system in place. Vegetation removal shall be performed under the oversight of the Construction Manager and in accordance with Section 31 11 00 – Clearing and Grubbing.

J. The Contractor shall adequately blend and prepare sand/PAC amendment materials to achieve a well-homogenized blend prior to placement. The Contractor shall use approved measurement techniques to accurately quantify the amount of sand and PAC mixed together. Excavator bucket mixing of sand and PAC will not be a permissible method of blending.

K. Amendment materials shall be placed in a manner to reduce damage or impact to existing vernal pool soils and vegetation to the extent practicable. Any heavy construction equipment entering a

vernal pool footprint or operating adjacent to the vernal pool shall be positioned atop construction mats.

L. The Contractor shall place amendment materials in accordance with the application rate requirements described in Parts 3.04.B and 3.04.C.

M. The Contractor shall provide details and methodology to accurately track the quantity of material placed per ACU in accordance with the specified requirements.

N. Woody debris may be removed from vernal pools to facilitate access and implementation. Woody debris that is embedded in and/or contaminated with vernal pool soil shall not be re-used but rather will be disposed of offsite. Woody debris that is above the sediment surface and free of soil may be re-used and placed back into the vernal pools following amendment application and mixing, where applicable. Any woody debris removed and deemed suitable for reuse shall be temporarily staged near the vernal pool and used for site restoration as described in Section 32 30 00 – Site Restoration, Planting and Seeding.

3.03 AMENDMENT PLACEMENT RAMP-UP TEST

A. The Contractor shall demonstrate the efficacy of sand/PAC amendment material blending, placement and verification methods for the sand/PAC amendment and pelletized PAC delivery product prior to implementing full-scale amendment placement operations. The amendment placement ramp-up test will be conducted in one ACU of the first vernal pool where each amendment type is placed.

B. The Contractor shall conduct testing of the sand/PAC amendment blending operations to demonstrate the components of the sand/PAC amendment have been adequately blended and prepared. The Contractor shall provide advance notice to the Construction Manager who will be present to observe the blending test. The Contractor shall submit the results of the blending test in a form acceptable to the Construction Manager.

C. Following the Construction Manager's approval of the sand/PAC amendment blending test, the Contractor shall complete separate ramp-up amendment placement tests for each amendment type. The ramp-up tests shall incorporate the Contractor's means and methods presented in the Amendment Placement Plan to demonstrate and model full-scale placement operations. The ramp-up tests shall be conducted over one ACU for each amendment type. The ramp-up testing will be conducted to verify that the performance requirements for amendment placement are achieved as specified in Parts 3.04 and 3.05. The Contractor shall provide advance notice to the Construction Manager, who will be present to observe the placement tests. The Contractor shall submit the results of the ramp-up testing in a form acceptable to the Construction Manager.

D. At the initiation of post-amendment-placement soil mixing (Part 3.06), the Contractor shall conduct initial soil/amendment mixing in one ACU for each mixing method in 5A-VP-15 in the presence of the Construction Manager to demonstrate adequate mixing as intended by the pilot study objectives. Observations of the soil mixing ramp-up test shall be documented and reviewed with the Construction Manager to determine if any modifications to the soil mixing approach are warranted for the full-scale mixing operation. The Contractor shall submit the results of the mixing tests in a form acceptable to the Construction Manager.

E. If results of the ramp-up testing dictate modifications to the Contractor's approach, the Contractor shall provide a detailed plan in writing to the Construction Manager for review and approval. The Contractor shall then conduct additional ramp-up testing until the Contractor demonstrates achievement of performance requirements. If the ramp-up testing results in modifications to placement operations and if directed to do so by the Construction Manager, the Contractor shall revise and resubmit the Amendment Placement Plan for Construction Manager approval.

3.04 AMENDMENT PLACEMENT

A. The Contractor shall place the amendments in the vernal pools as indicated on the Design Drawings in accordance with this Specification and as detailed in the approved Amendment Placement Plan. Any deviations shall be reviewed and accepted by the Construction Manager prior to execution.

B. Sand/PAC Amendment Performance Requirements:

1. The Contractor shall place the sand/PAC amendment to achieve a minimum PAC application rate of 0.79 pound per square foot (lb/ft^2; approximately 34,400 pounds per acre) in each ACU.
2. The sand/PAC amendment shall be applied uniformly across the placement area.
3. The overall quantity of sand/PAC amendment placed in each ACU shall consider the weights of each material type and the size of each ACU.
4. The sand/PAC amendment application rate in each ACU will be verified based on material tracking and other measures as detailed in Part 3.05.

C. Pelletized PAC Delivery Product Performance Requirements:

1. The Contractor shall place the pelletized PAC delivery product to achieve a minimum PAC application rate of 0.79 lb/ft^2 (approximately 34,400 pounds per acre) in each ACU.
2. The pelletized PAC delivery product shall be applied uniformly across the placement area.
3. The overall quantity of pelletized PAC delivery product placed in each ACU shall consider the weight percentage of PAC in the product and size of each ACU.
4. The pelletized PAC delivery product application rate in each ACU will be verified based on material tracking and other measures as detailed in Part 3.05.
5. Walking on and other surface disturbances should be minimized to the extent feasible following placement of the sand/PAC and pelletized PAC delivery product to avoid displacement of the placed amendments.

D. Sand/PAC amendment placement shall be accomplished in such a manner that the materials form a uniform layer of consistent thickness throughout the designated placement area.

E. Following the verification of sand/PAC amendment placement in vernal pools 5A-VP-9 and 5A-VP-15, the Contractor shall implement mechanical mixing techniques as described in Part 3.06.

F. The Contractor shall use an appropriate placement method to minimize disturbance to the underlying soils, to the extent practicable, except in vernal pools 5A-VP-9 and 5A-VP-15 where mixing will occur following amendment placement.

G. The Contractor shall sequence the placement such that placement does not disturb previously placed sand/PAC amendment or pelletized PAC delivery product.

H. If there is standing water in the vernal pools designated for sand/PAC amendment that interferes with the amendment application and it is anticipated that the pools will not dry out in a time frame that will allow for completion during the construction season, the Contractor shall work collaboratively with the Construction Manager to develop a plan to pump the standing water in the vernal pools to the Housatonic River in a manner that minimizes entrainment of sediments at the suction end to avoid impacts to the river. If pumping of standing water to the river is required, the Contractor shall prepare a pumping and discharge plan that will be subject to approval by the Construction Manager before implementation. Prior to the Construction Manager approval of the plan, U.S. Environmental Protection Agency (EPA) approval of the proposed pumping and discharge approach will be required.

I. The Contractor's methods for the pelletized PAC delivery product application shall be effective to allow placement of the amendment through up to 3 feet of standing water.

J. The pelletized PAC delivery product should be delivered and placed pneumatically consistent with manufacturer's recommendations.

3.05 AMENDMENT VERIFICATION

A. Amendment verification will be conducted on an ACU basis, which will be established as described in Part 3.02.A.

B. Verification of amendment placement will be conducted using the following lines of evidence in the following order:

1. Material Tracking Data: The Contractor shall perform real-time tracking and generate documentation of the volume and weight of each type of amendment placed in each ACU. The Contractor shall submit reports, in a form acceptable to the Construction Manager, that identifies the required amount of PAC for each ACU, the volume and weight of the material placed in each ACU, the amendment/material type, the areal extent where the material was placed, the date and time when the material was placed, and the weight percentage of PAC in the material to demonstrate that the amendment has been placed within each ACU to achieve the performance requirements in Parts 3.04.B and 3.04.C.
2. Construction Manager Observations: The Construction Manager will conduct visual observations to verify the material placement activities are conducted by the Contractor in a manner that provides uniform distribution of the amendment materials for each vernal pool.
3. Spatial Coverage. To document that the material has been placed over the required footprint, the Contractor's Quality Control Officer shall conduct visual observations of the placement and generate mapping, in a form acceptable to the Construction Manager,

that shows the extent of amendment application with an overlay of the ACU boundaries. The mapping shall be cross referenced to the Material Tracking Data (Part 3.05.B.1).

4. Photographic Documentation: The Contractor shall submit photographic documentation that demonstrates uniform distribution of the amendment materials throughout each vernal pool.

5. Physical Thickness and/or Weight Measurements: The Contractor shall collect physical measurements of the placed thickness and/or weight of the amendment in the presence of the Construction Manager at a minimum frequency of three measurements per ACU as a line of evidence to demonstrate uniform placement. The physical measurement locations shall be selected randomly within each ACU and shall not be selected to exclusively target favorable data points or the centroids of each ACU. The Contractor shall submit a map showing the physical measurement locations and a table documenting the measured thicknesses/weights. The average of the three measurements must not be less than 75% of the specified application rate, and no measurement can be less than 50% of the specified application rate.

C. The Contractor must perform the physical thickness measurements in the presence of the Construction Manager. If the Construction Manager determines that the amendment performance requirements in Parts 3.04.B or 3.04.C have not been achieved, the Contractor shall implement corrective action and produce additional documentation to demonstrate compliance with the performance requirements.

3.06 SAND/PAC AMENDMENT MIXING

A. Following placement and verification of the sand/PAC amendment in vernal pool 5A-VP-15, the sand/PAC amendment shall be mechanically mixed into the surface soils in vernal pool 5A-VP-15 using two different methods where shown on the Drawings.

1. Where designated, tilling of the upper 6 inches of soil shall be performed following sand/PAC placement. The intent of this approach is to turn over the soils to distribute the soil/PAC amendment within the upper 6 inches of the vernal pool soils. This approach will be more aggressive and is expected to result in more thorough mixing but is anticipated to present greater implementability challenges due to vegetation, roots, and woody debris.

2. Where designated, tines shall be pushed into (not raked through) the treatment area to penetrate the surface soil following PAC/sand placement. The intent of this approach is to push some of the PAC into the top 6 inches of the subsurface and create openings for the PAC to migrate downward. This approach will be less aggressive than the tilling approach and is expected to result in less effective mixing but is anticipated to be subject to fewer implementability challenges.

B. The methods and equipment to achieve the two mixing approaches shall be developed by the Contractor and presented in its Amendment Placement Plan.

C. The mixing method to be used for vernal pool 5A-VP-9 will be determined based on the mixing observations and effectiveness observed for vernal pool 5A-VP-15 in consultation with the Construction Manager.

D. The target depth for amendment-soil mixing is the upper 6 inches of soil. The Contractor shall design its mixing equipment and methods to prevent mixing deeper than the upper 6 inches of soil.

E. The Contractor shall mix the placed amendments into the upper 6 inches of soil within the vernal pools in accordance with this Specification and as detailed in the approved Amendment Placement Plan. Acceptable methods for post-placement amendment-soil mixing include the following:

1. Tilling using laborer-operated or low-ground-pressure equipment
2. Tines using laborer-operated or low-ground-pressure equipment. Tines shall be long enough to penetrate 6 inches into the subsurface and spaced 6 inches apart.
3. Alternate mixing methods may be proposed by the Contractor and will be subject to approval by the Construction Manager.
4. Bucket mixing of amendment and soil will not be accepted.

F. Mixing shall not result in loss of placed amendment materials outside the limits of the vernal pool or significant redistribution of placed amendment materials within the limits of the vernal pool. If loss or redistribution of placed amendment materials occurs during mixing (i.e., amendment materials sticking to mixing equipment), the Contractor shall discontinue mixing operations and modify the mixing operations in consultation with the Construction Manager.

G. Vegetation removal beyond what is required in the unmixed vernal pools may be required in vernal pools 5A-VP-9 and 5A-VP-15 to facilitate adequate mixing of the vernal pool soils. Any vegetation proposed for removal will be subject to approval by the Construction Manager.

H. In addition to the mixing to be pilot tested in vernal pools 5A-VP-9 and 5A-VP-15, the implementability of both types of mixing (till and tine mixing) will be evaluated for different vegetation types at relatively small plots within other pools (including areas of dogwoods, areas of other types of wetland vegetation, and where larger tree roots are present). The exact number, areas, and sizes of these test plots will be determined in the field in consultation with the Construction Manager.

I. If necessary based on the post-mixing survey, the mixed area shall be flattened and lightly compacted to restore it to the pre-mixing elevation. The average post-mixing elevation across each vernal pool mixed area shall be less than or equal to the average pre-mixing grade. Post-mixing elevations at each survey point shall be within plus or minus 0.2 foot of the pre-excavation grade.

J. After acceptance of amendment placement by the Construction Manager, the Contractor shall conduct a post-placement topographic survey of the vernal pool to document as-built conditions in accordance with Section 02 21 00 – Surveys.

END OF SECTION

SECTION 31 05 13 – SOILS AND AGGREGATES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. The Contractor shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and install soils and aggregates for construction of components as indicated on the Design Drawings and in this Specification. The Contractor is responsible for all sampling and testing of soil and aggregate materials to verify compliance with the specified requirements.

B. Related sections

1. Section 13 80 01 – Temporary Access Roads and Staging Areas
2. Section 13 90 01 – Amendment Placement – Vernal Pools
3. Section 31 23 00 – Excavation and Fill
4. Section 32 30 00 – Site Restoration, Planting, and Seeding

1.02 REFERENCES

A. Reference Standards:

1. The following standards are referenced in this Section:
   a. ASTM International (ASTM) D1140, Standard Test Methods for Amount of Material in Soils Finer Than No. 200 (75 µm) Sieve
   b. ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort of 56,000 ft-lb/ft^3, also known as "Modified Proctor"
   c. ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
   d. ASTM D3980, Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions.
   e. ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
   f. ASTM D6913, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
   g. ASTM 6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
   h. U.S. Environmental Protection Agency (USEPA) SW-846 Method 6010, Inductively Coupled Plasma-Atomic Emission Spectrometry

1.03 QUALITY ASSURANCE

A. Materials, procedures, operations, and methods shall be in strict conformance with the Contract Documents. Materials shall be subjected to strict quality control monitoring as detailed herein.

The placed materials shall conform exactly to the Contract Documents, except as otherwise authorized in writing by the Construction Manager.

B. Sampling and analysis of soil materials used for construction shall be conducted by the Contractor in accordance with GE's revised Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP) (Arcadis 2023[1]) and Sections 2 and 3 of the Soil Cover/Backfill Characterization Plan included as Attachment B of GE's revised Updated Project Operations Plan (Arcadis 2025[2]).

1.04 SUBMITTALS

A. The Contractor shall submit background information for each proposed material source to the Construction Manager for review as part of the source's initial screening for acceptance. At a minimum, background information shall include the following:

1. The location of the material source(s), including state, county, municipality, address, block, and lot numbers
2. The names, contact information, and relationship of persons involved with the source material preparation and transport of the fill from the material source to the receiving site
3. A description of the borrow site including use history
4. Identification of specific areas within the borrow site on a scaled site plan where material will be obtained for use at the project site
5. Identification of specific areas within the borrow site on a scaled site plan where samples for analytical and geotechnical testing will be obtained
6. A description of sampling methodology to be used to obtain geotechnical and analytical samples
7. The results of geotechnical testing previously performed and a description of the geotechnical properties of the fill material and indication that the material meets the project's geotechnical specifications

B. The Contractor shall submit results of laboratory chemical and physical analysis of each material type from each borrow pit as required in this Technical Specification.

C. The Contractor shall submit one 5-gallon bucket with a sample of each proposed type of material for inspection by the Construction Manager.

1.05 DELIVERY

A. Notify the Construction Manager no less than 1 week in advance of delivery of all soil fill materials.

---

[1] Arcadis, 2023. *Field Sampling Plan / Quality Assurance Project Plan GE-Pittsfield/Housatonic River Site.* Prepared for the General Electric Company, Pittsfield, Massachusetts. December 2023.
[2] Arcadis, 2025. *Project Operations Plan GE-Pittsfield/Housatonic River Site.* Prepared for the General Electric Company, Pittsfield, Massachusetts. May 2025.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Sand (for mixing with Powdered Activated Carbon for amendment placement)

1. Shall be free from debris, loam, clay, roots, sod, rubbish, surface coatings, foreign material, or other deleterious materials
2. Shall be sampled and meet criteria for geotechnical and chemical analysis as defined by this Specification
3. Shall have gradation in accordance with Table 1

Table 1: Sand Gradation Requirements

Sieve Size	Percent Passing by Weight
4	100
16	60 - 100
40	20 - 100
100	0 - 30
200	0 - 10

B. Topsoil (for use in backfilling the vernal pools and other restoration uses)

1. Topsoil shall be fertile, friable, natural-loam surface soil capable of sustaining vigorous plant growth and free of any admixture of subsoil, clods of hard earth, plants or roots, sticks, stones larger than 1 inch in diameter, pests and pest larvae, or other extraneous material harmful to plant growth.
2. Topsoil shall have the following properties:
   a. A loam texture with Unified Soil Classification System classification of SM (silty sands and sand-silt mixtures) or SC (clayey sands and sand-clay mixtures) granular soil material
   b. A weak granular structure and friable consistency
   c. 3.8% to 6.1% organic matter by weight (ASTM D2974), which corresponds to the mean and maximum organic matter content measured in the test and control pools during the baseline monitoring
   d. A pH between 5.9 and 6.2 in accordance with ASTM D4972, which correspond to the 15^{th} and 85^{th} percentiles of the values measured in the test and control pools during the baseline monitoring
3. Prior to acceptance, imported topsoil samples shall be analyzed for texture, organic matter content, nutrients, and pH to verify they meet the above specifications or are otherwise acceptable to the Construction Manager.
4. Topsoil shall meet the following chemical criteria, per the Soil Cover/Backfill Characterization Plan:
   a. Polychlorinated biphenyl (PCB) Aroclors shall be nondetect or less than 0.021 milligram per kilogram (mg/kg).

b. Volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) shall be nondetect.
c. Metals concentrations shall meet the criteria listed on Table B-1 in Section 3.1.2.2 of the Soil Cover/Backfill Characterization Plan.

C. Dense Graded Aggregate (for Temporary Access Roads and Staging Areas)

1. Material shall be a naturally or artificially graded mixture of natural or crushed gravel, crushed stone, or natural or crushed sand. Crushed slag is unacceptable.

2. Material shall meet the gradation requirements for Dense Graded Crushed Stone for Sub-Base in Table M2.01.7-1 of the State of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2022, as follows:

Particle Size or U.S. Sieve No.	Percentage by Weight Passing
2 inches	100
1-1/2 inches	70–100
3/4 inch	50–85
No. 4	30–55
No. 50	8–24
No. 200	3–10

3. Material shall meet the following chemical criteria, per the Soil Cover/Backfill Characterization Plan:
   a. PCB Aroclors shall be nondetect or less than 0.021 mg/kg.
   b. VOCs and SVOCs shall be nondetect
   c. Metals concentrations shall meet the criteria listed on Table B-1 in Section 3.1.2.2 of the Soil Cover/Backfill Characterization Plan.

2.02 SOURCE QUALITY CONTROL

A. Provide imported topsoil and aggregate material from a permitted mine, pit, or quarry, or a commercial processing facility specializing in the manufacture of topsoil.

B. Initial Borrow Source Assessment: The Contractor shall conduct an initial assessment in coordination with the Construction Manager (if not previously conducted for the proposed material and borrow source) to evaluate whether the materials at the borrow source are potentially suitable for use, subject to further evaluation through sampling and analysis. This assessment will likely include some or all of the following: a field visit to evaluate the materials and the location of the materials and discussions with the owner of the materials or the property owner regarding the origin of the materials, the historical use of the borrow source area, and any chemical/physical characterization data that may already exist for the material at the source. The level of detail involved in this initial assessment will depend on the candidate materials and will be limited if the potential materials are undisturbed in-place materials. If the initial assessment indicates the materials at the borrow source are potentially usable and thus warrant further evaluation, the Contractor shall coordinate with the Owner for sampling and testing of the potential materials as described in this Technical Specification. The initial assessment shall also meet the requirements described in the Soil Cover/Backfill Characterization Plan.

C. The Contractor shall collect samples for geotechnical and chemical analyses in accordance with the specifications herein.

2.03 MATERIAL TESTING REQUIREMENTS

A. The Contractor shall coordinate, collect, and submit the sample for laboratory analysis and pay for laboratory testing of each material to verify conformance with the Contract Documents.

B. Sampling for geotechnical and chemical quality of the imported materials shall be performed at the source location(s) prior to shipment to the Site unless otherwise approved by the Construction Manager. Do not ship topsoil or aggregate material to the Site until the proposed material, source, and Supplier are accepted by the Construction Manager.

C. Geotechnical Testing: If the results of the Initial Borrow Source Assessment indicate the candidate borrow source and materials may be suitable for use, the Contractor shall obtain representative samples in coordination with the Construction Manager of each of each material types for laboratory geotechnical testing to verify conformance with the Contract Documents.

1. Geotechnical testing shall be completed prior to placement of the material and at a frequency of one per 2,000 cubic yards (cy) of imported off-site materials.
2. Geotechnical sample testing results shall be provided to the Construction Manager to verify acceptability of the soil materials for on-site use. Fill material may not be accepted for import until results of geotechnical analysis are approved by the Owner.
3. Geotechnical testing for sand shall include the following tests:
   a. Grain size distribution (ASTM D6913 or C136)
   b. Moisture content (ASTM D2216)
   c. Weight per unit volume of uncompacted materials (ASTM D4254 or C29)
   d. Particle specific gravity (ASTM D854 or C128)
4. Geotechnical testing for topsoil shall include the following tests:
   a. Grain size distribution (ASTM D6913 or C136)
   b. Material classification (ASTM D2487)
   c. Moisture content (ASTM D2216)
   d. Organic content (ASTM D2974)
   e. pH (ASTM D4972)
5. Geotechnical testing for dense graded aggregate shall include the following tests:
   a. Grain size distribution (ASTM D6913 or C136)
   b. Weight per unit volume of uncompacted materials (ASTM D4254 or C29)

D. Chemical Testing: If the results of the Initial Borrow Source Assessment indicate the candidate borrow source and materials may be suitable for use, the Contractor shall obtain representative samples of each material (sand, topsoil and dense graded aggregate), in coordination with the Construction Manager, for chemical testing of the materials. Chemical testing of stone materials (e.g., riprap, cobbles, boulders, and drainage stone) is not required, provided that those materials are from a source found to be acceptable in the Initial Borrow Source Assessment. Chemical testing shall be performed as follows:

1. The frequency of sampling/analysis for chemical contaminants is dependent on the source/location of the proposed off-site soil fill material:
   a. If the candidate material is from an undisturbed in-place source (e.g., an active gravel or borrow pit), the source shall provide a letter certifying that the material is virgin, and one representative sample of the material shall be collected and analyzed. The analytical data from this chemical characterization shall be submitted to the Construction Manager, who will compare the data with the criteria described in Section 3.1.2.2 of the Soil Cover/Backfill Characterization Plan. If the data are acceptable, the Construction Manager will submit sample test results to USEPA for approval. The results of this sample will be considered to represent the materials that originate from this virgin source for up to 20,000 cy of material from the borrow source or until such time as the physical characteristics of the source location significantly change.
   b. For off-site materials that have not been certified as a virgin source, the frequency of borrow source characterization testing shall involve the collection of one composite sample for each 2,000 cy from the borrow source and for each distinct material type specified in the technical design documents. If the volume of material to be characterized is less than 2,000 cy, one composite sample shall still be collected from that material. Each composite sample shall be composed of 10 discrete "grab" subsamples that shall be collected at spatially distributed locations within the source material and composited into a single sample to be submitted to a laboratory for the appropriate chemical analyses identified in this Specification. A photoionization detector (PID) headspace screening shall be performed for all 10 subsample locations used to form the composite sample. However, for analysis of VOCs, each sample shall be a single discrete grab sample collected at one of the 10 subsample locations used to form the composite sample. The analytical data from this chemical characterization shall be submitted to the Construction Manager, who will compare the data with the criteria described in Section 3.1.2.2 of the Soil Cover/Backfill Characterization Plan. If the analytical results from this sampling are acceptable, the Owner will submit sample test results to USEPA for approval. The initial sampling frequency shall be used to characterize up to 2,000 cy of material from the borrow source.
   c. If more than one off-site source is proposed for the soil fill material, samples shall be collected and analyzed from each source at the appropriate frequency provided in the above Subparagraphs.
2. Each material type shall be collected and sampled in accordance with the Soil Cover/Backfill Characterization Plan and, in particular, shall be tested as follows:
   a. Each borrow source material sample shall be analyzed for PCBs (as Aroclors) and the VOCs, SVOCs, and metals listed in Appendix IX of 40 *Code of Federal Regulations* 264, plus benzidine, 2- chloroethyl vinyl ether, and 1,2-diphenylhydrazine.
   b. Each borrow source material sample collected for chemical characterization testing shall also be screened using a PID as described in Appendix A2 (Standard Operating Procedure for Photoionization Detector Field Screening) of GE's revised (2023) FSP/QAPP to verify that the materials do not contain elevated levels of volatile organic vapors. All samples shall be collected, analyzed, and validated in accordance with that revised FSP/QAPP or any USEPA-approved revision of that document.
3. Topsoil shall be evaluated for pH and organic content.

4. Chemical testing shall be completed prior to shipment of soil material to the site. Soil material may not be accepted for import to the site until results of chemical analysis are approved by the Construction Manager.

END OF SECTION

SECTION 31 11 00 – CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. The Contractor shall providing all labor, materials, equipment, and incidentals required to perform clearing and grubbing as needed to allow completion of pilot test activities.
2. The Contractor shall be responsible for removing and disposing or reusing of trees, shrubs, brush, logs, vegetation, rubbish, and other objectionable material.
3. The Contractor shall implement best management practices (BMPs), controls, and other measures necessary to maintain compliance with the project environmental and quality of life criteria described in Section 01571 – Operations Environmental Restrictions and Controls.

B. Related Sections:

1. Section 01571 – Operations Environmental Restrictions and Controls
2. Section 13 80 01 – Temporary Access Roads and Staging Areas
3. Section 31 23 00 – Excavation and Fill
4. Section 31 25 00 – Erosion and Sediment Controls
5. Section 13 90 01 – Amendment Placement – Vernal Pools

1.02 SUBMITTALS

A. The Contractor shall prepare and submit a Project Clearing and Grubbing Plan for review and approval by the Construction Manager prior to mobilization as part of the Contractor's Operations Plan that outlines the areas, methods, and equipment to be used for clearing and grubbing.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

A. Protection:

1. Protect existing site improvements, including streets, drives, underground and aboveground utilities, and adjacent property and structures throughout the Work. Repair damage caused by the Contractor to original condition or replace in kind to the satisfaction of the Construction Manager.

2. Protect trees, shrubs, and vegetation to remain by providing temporary fencing, barricades, wrapping, or other methods as needed.
3. Do not remove trees without the approval of the Construction Manager.

B. Site Preparation:

1. Delineation of Clearing and Grubbing Limits:
   a. Locate and clearly flag trees, vegetation, and other items to remain within the limits of clearing and grubbing.
   b. Provide flagging to delineate limits of areas to be cleared or grubbed. Review at the Site with the Construction Manager before initiating clearing and grubbing Work.
   c. Replace flagging that is lost, removed, or destroyed until clearing and grubbing Work is complete and the Construction Manager allows removal of flagging.
2. Erosion and Sediment Controls:
   a. Install applicable erosion and sediment controls before initiating clearing and grubbing Work.
   b. Comply with erosion and sediment control requirements of Section 31 25 00 – Erosion and Sediment Controls.
   c. Adjust, relocate, or install additional erosion and sediment controls as clearing and grubbing Work progresses to previously uncleared, ungrubbed areas of the Site.

3.02 CLEARING AND GRUBBING

A. Clearing and grubbing within and adjacent to the vernal pools shall be conducted between August 1 and December 31, provided it has been verified by the Construction Manager that amphibian development through metamorphosis has completed prior to initiation of construction activities. Clearing and grubbing work within other areas such as is required for construction of access roads and staging areas may begin prior to August 1, subject to approval by the Construction Manager.

B. Remove all trees less than 8 inches in diameter at breast height, shrubs, brush, logs, vegetation, rubbish, and other surface material as needed to complete the excavation within the limits of the excavation test pools. Stumps and roots shall be removed from within soil excavation areas during excavation activities and managed as contaminated material.

C. Vegetation removal in treatment vernal pools will be completed prior to amendment placement as needed, to be determined in conjunction with the Contractor and Construction Manager. The goal is to minimize vegetation removal to minimize impacts to the vernal pools. At a minimum, it is anticipated that cutting of dogwoods and similar small woody vegetation will be required.

D. Remove small trees, shrubs, brush, logs, vegetation, rubbish, and other material within the support areas and associated with temporary access road construction and improvement only as necessary and as approved by the Construction Manager. Blanket tree removal is prohibited. The goal is to minimize impacts to trees, shrubs, and vegetation in these areas.

E. Mature trees in all areas with a trunk diameter at breast height greater than 8 inches will be left in place to the extent practicable, under oversight by the Construction Manager. This will

necessitate special excavation adjacent to mature trees within and adjacent to the excavation area as detailed in Section 31 23 00 – Excavation and Fill.

F. Where tree cutting is necessary, trees shall be cut flush with the ground and roots left in place to the extent practicable.

G. Trees and shrubs to remain that have been damaged or require trimming shall be treated and repaired under the oversight of the Construction Manager.

3.03 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

A. The aboveground portions of all cleared vegetation not impacted by contaminated soil will be managed on site in a manner supportive of the local ecology, such as spreading of smaller and chipped material for erosion control; placement of tree trunks, brush, and branches within the remediated vernal pools as habitat features; or creation of adjacent brush or log piles as approved by the Construction Manager.

END OF SECTION

SECTION 31 23 00 – EXCAVATION AND FILL

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. The Contractor shall provide all labor, materials, equipment, and incidentals required to perform all excavating, filling, and grading as shown, specified, and required to complete the Work per this Specification and the Design Drawings.
2. Perform excavation and fill Work in a manner that prevents damage to property, structures, utilities, and trees larger than 8 inches in diameter at breast height (DBH).
3. Perform excavation and fill Work within the limits and to the depths shown or indicated on the Design Drawings.
4. Excavation and fill and other heavy construction equipment operated within portions of the vernal pools not subject to excavation and backfill and adjacent to the vernal pools shall be low-ground-pressure equipment and operated from construction mats to distribute the equipment loads and minimize disturbance or compaction of the underlying vernal pool soils and adjacent soils, to the extent practicable. Heavy construction equipment operated within portions of the vernal pools subject to excavation and backfill shall be low-ground-pressure equipment or operated from construction mats.
5. Excavation and backfilling associated with vernal pools shall be conducted between August 1 and December 31, provided it has been verified by the Construction Manager that amphibian development through metamorphosis has completed prior to initiation of construction activities. In addition, to the extent practicable, excavation and backfilling associated with vernal pools shall be performed when there is no or limited standing water in the vernal pools and when groundwater levels are lowest.
6. The Contractor shall implement best management practices (BMPs), controls, and other measures necessary to maintain compliance with the project environmental and quality of life criteria described in Section 01571 – Operations Environmental Restrictions and Controls.

B. Related Sections:

1. Section 01571 – Operations Environmental Restrictions and Controls
2. Section 02 21 00 – Surveys
3. Section 02 51 00 – Equipment Decontamination
4. Section 02 72 00 – Water Management
5. Section 02 81 02 – Transportation and Disposal of Waste Material
6. Section 31 05 13 – Soils and Aggregates
7. Section 31 11 00 – Clearing and Grubbing
8. Section 31 25 00 – Erosion and Sediment Controls

9. Section 32 30 00 – Site Restoration, Planting, and Seeding
10. Section 35 20 24 – Excavated Material Processing and Handling

1.02 SUBMITTALS

A. Excavation and Backfilling Plan: The Contractor shall prepare and submit an Excavation and Backfilling Plan as part of the Contractor's Operations Plan for review and approval by the Construction Manager prior to starting excavation Work. At a minimum, the Excavation and Backfilling Plan shall include the following:

1. Procedures, means, and methods for excavation, dewatering, and backfilling within the designated vernal pools. If different procedures or equipment will be used at different locations, indicate where each procedure and equipment item will be used.
2. Procedures to protect trees with a DBH greater than 8 inches.
3. Proposed methods for fine excavation by hand or using other methods that minimize disturbance to the root system to trees that will remain in place. Multiple methods may be required.
4. List of proposed equipment for excavation, dewatering, and backfilling Work.
5. Details for material transport and staging, which include, at a minimum, transportation methods, schedules, and routing; locations of material staging areas; details for the equipment that will be used to transport excavated materials from the vernal pools to the material staging areas; and details for the equipment that will be used to transport fill materials from the source locations to the material staging areas and from the material staging areas to the designated vernal pools.
6. Details of the estimated or effective ground pressure for any equipment working within or adjacent to the vernal pools, including equipment weights and methods to distribute the equipment loads and minimize disturbance and compaction of the vernal pool soils and adjacent soils. These details shall include the proposed types and sizes of construction matting that will be used and describe how the matting will be placed, maneuvered, and removed to facilitate the excavation and backfilling operations.
7. Procedures to excavate and handle excavated materials characterized as Toxic Substances Control Act (TSCA) materials separately from non-TSCA materials. The limits of TSCA and non-TSCA characterization areas within the excavation areas are shown on the Design Drawings.
8. Procedures, means, methods, and BMPs that will be implemented to minimize dust generation during excavation, material handling, and backfilling.
9. Planned sequence of excavation and backfilling operations.
10. Detailed schedule of excavation and backfilling Work.

B. Delivery Tickets: Submit a copy of the delivery ticket for each load of fill material delivered to the Site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, MassDOT item number when applicable, and quantity delivered.

1.03 SITE CONDITIONS

A. Subsurface Information:

1. Shallow subsurface conditions generally consist of woodland soils (generally silty loam) that may contain significant tree and other vegetation roots and woody debris. Soils may be inundated, saturated, or partly saturated.

B. Existing Structures and Utilities:

1. The Contractor shall be responsible for identification, location, and protection of all utilities and structures (e.g., manholes, utility poles, sewer lines, water lines, gas lines, overhead lines, and other structures/utilities) prior to and during the Work.
2. There are no known manmade aboveground structures within or immediately adjacent to the vernal pool excavation areas. Aboveground and subsurface utilities are known to be present near some vernal pool excavation areas, along potential access routes, and at or near anticipated support areas. Known subsurface utilities include a sanitary sewer that runs along easements near several of the vernal pools and beneath proposed access routes. Known aboveground utilities include overhead utility poles and lines along proposed access routes. In addition, known underground and aboveground utilities are present at work area entrances along Pomeroy Avenue and Holmes Road.
3. The Contractor shall be responsible for coordinating with Dig Safe (i.e., 811 or www.digsafe.com) to identify the locations of underground utilities at the start of the work and, as necessary, coordinating with utility owners regarding any potential protection requirements.
4. Existing aboveground and underground structures, utilities, and facilities shall be protected from damage by the Contractor. The Contractor shall be solely responsible for immediately repairing and restoring existing structures and utilities, and facilities if damaged by the Contractor or the Contractor's operations.
5. Movement and operation of construction equipment over underground utilities shall be at the Contractor's sole risk and only after the Contractor has prepared and submitted to the Construction Manager and utility owners (as applicable), and received acceptance therefrom, a plan describing Contractor's analysis of the loads to be imparted and the Contractor's proposed measures to protect structures and underground utilities.
6. Do not interrupt existing utilities, except when such interruption is allowed in writing by the Construction Manager after acceptable temporary utility services are provided by the Contractor for the affected structure or property.

PART 2 – PRODUCTS

2.01 MATERIALS

A. See Section 31 05 13 – Soils and Aggregates.

PART 3 – EXECUTION

3.01 INSPECTION

A. The Contractor shall conduct field reconnaissance and survey activities as necessary to plan the Work and identify any potential obstacles.

B. Provide the Construction Manager with sufficient notice and with means to examine areas and conditions under which excavating, filling, and grading Work will be performed.

C. Do not proceed with the Work until unsatisfactory conditions are corrected.

D. Prior to any excavation, the Construction Manager and Contractor will complete a visual inspection of areas to be excavated to identify key features that will need to be recreated during backfilling. This includes micro-topography and drainage paths and features within, to, or from the vernal pools.

3.02 PREPARATION

A. Survey Control: The Contractor shall establish and maintain survey control prior to and throughout the duration of work as described in Section 02 21 00 – Surveys.

B. Pre-Construction Survey: The Contractor shall conduct pre-excavation topographic surveys in accordance with Section 02 21 00 – Surveys to document baseline elevations and conditions of the vernal pool soil removal areas. As part of this survey, the Contractor to stake the limits of the floodplain soil removal areas.

C. Erosion and Sediment Controls: Provide temporary erosion and sediment controls in accordance with the Design Drawings and Section 31 25 00 – Erosion and Sediment Controls.

D. Dust, Air Quality, Noise, and Odor Controls: Provide dust, air quality, noise, and odor controls in accordance with Section 01571 – Operations Environmental Restrictions and Controls.

E. Site Preparation:

1. Clearing and Grubbing: The Contractor shall conduct pre-excavation clearing and grubbing as necessary to facilitate the excavation activities, but such activity shall be minimized to the extent practicable. Comply with Section 31 11 00 – Clearing and Grubbing.

F. Temporary Barriers:

1. Provide temporary barriers or demarcations surrounding excavations and excavation work areas to provide temporary protection to persons and property. The barriers shall have openings only at vehicular, equipment, and worker access points.
2. During nonworking hours, completely enclose all sides of excavation with temporary barriers or demarcations.

3.03 DEWATERING

A. General:

1. Provide and maintain adequate drainage and dewatering equipment to manage and remove surface and Construction Water as defined in Section 02 72 00 – Water Management.

B. Temporary Dewatering System:

1. It is anticipated that the soil excavation will be performed in summer or fall when there is little to no standing water within the vernal pools. If water is encountered, the Contractor shall design, provide, operate, and maintain dewatering of the excavation area as necessary to facilitate dewatering of excavated soils, verification of excavation depths, and placement of backfill. The actual methods shall be determined by the Contractor based on the amount of water observed and other location-specific factors.
2. Locate elements of the temporary dewatering system to allow continuous dewatering operation without interfering with the Work to the extent practicable.

C. Disposal of Water Removed by Dewatering System:

1. Water resulting from excavation and fill area dewatering shall be temporarily stored and managed in accordance with Section 02 72 00 – Water Management.

3.04 EXCAVATION

A. The Contractor shall excavate soils to the extents and depths as shown, specified, and required in the Design Drawings. Excavation shall include removing and handling of earth, rock, woody debris, and other materials within the excavation limits. The over-excavation allowance within the vernal pool soil removal areas is 3 inches below the target removal depths. The Contractor shall minimize over excavation to the maximum extent possible.

B. The Contractor shall excavate, handle, stage, segregate, and dispose of excavated materials characterized as Toxic Substances Control Act (TSCA) materials separately from non-TSCA materials.

C. The Contractor shall clean material handling equipment that handles TSCA materials prior to handling non-TSCA materials in accordance with Section 02 51 00 – Equipment Decontamination.

D. Mature trees within and adjacent to excavation areas with a DBH greater than 8 inches shall be left in place to the extent practicable, and fine excavation shall be implemented. Fine excavation is defined as excavation using hand excavation or other methods such as using an air-powered excavation / vacuum system, or similar techniques approved by the Construction Manager, that minimizes disturbance to the root system. Fine excavation is required to preserve flow of water, food and nutrients between the tree's roots and canopy, and the structure integrity and stability of the tree and its root system (i.e., minimize the potential for windthrow). Trees to be preserved will be verified in the field by the Construction

Manager prior to construction activities. Multiple fine excavation methods may be required depending on site conditions.

E. Trees classified as "healthy" by a qualified scientist shall be included for fine excavation, while those deemed "unhealthy" or are unlikely to survive the root pruning process will not be included.

F. Invasive species such as Norway maple, are not included in the fine excavation process.

G. If root pruning is deemed necessary in areas of fine excavation, sharp tools shall be used that ensure a clean and smooth cut, never tear with a backhoe or other dull instruments. Never cut roots more than 4 inches in diameter.

H. Proper care should be taken to not damage any roots being preserve. Once roots are exposed, roots shall be covered within 8 hours with topsoil or burlap and watered.

I. No activities that could cause disturbance to the root systems are permitted within a radius of three times the tree's DBH measured out from the tree trunk or out to the dripline of the tree canopy, whichever is greater (typically referred to as the "critical root zone"), except as described below in Item 8.

J. The extent of open excavations shall be minimized to the greatest extent practical.

K. Excavation Protection: The Contractor shall be responsible for implementing measures to maintain stable excavations, as necessary. Provide excavation protection systems in accordance with laws and regulations to prevent injury to persons and property, including surface structures and underground facilities.

L. Prior to backfilling work, field measurements shall be made and documented to verify target removal depths have been achieved or exceeded at all locations as detailed in Section 02 21 00 – Surveys, and approval has been received from the Construction Manager. Deviations may be approved by the Construction Manager in areas where fine excavation is not able to achieve the target removal depths due to the presence of tree roots.

M. Unauthorized Excavation: All excavations outside the lines and grades shown or indicated and not approved by Construction Manager, together with removing and disposing of the excavated material and backfilling with suitable material, shall be the sole responsibility of the Contractor. It shall be the Contractor's sole responsibility to fill unauthorized vernal pool excavations with topsoil at the direction of and to the satisfaction of the Construction Manager.

3.05 FILL AND COMPACTION

A. The Contractor shall not proceed with backfill placement until the Construction Manager has provided the Contractor with written notification that backfill placement may commence. Following approval by the Construction Manager, backfilling shall proceed as soon as possible to facilitate initiation of planting and seeding.

B. The Contractor shall clean material handling equipment used to remove or handle PCB-containing soils before it handles "clean" backfill materials in accordance with Section 02 51 00 – Equipment Decontamination.

C. Provide all topsoil required for the finished grades as shown on the Design Drawings and as specified in Section 31 05 13 – Soils and Aggregates.

D. Topsoil material that includes unacceptable materials or does not meet the specifications shall be removed and replaced with approved material in accordance with the Contract Documents.

E. Unless otherwise approved by the Construction Manager, materials delivered to the Site shall be weighed on certified scales at the source location or other off-site location. The Contractor shall provide copies of delivery tickets for all backfill materials transported to the Site.

F. The Contractor shall stockpile backfill materials at the Site in sufficient quantities to meet schedule requirements.

G. Following backfilling in the areas subject to fine excavation due to tree roots, the backfilled topsoil shall be thoroughly wetted to enhance root/soil contact.

H. Placement – General:

1. Place topsoil to re-establish pre-excavation grade as shown on the Design Drawings and as follows:
   a. The average post-placement elevation across each vernal pool shall be less than or equal to the average pre-excavation grade.
   b. Post-placement elevations at each survey point shall be within plus or minus 0.2 foot of the pre-excavation grade.
   c. Recreate micro-topography and drainage features as identified in 3.01.D.
2. Document and verify that target backfill elevations have been achieved as detailed in Section 02 21 00 – Surveys subject to approval by the Construction Manager.
3. Place topsoil under moist conditions and lightly compact the material using an excavator bucket or track in place using low-ground-pressure equipment. Care shall be taken to avoid over-compaction by making only the minimum number of passes needed to adequately place and grade the topsoil.
4. Do not place topsoil when significant standing water is present on the surface of the area where topsoil will be placed unless otherwise approved by the Construction Manager. Manage Construction Water in accordance with Section 02 72 00 – Water Management.
5. Do not place topsoil in a frozen condition or on top of frozen material.
6. The Contractor shall repair observed or measured areas of settlement that occur within 7 days of placement. Make repairs and replacements as required within 5 days after being advised by the Construction Manager.

3.06 FIELD QUALITY CONTROL

A. Earthwork Inspections:

1. Perform daily or more frequent inspections of all excavations, adjacent areas, and protective systems as required by laws and regulations and this Section to ensure their continued effectiveness and integrity and the safety of exposed employees.
2. Inspections shall be performed by the Contractor's supervisor or competent person, as required, together with the Construction Manager, at the following times:
   a. Prior to the start of Work and as needed throughout the day.
   b. After every significant rainstorm or other hazard-increasing occurrence.
3. Document the date, time, and outcome of each inspection in a dedicated log. Submit a copy of the inspection log to the Construction Manager with the daily construction report.

END OF SECTION

SECTION 31 25 00 – EROSION AND SEDIMENT CONTROLS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. A Draft Stormwater Pollution Prevention Plan (SWPPP) has been prepared by others under the direction of the Owner to meet the substantive provisions of the latest National Pollutant Discharge Elimination System (NPDES) Construction General Permit. This will be used by the contractor as a basis for developing the final SWPPP that will describe controls and inspection requirements to reduce pollution from erosion and sedimentation during the construction project and protect nearby water resources. The SWPPP will be included in the Supplemental Information Package (SIP) that will be submitted for USEPA review and approval prior to construction.
2. The Contractor shall prepare the final SWPPP to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities. In particular, the plan shall identify control measures to mitigate erosion and sedimentation into wetlands and vernal pools not intended for excavation or disturbance during the pilot study. The plan shall identify all stormwater management activities that are needed during land disturbance and construction, including source control and pollution prevention measures, best management practices (BMPs) to address erosion and sedimentation, stabilization measures, and procedures for operating and maintaining the BMPs, especially in response to wet weather events and frost. The plan shall include a schedule for sequencing construction and stormwater management activities that minimizes land disturbance by ensuring that vegetation is preserved to the extent practicable, and disturbed portions of the site are stabilized as quickly as possible.
3. The Contractor shall be responsible for implementation of the SWPPP for the duration of the Contract, including installing, maintaining, and inspecting the necessary controls and stabilization measures. Implementation of the SWPPP shall be required until the disturbed area is fully stabilized and the temporary erosion and sedimentation controls are removed. The Contractor shall not remove temporary erosion and sedimentation controls until written approval is provided by the Construction Manager.

B. Related Sections:

1. Section 13 80 01 – Temporary Access Roads and Staging Areas
2. Section 13 90 01 – Amendment Placement – Vernal Pools
3. Section 31 11 00 – Clearing and Grubbing
4. Section 31 23 00 – Excavation and Fill
5. Section 32 30 00 – Site Restoration, Planting, and Seeding
6. Section 35 20 24 – Excavated Material Processing and Handling

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. Clean Water Act, NPDES Regulations (stormwater discharges), 40 CFR 122.26(c)(1)(ii)(C) and 40 CFR 122.44(k)

B. Massachusetts Clean Water Act, Water Quality Certification Regulations, 314 CMR 9.00 et seq., including 9.06 and 9.07

C. Massachusetts Clean Water Act and Wetlands Protection Act—Stormwater Management Standards, 310 CMR 10.05(6)(k) and 314 CMR 9.06(6)(a)

D. Massachusetts Department of Environmental Protection (MassDEP) Stormwater Handbook and Stormwater Standards

1.03 SUBMITTALS

A. The Contractor shall prepare and submit the SWPPP.

B. Submit the manufacturer's product data, specifications, and installation instructions for all products listed in the SWPPP.

C. Documentation of inspection and maintenance of erosion and sedimentation controls as required by the SWPPP.

PART 2 – PRODUCTS

2.01 EROSION AND SEDIMENT CONTROLS

A. General:

1. Materials used for erosion and sediment controls shall be in accordance with the applicable regulatory requirements and the approved SWPPP.

B. Reinforced Silt Fencing:

1. Filter Fabric:
   a. Material: Geotextile shall comply with MassDEP guidelines for Soil Erosion and Sediment Control standard and specifications for silt fencing.
   b. Height shall be 16 inches minimum.
2. Fence Support Posts:
   a. Material: Hardwood or steel posts may be used.
      1) Hardwood posts shall be at least 1.25 by 1.25 inches in cross section.
      2) Steel posts shall be "T" or "U" in shape in cross section with a minimum weight of 1 pound per linear foot.
   b. Length shall be a minimum of 4 feet.
3. Wire Reinforcing: Wire fencing shall be a minimum of 14 gauge with a maximum 6-inch mesh opening or otherwise as approved by the Construction Manager.

4. Fabric fasteners shall be heavy-duty staples, wire ties, or other fasteners compatible with support post material.

C. Temporary Erosion Control Blankets: Type 3.B, in accordance with Federal Highway Administration FP-03, Section 713.17.

1. Product and Manufacturer: Provide one of the following:
   a. ECSC-2B by East Coast Erosion Blankets, LLC
   b. Curlex II FibreNet by American Excelsior Company
   c. Or equal as approved by the Construction Manager
2. Erosion control blankets shall be 100% natural and biodegradable and shall not incorporate plastic netting of any kind. Acceptable materials include jute, excelsior, straw or coconut fiber, and cotton.
3. Staples or anchoring stakes shall be 100% biodegradable.

D. Straw Wattles:

1. 12-inch diameter, biodegradable straw wattle, 100% weed free
2. Up to 24-month life expectancy
3. 1/8-inch mesh opening
4. Minimum strength of 180 pounds per square inch per ASTM International 5035

PART 3 – EXECUTION

3.01 EROSION AND SEDIMENT CONTROL

A. Installation and Maintenance:

1. General:
   a. No land disturbance activities shall commence until the SWPPP are approved as part of the SIP.
   b. Install and maintain erosion and sediment controls as shown in the design drawings and as specified in the approved SWPPP. Install erosion and sediment controls prior to any land disturbance activities and maintain the controls throughout the duration of the Work.
   c. Use necessary methods to successfully control erosion and sedimentation, including ecology-oriented construction practices, vegetative measures, and mechanical controls. Use BMP in accordance with applicable laws and regulations, and regulatory requirements to control erosion and sedimentation during the Project.
   d. Plan and execute construction, disturbances of soils, and earthwork by methods to control surface drainage from cuts and fills to prevent erosion and sedimentation. Provide temporary measures for controlling erosion and sedimentation as indicated in the SWPPP.
   e. Regulate drainage and control erosion and sedimentation in areas cleared for storage of materials or equipment, or for temporary facilities.

f. Provide erosion and sediment controls, including stabilization of soils, at the end of each workday.

2. Provide all required erosion and sediment control measures for the areas where soil will be disturbed before commencing activities that will disturb soil at the Site.

3. Provide erosion and sediment control measures to divert rainfall runoff from entering work areas and open excavations.

4. Implement construction procedures associated with, or that may affect, erosion and sediment control to ensure minimum damage to the environment during construction.

5. Straw wattles will be used as needed, including along gravel access roads, in areas where surface water flow is evident (e.g., scour zones or swales) to prevent material migration. Installation procedures for straw wattles include the removal of vegetation, native leaf litter, and debris so that wattles will be in firm contact with the soil surface.

6. Vegetation Removal:
   a. Remove only those shrubs, grasses, and other vegetation that must be removed for construction. Protect remaining vegetation.

7. Earthwork and Temporary Controls:
   a. Control erosion to minimize transport of silt from the Site into existing waterways and surface waters. Such measures shall include, but are not limited to, using berms, silt fencing, gravel or crushed stone, and slope drains. Apply such temporary measures to erodible materials exposed by activities associated with the remedial construction.
   b. Hold the areas of bare soil exposed at one time to a minimum.
   c. Provide special care in areas with steep slopes. Minimize vegetation disturbance to maintain soil stability.

8. Inspection and Maintenance:
   a. Periodically inspect areas of earthwork and areas where soil is disturbed to identify evidence of the start of erosion and sedimentation; apply corrective measures as required to control erosion and sedimentation. Continue inspections and corrective measures until soils are permanently stabilized and permanent vegetation has been established.
   b. Inspect erosion and sediment controls prior to conducting any intrusive activities. During Work, erosion and sediment controls shall be inspected at least once every 7 days until restoration is complete.
   c. Repair or replace damaged erosion and sediment controls within 1 day of becoming aware of such damage.
   d. Periodically remove silt and sediment that has accumulated in or behind sediment and erosion controls. Properly dispose of silt and sediment.

9. Duration of Erosion and Sediment Controls:
   a. Maintain erosion and sediment controls in effective working condition until the associated drainage area has been permanently stabilized.
   b. Maintain erosion and sediment controls until the Site is restored, underlying soils are permanently stabilized, and permanent vegetation has been established.
   c. Remove silt fencing from within the boundaries of the vernal pools and from around portions of the pool perimeters prior to the first post-restoration winter freeze.

10. Work Stoppage: Provide additional temporary controls necessary to prevent environmental damage to the Site and adjacent areas if the Work is temporarily stopped or suspended for any reason.

B. Reinforced Silt Fencing:

1. Locations of Reinforced Silt Fencing:
   a. Install silt fencing at the locations shown in the Design Drawings and elsewhere as needed to control runoff in accordance with SWPPP.
   b. On slopes, install silt fencing at intervals that do not exceed the maximum lengths indicated in Table 1, unless otherwise approved by the Construction Manager.

Table 1
Maximum Length of Upgradient Slope Between Runs

Slope	Upgradient Slope Length (feet)
<2%	N/A
2–10%	250
10–20%	150
20–33%	80
33–50%	70
>50%	30

   c. Provide silt fencing around the perimeter of each stockpile of topsoil, general fill material, and excavated material. Install silt fencing before expected precipitation and maintain it until the stockpile is removed.
   d. Do not install silt fencing at the following types of locations:
      1) Area of concentrated stormwater flows such as ditches, swales, or channels
      2) Where rock or rocky soils prevent full and uniform anchoring of silt fencing
      3) Across upstream or discharge ends of stormwater piping or culverts

2. Installation:
   a. Securely fasten filter fabric to each support post in no fewer than four locations. Spacing between support posts shall not exceed 8 feet (center to center).
   b. When two sections of filter fabric abut each other, fold over edges and overlap by a minimum of 6 inches and securely fasten to wire mesh.
   c. Embed posts in the ground to the depth necessary for proper controls but not less than 16 inches below ground surface.
   d. Extend filter fabric a minimum of 6 inches belowground and a minimum of 16 inches aboveground.
   e. Bury filter fabric at bottom of silt fence in a trench, in a "J" configuration, to a depth of 6 inches below grade.

3. Maintenance:
   a. Conduct routine inspection at least once every 7 days until final restoration.
   b. Remove accumulated sediment when depth reaches half the effective height of the sediment control.

c. Repair and reinstall silt fencing as required.
d. Do not allow formation of concentrated stormwater flows on slopes above silt fencing unless so shown or indicated in the Contract Documents. If unauthorized concentrated stormwater flows occur, stabilize the slope via earthmoving and other stabilization measures as required to prevent flow of concentrated stormwater flows toward silt fencing.

3.02 REMOVAL OF EROSION AND SEDIMENT CONTROLS

A. Remove erosion and sediment controls only when directed by the Construction Manager.

END OF SECTION

SECTION 32 30 00 – RESTORATION, PLANTING, AND SEEDING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. The Contractor shall furnish all labor, materials, equipment, and incidentals required to restore the vernal pools as detailed in this Specification and in the Design Drawings.
2. Perform restoration Work in a safe manner that prevents injury to persons and property, including, but not limited to, mature trees, surface structures, and Underground Facilities.
3. Perform restoration Work within the areas shown or indicated in the Design Drawings and as determined necessary by the Construction Manager.
4. Restoration equipment operated within and adjacent to the vernal pools shall be low-ground-pressure equipment and/or operated from construction mats to prevent compression of soils.
5. To the extent practicable, the restoration activities associated with the vernal pools shall be done the same year as the other construction activities, during low-water levels when there is no standing water in the vernal pools and outside of the breeding, development, and emergence period for vernal pool amphibians (approximately early March through July 31).

B. Related Sections

1. Section 13 80 01 – Temporary Access Roads and Staging Areas
2. Section 13 90 01 – Amendment Placement – Vernal Pools
3. Section 31 05 13 – Soils and Aggregates
4. Section 31 11 00 – Clearing and Grubbing
5. Section 31 23 00 – Excavation and Fill
6. Section 31 25 00 – Erosion and Sediment Controls

1.02 SUBMITTALS

A. The Contractor shall prepare and submit a Site Restoration Plan for review and approval by the Construction Manager as part of the Contractor's Operations Plan detailing methods, equipment, and materials to be used as part of site restoration. At a minimum, the Restoration Plan shall include the following:

1. Means by which final grades will be checked and verified by the Contractor prior to seeding and planting
2. Methods, equipment, procedures, and sequence for seeding, planting, placement of tree and shrub guards, and watering. Include fertilizer application and protection fabric if required

3. Product data sheets, certificates, and source information for proposed seed mixes
   a. The seed certificates shall include the following: botanical name and common name of all species included in the seed mixture, percentage of each species of seed by weight in the mixture, percentage of pure seed for each species included in the mixture, germination percentage, amount of undesirable plant seed present in the mixture, date of packaging, name and address of supplier, and county and state of origin.
4. A list of all plants that will be planted, including the locations, species, quantity of each species, and sizes of each item (if applicable)
5. A fertilizer certificate, if required, and product data sheet and certificate confirming conformance with this Technical Specification
6. Protection Fabric, if required, in addition to manufacturer product data and delivery, handling, storage, installation, and repair methods
7. A maintenance and inspection schedule

1.03 DELIVERY, STORAGE, AND HANDLING

A. The Contractor shall ensure fertilizer is delivered in manufacturer's standard-sized bags or cartons showing weight, analysis, and the name of the manufacturer. The Contractor shall store fertilizer as approved by the Construction Manager.

B. The Contractor shall ensure seed is delivered in the vendor's unopened packages bearing labels showing the vendor's name and seed analysis by weight.

C. The Contractor shall store all seed at the Project Site in a cool, dry place at locations approved by the Construction Manager. The Contractor shall replace any seed damaged during storage.

D. The Contractor shall store seed in weather- and rodent-proof enclosures.

E. Plants shall be maintained in proper moist conditions and protected from wind, herbivory, or other adverse effects.

PART 2 – PRODUCTS

2.01 PROTECTION FABRIC

A. Coir Fiber Fabric shall be Coir Mat 700 or approved equivalent.

2.02 SEED

A. Seed shall be as follows:

1. Wetland Seed Mix: ERNMX-122 FACW Meadow Mix, New England Wetland Plants "Wetmix" or equivalent seed mixture approved by the Construction Manager is acceptable.

B. All seed shall have the proper stratification or scarification, in accordance with the producer's instructions, to break seed dormancy.

C. Seed mixtures should be delivered in original sealed containers. Seed in wet, torn, or otherwise obviously damaged packaging is not acceptable. The Contractor shall label containers with the following information: analysis of seed mixture, percentage of pure seed by species, percentage of weed seed, year of production, net weight, date tagged and location, percentage of germination, and name and address of distributor.

2.03 PLANTS

A. Species to be included in the plantings are shown in Table 1 The quantity of each species shall be consistent with the Design Drawings.

B. All plants shall be obtained from nursery stock in the northeastern United States and produced from species native to the region. The source of plant material shall be submitted to the Construction Manager for review. Any field-collected plant material (e.g., seeds or live stakes) shall be collected from the same region.

C. Plants shall be free of insects and diseases, appear healthy, and exhibit visible signs of viability such as green leaves or stems. Plants shall not appear chlorotic or exhibit signs of desiccation. Plants shall not exhibit visible signs of herbivory. Leaf margins shall be predominantly green with limited areas of spots or blotches. Dormant plants shall exhibit healthy roots, rhizomes, and leaf buds. All plant materials, including any collected field stock, shall comply with state and federal laws with respect to inspection for plant diseases and insect infestations. Collected plant materials shall be obtained in strict compliance with any applicable state or federal wetland or species protection programs.

D. Each plant species shall be handled and placed in a manner consistent with good trade practice to verify plants are in acceptable condition at their time of arrival at the Site. Plants not in acceptable condition shall be rejected from use.

E. All plant stock, if not directly transplanted, shall be stored in above-ground locations in non-construction areas accepted by the Construction Manager. All plant stock shall have soil placed around the roots sufficient to protect from desiccation and to provide nourishment during storage. All plants stored in the field prior to installation shall be kept cool and shall be sheltered from the drying effects of direct sunlight and prevailing winds. Plants should not be subject to freezing or drying. It is the Contractor's responsibility to supply adequate water for all plant stock to maintain it in a healthy, vigorous state suitable for transplanting.

2.04 FERTILIZERS

A. Fertilizing of plants is not anticipated in these wetland environments. Any request for fertilizers would require approval by the Construction Manager. If needed, fertilizer mixes and rates of application shall be made based on laboratory testing of the backfill and the recommendations of the University of Massachusetts Cooperative Extension.

2.05 WATERING

A. Water shall be from a source approved by the Construction Manager.

2.06 PROTECTION OF TREES AND SHRUBS

A. Protect trees, shrubs, and herbaceous vegetation to remain by providing temporary fencing, barricades, wrapping, or other methods shown, specified, or accepted by Engineer. Correct damage caused by The Contractor outside the limits of work.

B. Desirable vegetation intended to be preserved on the site will be flagged prior to the start of construction.

C. Do not remove trees or shrubs without the approval of the Construction Manager, unless shown or indicated for removal on the Design Drawings.

D. The Contractor shall purchase and properly install physical guards for tree and shrub plantings. Guards must be designed to protect young plantings from wind, deer grazing, and rodents. The guards must be durable, well ventilated, UV stabile for at least 4 years, and either self-supported or supported and anchored to a wooden stake in accordance with manufacturer requirements.

E. The Contractor must provide the Construction Manager with the proposed plant guard product information, including manufacturer, materials, quantities, pricing, and installation and maintenance requirements prior to purchase.

PART 3 – EXECUTION

3.01 EXCAVATION AREAS

A. Prior to the start of clearing and excavation, an inventory and photographic record of woody debris within the vernal pools shall be performed. Woody debris that is embedded in and/or contaminated with vernal pool soil shall not be re-used but rather will be disposed of offsite. Woody debris that is above the sediment surface and free of soil may be re-used. During restoration, woody debris shall be replaced consistent with the original size, location, and density of the original woody debris. Woody debris may be sourced from the vernal pool if it is free of contaminated soil from the vernal pool and surrounding area, from material generated from clearing in other areas of the pilot test project if it is free of contaminated soil, or from off site. Any woody debris removed deemed suitable for reuse shall be temporarily staged near the vernal pool and then replaced after backfilling.

B. During backfilling, woody debris shall be incorporated into the near-surface topsoil to create microtopographic variability, consistent with pre-remediation conditions, as directed by the Construction Manager.

C. Cut dogwood and other woody shrubs shall be set aside for placement following backfilling to function as temporary egg attachment sites and cover for developing larvae. The cut shrubbery

shall be placed along the edges of the vernal pools with the branch tips pointing into deeper water.

D. Prior to planting and seeding, soils shall be prepared with a shallow rake to break up the soil and prepare the surfaces for planting and seeding as per the Design Drawings and this Technical Specification.

E. Planting and seeding shall be performed under direct supervision by the Construction Manager.

F. The planting plans for each vernal pool (Table 1) shall not be deviated from without the approval of the Construction Manager. It is recognized that not all species may be available at the time of planting, and substitutions may be allowed with the approval of the Construction Manager and the U.S. Environmental Protection Agency (USEPA).

G. The wetland seed mix shall be hand-broadcast at the specified rates throughout the area of the restored vernal pools and directly adjacent disturbed areas to create an herbaceous groundcover layer. Acceptable seed mixes include New England wet mix (New England Wetland Plants, Amherst, Massachusetts) and obligate wetland mix (Ernst Seeds, Meadville, Pennsylvania). Comparable alternative sources may be approved by the Construction Manager and USEPA.

H. Trees, shrubs, and herbaceous plants shall be sized as specified in Table 1 below. Plant material shall be inspected when picked up at the nursery, as well as upon delivery to the site.

I. The vernal pool planting and seeding season shall be in the fall of the same year as other construction activities, from August 15 through November 15.

J. The following planting protocol shall be followed:

1. The planting contractor shall maintain the original grade of the root flare after transplanting from the nursery.
2. The tree/shrub pit shall not exceed 1-foot deep to avoid excavation beyond the clean backfill and into the underlying contaminated soil, and shall, therefore, be restricted to 1-gallon container plants. Plantings shall be backfilled with topsoil.
3. A temporary earth saucer shall be made to promote water retention over the root ball.
4. Plant material and seed mixtures shall be immediately watered following planting.
5. A 1- to 2-inch layer of mulch composed of leaf litter from trees characteristic of the nearby floodplain forest, minimizing use of oak leaves (*Quercus* spp.) to less than 30%, shall be applied over the area of the restored vernal pools. The leaf litter shall be sourced locally to the extent practicable, such as from nearby neighborhoods or local leaf collection sites. The leaf litter shall not be sourced from other wooded areas of the Housatonic River floodplain. The mulch source and composition shall be reviewed by and approved by the Construction Manager.
6. Additional erosion control matting shall be placed on disturbed areas as needed or at the direction of the Construction Manager.

3.02 IN SITU TREATMENT AREAS

A. Prior to the start of clearing and excavation, an inventory and photographic record of woody debris within the vernal pools shall be performed. To the extent feasible, woody debris shall be left in place in the treatment vernal pools. However, woody debris removal will be required in vernal pools 5A-VP-9 and 5A-VP-15 to facilitate the mechanical mixing of the amendment and soils to be performed in that pool. Removal of woody debris may also be required in other pools to allow access for equipment required to place the amendment. Woody debris that is embedded in and/or contaminated with vernal pool soil shall not be re-used but rather will be disposed of offsite. Woody debris that is above the sediment surface and free of soil may be re-used. During restoration, woody debris shall be replaced consistent with the original size, location, and density of the original woody debris. Woody debris may be sourced from the vernal pool if it is free of contaminated soil from the vernal pool and surrounding area, from material generated from clearing in other areas of the pilot test project if it is free of contaminated soil, or from off site. Any woody debris removed deemed suitable for reeuse shall be temporarily staged near the vernal pool and then replaced after amendment placement.

B. Vegetation removal in treatment vernal pools shall be completed prior to amendment placement as needed, to be determined in conjunction with the Contractor and the Construction Manager. The goal is to minimize vegetation removal to minimize impacts to the vernal pools. At a minimum, it is anticipated that cutting of dogwoods and similar small woody vegetation shall be required. There shall be no tree removal.

C. Cut dogwoods and other woody shrubs shall be set aside for placement following amendment application to function as temporary egg attachment sites and cover for developing larvae. The cut shrubbery shall be placed along the edges of the vernal pools with the branch tips pointing into deeper water.

D. A 1- to 2-inch layer of mulch composed of leaf litter from trees characteristic of the nearby floodplain forest, minimizing use of oak leaves (*Quercus* spp.) to less than 30%, shall be applied over the area of the vernal pools following amendment application. The leaf litter shall be sourced locally to the extent practicable, such as from nearby neighborhoods or local leaf collection sites. The leaf litter shall not be sourced from other wooded areas of the Housatonic River floodplain. The mulch source and composition shall be reviewed by and approved by the Construction Manager. Vegetation removed from the amendment-based pools may also be used, subject to approval by the Construction Manager.

3.03 ACCESS ROADS AND STAGING AREAS

A. Following finalization of the footprints of the secondary access roads and staging areas by the Contractor and Construction Manager, GE will arrange for the performance of an inventory by a licensed arborist or other qualified person of all trees and shrubs (including species and size) and other significant vegetation anticipated to be removed or significantly damaged due to the pilot test activities. A scaled figure showing the approximate locations of the trees and shrubs and other significant vegetation in areas that may be affected by the pilot test activities shall also be prepared as part of this inventory.

B. Based on the results of this inventory, a Restoration Plan, which includes a planting plan, will be developed by GE and submitted to USEPA for review and approval. The Contractor shall be responsible for implementing this Restoration Plan.

C. Prior to completion of the vegetation-related restoration, topsoil placement may be required to restore adjacent areas impacted by construction activities to pre-construction elevations. For example, if use of marsh mats to access the vernal pools results in significant settlement such that the surface water flow or ecological integrity of the area is significantly impacted, topsoil shall be placed to restore the area to the original grade. The need for such backfilling will be determined and executed under oversight by the Construction Manager.

3.04 SEEDING AND PLANTING

A. Seeding and planting shall only occur immediately after approval of backfill placement by the Construction Manager.

B. The Contractor shall not plant or apply seed if the ground is frozen.

C. Seeding and planting shall not be performed when the temperature may drop below 35°F or rise above 90°F over the forthcoming week.

D. The Contractor shall provide notice to the Construction Manager at least 48 hours prior to seeding and planting.

E. The Contractor shall use the seed mixes specified in Part 2.02.A.2 unless alternative mixtures and application formulae have been approved by the Construction Manager.

F. Seeding rates shall be as prescribed by the seed vendor, unless otherwise approved or specified by the Construction Manager.

G. Seed shall not be applied when wind conditions are such that materials would be carried beyond designated areas or that materials would not be uniformly applied and when wind velocity exceeds 15 miles per hour.

H. Seeding activities shall not be carried out on days with heavy precipitation that may result in the washing out of seed.

I. The Contractor shall apply seed in a way that ensures the entire required area receives seed. The Contractor shall reseed areas where gaps in the seeded areas exceed 4 square feet.

J. The Contractor shall lightly rake seeded areas within 12 hours to ensure proper soil-seed contact.

K. The Contractor shall not seed areas inundated by water.

L. Seeding shall overlap adjoining vegetation by at least 12 inches.

M. The Contractor shall water seeded areas to promote seed germination and growth. The Contractor shall avoid creating rills and furrows as a result of watering and repair and reseed any rills and furrows resulting from overwatering.

N. The Contractor shall mark seeded areas to prevent intrusion from foot traffic and equipment.

3.05 PROTECTION FABRIC

A. If determined necessary, erosion protection fabric shall be installed after seeding is accepted by the Construction Manager.

B. The surface shall be free of rocks, clods, sticks, and vegetation prior to fabric installation. Fabric shall be placed to have good contact with the soil.

C. The Contractor shall lay protection fabric loosely and stake or staple the fabric to the slope to maintain direct contact with the soil. The fabric shall not be stretched during installation.

D. The Contractor shall install the fabric blankets vertically from top of slope to bottom of slope.

E. The Contractor shall bury and anchor the top of slope and toe of slope portions of the fabric.

3.06 MAINTENANCE – SEEDED AND PLANTED AREAS

A. The Contractor shall maintain the seeded and planted areas for the contracted Warranty period. Maintenance responsibilities begin immediately after seeding and planting and continue throughout the contracted Warranty period.

B. Maintenance shall include control of invasive species and herbivores and other vectors that threaten the establishment of the seeding. The Contractor shall remove undesirable plant material that interferes or inhibits the growth of the plants installed by the Contractor. The Contractor shall take necessary action to correct and restore the unacceptable areas.

C. The Contractor shall maintain vegetative cover by watering, weeding, and reseeding and replanting. In addition, the Contractor shall control invasive plant species listed as Invasive or Likely Invasive by the Massachusetts Invasive Plants Advisory Group (MIPAG), preferably by physical removal. Restricted cut and treat application using EPA approved herbicides may be used under the direction of a licensed applicator, though only with the approval of the Construction Manager.

D. The Contractor shall repeat watering weekly for at least 4 weeks after seeding and planting if natural rainfall is less than 1 inch per week.

E. The Contractor shall reseed and replant areas that are unacceptable during the maintenance period. Bare areas greater than 4 square feet shall be reseeded with the specified seed mix.

F. During the growing season, the Contractor shall conduct corrective action and maintenance within 30 days to address unacceptable areas if notified by the Construction Manager.

G. The Contractor shall notify the Construction Manager 48 hours prior to and following any maintenance activity.

H. Approval of seeded and planted areas will be by the Construction Manager at the end of the contracted Warranty period. Approval will be provided if all requirements have been met, including the following:

1. Seeded and planted areas are properly established.
2. Seeded and planted areas are free of eroded, bare, or dead spots and free of prohibited and regulated plant species.
3. Planted shrubs and trees have remained viable during the contracted maintenance period.
4. Mean percent cover of native target species is equal to or greater than 80% in each design plant community type.
5. Mean percent cover of invasive or likely invasive plant species (https://massnrc.org/mipag/) is equal to or less than 10% cover.

3.07 WARRANTY

A. The Contractor shall guarantee the plantings for the contracted Warranty period, which begins upon post-construction acceptance by the Construction Manager. During this Warranty period, monthly inspections of plantings during March through November are to be conducted to document and communicate the current condition of plants established. Measures in accordance with Section 3.05 are to be taken if conditions at the time of inspection dictate maintenance. Inspection reports are to be submitted to the Construction Manager within forty-eight (48) hours of the inspection. Dead or stressed plants noted in inspections shall be replaced with new plants of same size and species within one (1) month or in first month of next growing season, whichever comes first, as permitted by specifications. An arborist can be contracted if necessary to determine plant vitality, however the CM will have ultimate and final say regarding replanting. Replacement plants shall be installed according to the Drawings and Specifications.

B. Notify the Construction Manager at least one (1) month in advance of requested date of final inspection at end of the contracted Warranty period. Submit to the Construction Manager, at least fourteen (14) days before final inspection, a compiled list of plants replaced during the Warranty period with species, location, and replacement dates.

C. At the end of the Warranty period, plant guard or bracing material acquired and installed that is deemed no longer necessary by the Construction Manager shall be removed from applicable plantings. All dead or unsatisfactory areas shall be addressed until satisfactory growth with intended species has occurred, as a condition of completion of all Work at final inspection.

TABLE 1. TREE AND SHRUB PLANTINGS INCLUDED IN RESTORATION DESIGN.

Pool ID	Scientific Name	Common Name	Layer	Count
5A-VP-4	*Acer saccharinum*	Silver maple	Tree	2
	Cephalanthus occidentalis	Buttonbush	Shrub	13
	Ilex verticillata	Winterberry	Shrub	19
	Cornus amomum	Silky dogwood	Shrub	44
	Spirea alba	Meadowsweet	Shrub	7
	Vaccinium corymbosum	Highbush blueberry	Shrub	5
5A-VP-7	*Acer saccharinum*	Silver maple	Tree	1
	Cephalanthus occidentalis	Buttonbush	Shrub	19
	Ilex verticillata	Winterberry	Shrub	22
	Cornus amomum	Silky dogwood	Shrub	99
	Spirea alba	Meadowsweet	Shrub	14
5A-VP-16	*Ilex verticillata*	Winterberry	Shrub	2
	Cornus amomum	Silky dogwood	Shrub	7
5A-VP-52	*Cornus amomum*	Silky dogwood	Shrub	9
5A-VP-57	*Acer saccharinum*	Silver maple	Tree	7

Notes:
1. All trees and shrubs shall not exceed a 1-gallon container size or be planted deeper than 12 inches. All trees shall be containerized and be 18” to 24” tall. All shrubs shall be containerized and 18” tall.

END OF SECTION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The Contractor shall furnish all labor, materials, tools, equipment, accessories, and appurtenances necessary to perform all excavated material and debris handling, processing, stockpiling, and management as described on the Design Drawings and in this Technical Specification.
2. The Contractor shall be responsible for determining the means and methods of unloading, handling, processing, dewatering, and transporting the excavated material.
3. The Contractor shall be responsible for the design, construction, and installation of any modifications to the Staging Area as necessary to complete the Work specified herein.
4. The Contractor shall handle, stage, segregate, and dispose of excavated materials characterized as Toxic Substances Control Act (TSCA) materials separately from non-TSCA materials. The limits of TSCA and non-TSCA characterization areas within the excavation areas are shown on the Design Drawings.
5. The Contractor shall clean material handling equipment that handles non-TSCA materials after having handled TSCA materials in accordance with Section 02 51 00 – Equipment Decontamination.
6. The Contractor shall either directly load excavated material and debris into trucks for off-site transportation and disposal or otherwise temporarily stockpile excavated material and debris at a nearby staging area prior to dewatering or stabilizing (as required) prior to off-site transportation to an Owner-approved disposal facility.
7. Potential temporary staging areas for excavated material management and processing are shown on the Design Drawings near the vernal pool excavation areas. Any Contractor-proposed temporary staging areas located at different locations or outside of the potential staging area locations shown on the Drawings will require approval by the Construction Manager.
8. The Contractor shall conduct excavated material dewatering, and segregation, as needed, within the excavation limits or at temporary staging areas. Any stabilization of excavated materials with an additive or amendment shall be performed within a temporary staging area. The Contractor shall, at a minimum, dewater and stabilize excavated materials as needed in accordance with all applicable laws and regulations for transportation over public roadways (e.g., pass the Paint Filter Test) and to meet the requirements of Owner-approved disposal facilities.
9. The Contractor shall contain and dispose of Construction Water in accordance with Section 02 72 00 – Water Management, including Construction Water generated from excavated material dewatering and stabilization in the staging areas, stormwater runoff collected from the staging areas, truck washing, decontamination procedures, and from other water-generating activities in the staging areas.

10. The Contractor shall implement best management practices (BMPs), controls, and other measures necessary to maintain compliance with the project environmental and quality of life criteria described in Section 01571 – Operations Environmental Restrictions and Controls.

B. RELATED SECTIONS

1. Section 01571 – Operations Environmental Restrictions and Controls
2. Section 02 51 00 – Equipment Decontamination
3. Section 02 72 00 – Water Management
4. Section 02 81 02 – Transportation and Disposal of Waste Material
5. Section 13 80 01 – Temporary Access Roads and Staging Areas
6. Section 31 25 00 – Erosion and Sediment Controls

1.02 SUBMITTALS

A. CONSTRUCTION

1. The Contractor shall prepare and submit an Excavated Material Management and Processing Plan as part of the Contractor's Operations Plan to the Construction Manager for review and approval. The Excavated Material Management and Processing Plan shall be approved by the Construction Manager prior to initiation of any Work that requires excavation. At a minimum, the Excavated Material Management and Processing Plan shall include the following:
   a. A detailed description of the means and methods, including all equipment and personnel, for material management, handling, and transport from the location of removal to the staging areas, if used; segregating Toxic Substances Control Act (TSCA) and non-TSCA materials; dewatering; truck loading; and on- and off-site transport.
   b. Figures showing the locations, arrangement, and layout of the temporary staging areas relative to the excavation areas including material unloading areas, processing areas, stabilization agent staging areas, equipment locations, and any other details pertinent to the processing and handling of the excavated materials.
   c. Describe the means and methods to construct and use temporary staging areas with berms and impermeable liners and to securely cover stockpiles.
   d. Details related to the Contractor's proposed dewatering and stabilization means and methods.
   e. If the Contractor elects to use Portland cement or another approved drying agent, indicate the percent by weight of such materials to be added to satisfy disposal facility requirements. The Contractor shall describe the mixing procedures to be used and describe the measures for controlling/mitigating dust generation.
   f. Safety Data Sheets (SDSs) for all proposed dewatering and stabilization agents.
   g. A description of testing activities and methods to be performed by the Contractor to verify that excavated material passes the Paint Filter Test and any other requirements of the selected disposal facility.
   h. Methods and materials to prohibit leaking of free liquids, including lining truck beds and using tailgate seals.

i. A description of the procedures, materials, and equipment to be used to prevent cross-contaminating surfaces and materials or tracking of excavated material outside of the material staging area.
j. A description of water management procedures at the temporary staging areas.

2. The Contractor shall provide the results of any material testing to verify that excavated material passes the Paint Filter Test and any other requirements of the selected disposal facility.

PART 2 –PRODUCTS

2.01 GENERAL MATERIALS

A. The Contractor shall be responsible for the selection of any dewatering or stabilization agents, subject to approval by the Construction Manager.

B. All additives, polymers, and coagulants to be used during the excavated soil management process shall meet the requirements of the Owner-approved disposal facility(ies).

PART 3 – EXECUTION

3.01 EXCAVATED MATERIAL MANAGEMENT

A. The Contractor shall provide all labor, equipment, and materials to characterize, handle, load, dewater, properly store, and transport excavated materials and miscellaneous debris in accordance with Section 13 80 01 – Temporary Access Roads and Staging Areas, Section 02 72 00 – Water Management, Section 02 81 02 – Transportation and Disposal of Waste Material, and Section 31 25 00 – Erosion and Sediment Controls.

B. The Contractor shall allow saturated soils, when encountered, to drain within the excavation limits by being placed in small piles for gravity dewatering or by draining directly from the excavator bucket suspended over the excavation area prior to being directly loaded into trucks for transportation to an off-site disposal facility or stockpiled in the staging areas.

C. If required, additional gravity dewatering of excavated material shall be completed in the staging areas in preparation for off-Site transport. The Contractor shall coordinate with the Contractor-selected, Owner- approved disposal facility regarding requirements for disposal. Excavated materials shall be stockpiled in the staging areas until sufficiently dewatered by gravity to pass the Paint Filter Liquids Test (USEPA Method 9095B).

1. For non-TSCA materials, if gravity dewatering procedures do not yield material that will pass the Paint Filter Test, the Contractor shall mix drier non-TSCA excavated materials or drying agents with the stockpiled material, as necessary, such that the material passes the Paint Filter Test and is suitable for transport.

2. For TSCA materials, if gravity dewatering procedures do not yield material that will pass the Paint Filter Test, the Contractor shall mix drier TSCA excavated materials or drying

agents with the stockpiled material, as necessary, such that the material passes the Paint Filter Test and is suitable for transport.

D. The Contractor shall establish segregated areas in the staging areas with impermeable physical separation barriers to preclude intermingling of TSCA materials and non-TSCA materials. The Contractor shall maintain appropriate signage within and/or adjacent to the stockpiles to document the characterization of materials placed in the stockpiles. Any areas of the staging areas used to handle, store, or process TSCA materials shall be thoroughly decontaminated in accordance with the procedures detailed in Section 01 51 00 – Decontamination prior to handling, storing, or processing non-TSCA materials.

E. The Contractor shall use lined watertight material haul trucks for all transport of excavated materials. If free liquids are observed leaking from truck beds, operations will be ceased by the Construction Manager until the Contractor can implement corrective action.

F. Stockpiled excavated material shall be stored in bermed areas lined with impermeable material to the satisfaction of the Construction Manager.

G. Stockpiled excavated material shall be securely covered with impermeable material to prevent wind damage, dust generation, and water infiltration at the end of each workday, when materials are not actively being placed or removed, during precipitation events, or within 30 minutes of notification from the Construction Manager. Such covering activities shall be the sole responsibility of the Contractor. Stockpile covers may consist of either a spray on cover or polyethylene sheeting (minimum 10-mil thickness in accordance with the Design Drawings) to the satisfaction of the Construction Manager. The Contractor's proposed materials, methods, and procedures for covering stockpiled material will be subject to approval by the Construction Manager. Spray-on covers, if used, shall be applied to the stockpiled material in accordance with the manufacturer's recommendations. Spray-on covers shall be applied only during weather conditions acceptable to the Construction Manager (e.g., excluding periods of high winds).

H. Loading of trucks with material from the staging areas shall be completed in preparation for off-site transport for disposal per Section 02 81 02 – Transportation and Disposal of Excavated Materials.

I. Material testing for verification with trucking and disposal facility acceptance criteria shall take place within the staging areas. The Contractor shall coordinate acceptance criteria with the trucking and disposal facilities and verify compliance with these criteria prior to transporting material for off-site disposal. At minimum, the Contractor shall perform gravity dewatering and stabilization operations to pass a Paint Filter Liquids Test (USEPA Method 9095B) prior to transport. No excavated material shall depart the staging areas until the Contractor submits to the Construction Manager testing results that show compliance with the acceptance criteria.

    1. The Construction Manager may perform their own Paint Filter Liquids Test(s) on material targeted for disposal. If the field test fails, the Contractor shall be required to identify an alternate method to achieve material conditions suitable for transport or dewater existing material to meet Paint Filter Liquids Test.

J. Debris encountered during soil removal that has been in contact with contaminated soil shall be segregated for disposal based on the designation of the surrounding soil or characterized separately for determining the appropriate disposal method. As necessary, large debris items shall be cut to

size at the staging areas to facilitate transport and to meet the requirements of the disposal destination.

3.02 SITE MAINTENANCE AND HOUSEKEEPING

A. The Contractor shall perform the following maintenance activities daily:

1. Access roads and staging areas: Any necessary repairs or replacements shall be implemented by the Contractor immediately, and as directed by the Construction Manager, and shall be the sole responsibility of the Contractor.
2. Water collection system and sumps: Unclog soil as needed to not disrupt performance of the system.
3. Barriers, liners, and environmental controls: Repair immediately following observation of deficiency or as directed by the Construction Manager.
4. The Contractor shall keep the staging areas clean and free from rubbish and debris at all times.

3.03 PROTECTION OF SITE AND WATER RESOURCES

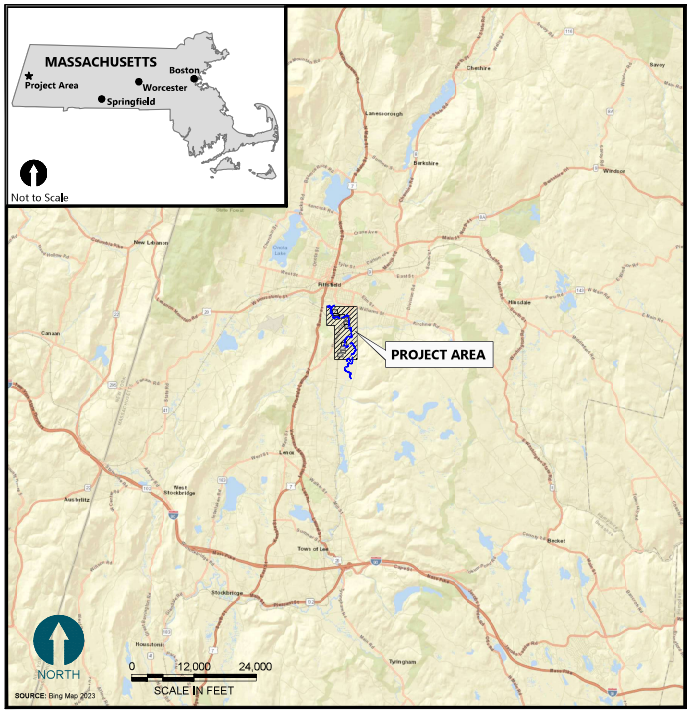
A. The Contractor shall comply with applicable federal, state, and local laws, ordinances, and regulations concerning the control and abatement of water pollution in accordance with Section 31 25 00 – Erosion and Sediment Controls during excavated material management and processing activities.

END OF SECTION

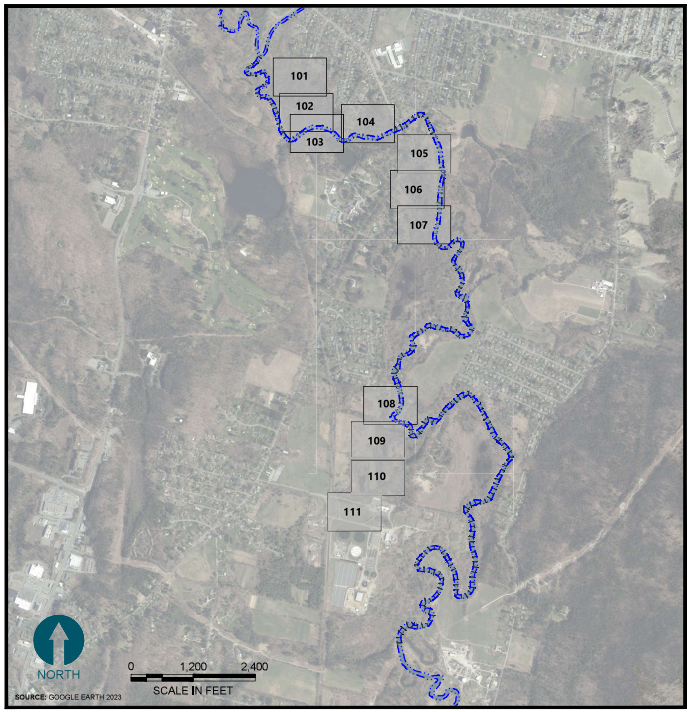
Appendix B
Design Drawings

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

VICINITY MAP



LOCATION MAP



PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest Date: 2026.06.19 12:47:23 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

TITLE SHEET

T001

SHEET # 1 OF 42

Jun 19, 2026, 10:39am jmcisaac
K:\Projects\0468-general electric\housatonic - vernal pools - reach 5a\construction plans\0468-VP-5a-PA-Title Sheet.dwg T001

DRAWING INDEX

SHEET NO.	SHEET ID	SHEET TITLE
T-SERIES: TITLE		
1.	T001	TITLE SHEET
G-SERIES: GENERAL		
2.	G001	GENERAL NOTES AND LEGEND
3.	G002	OVERALL SITE PLAN
E-SERIES: EXISTING CONDITIONS PLAN VIEWS		
4.	E101	EXISTING PLAN VIEW 5A-VP-3, 5A-VP-4, 5A-VP-5
5.	E102	EXISTING PLAN VIEW 5A-VP-7, 5A-VP-9, 5A-VP-10
6.	E103	EXISTING PLAN VIEW 5A-VP-12
7.	E104	EXISTING PLAN VIEW 5A-VP-15, 5A-VP-16
8.	E105	EXISTING PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM HOLMES ROAD
9.	E106	EXISTING PLAN VIEW 5A-VP-21, 5A-VP-22
10.	E107	EXISTING PLAN VIEW 5A-VP-26, 5A-VP-27
11.	E108	EXISTING PLAN VIEW 5A-VP-52, 5A-VP-55, VP-57
12.	E109	EXISTING PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 1)
13.	E110	EXISTING PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 2)
14.	E111	EXISTING PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEETS 3)
C-SERIES: CONSTRUCTION PLAN VIEWS		
15.	C101	CONSTRUCTION PLAN VIEW 5A-VP-3, 5A-VP-4, 5A-VP-5
16.	C102	CONSTRUCTION PLAN VIEW 5A-VP-7, 5A-VP-9, 5A-VP-10
17.	C103	CONSTRUCTION PLAN VIEW 5A-VP-12
18.	C104	CONSTRUCTION PLAN VIEW 5A-VP-15, 5A-VP-16
19.	C105	CONSTRUCTION PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM HOLMES ROAD
20.	C106	CONSTRUCTION PLAN VIEW 5A-VP-21, 5A-VP-22
21.	C107	CONSTRUCTION PLAN VIEW 5A-VP-26, 5A-VP-27
22.	C108	CONSTRUCTION PLAN VIEW 5A-VP-52, 5A-VP-55, VP-57
23.	C109	CONSTRUCTION PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 1)
24.	C110	CONSTRUCTION PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 2)
25.	C111	CONSTRUCTION PLAN VIEW TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 3)
26.	C112	OVERALL ACCESS SITE PLAN
27.	C113	TEMPORARY CONSTRUCTION ROADS (NORTH)
28.	C114	TEMPORARY CONSTRUCTION ROADS (SOUTH)
29.	C115	OFFSITE TRANSPORTATION ROUTES
30.	C116	VERNAL POOL CONTROL POINTS
31.	C117	MISCELLANEOUS CONSTRUCTION DETAILS 1
32.	C118	MISCELLANEOUS CONSTRUCTION DETAILS 2
33.	C119	MISCELLANEOUS CONSTRUCTION DETAILS 3
AM-SERIES: AIR MONITORING		
34.	AM101	AIR MONITORING LOCATIONS (NORTH AREA)
35.	AM102	AIR MONITORING LOCATIONS (CENTRAL AREA)
36.	AM103	AIR MONITORING LOCATIONS (SOUTH AREA)
R-SERIES: PLANTING		
37.	R1	EXISTING CONDITIONS & PLANTING PLAN 5A-VP-4
38.	R2	EXISTING CONDITIONS & PLANTING PLAN 5A-VP-7
39.	R3	EXISTING CONDITIONS & PLANTING PLAN 5A-VP-16
40.	R4	EXISTING CONDITIONS & PLANTING PLAN 5A-VP-52
41.	R5	EXISTING CONDITIONS & PLANTING PLAN 5A-VP-57
42.	R6	PLANTING AND CONSTRUCTION NOTES

GENERAL NOTES

1. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83) MASSACHUSETTS STATE PLANE, MAINLAND ZONE, U.S. SURVEY FEET; VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988, U.S. SURVEY FEET.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS WITHIN THE LIMITS OF WORK AND DETERMINE THE APPROPRIATE QUANTITIES AND MATERIALS TO COMPLETE THE WORK WITHIN ACCORDANCE OF THE DRAWINGS AND SPECIFICATIONS.
3. LOCATIONS OF UTILITIES ARE APPROXIMATE AND NOT ALL UTILITIES MAY BE SHOWN. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL UTILITIES. CONTRACTOR SHALL VERIFY THE PRESENCE AND LOCATION OF ALL UNDERGROUND, UNDERWATER, AND OVERHEAD UTILITIES AND SHALL PROTECT EXISTING UTILITIES IN THE WORK AREA.
4. ALL BASEMAP INFORMATION CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THE TIME OF THE SURVEYS. REUSE OF THIS INFORMATION BY CONTRACTOR OR OTHERS BEYOND THE SPECIFIC SCOPES OF WORK FOR WHICH CONTRACTOR WAS RETAINED SHALL BE AT THE SOLE RISK OF CONTRACTOR.
5. DRAWINGS INCLUDE COLOR AND SHOULD BE PRINTED ACCORDINGLY. SOME DESIGN FEATURES MAY NOT BE VISIBLE OR LEGIBLE IN GRAYSCALE OR BLACK AND WHITE IF REPRODUCED INCORRECTLY.

SOURCES

1. THE TOPOGRAPHIC DATA SHOWN WITHIN THE PILOT STUDY VERNAL POOLS AND AN APPROXIMATELY 50-FOOT BUFFER SURROUNDING THE VERNAL POOLS ARE BASED ON TOPOGRAPHIC SURVEYS PERFORMED BY FORESIGHT LAND SERVICES BETWEEN APRIL AND DECEMBER 2024.
2. THE TOPOGRAPHIC DATA SHOWN WITHIN AND ALONG THE RIVER CORRIDOR AND IN BACKWATER AREAS IN REACH 5A ARE BASED ON TOPOBATHYMETRIC LIDAR SURVEYS PERFORMED BY WHITEOUT SOLUTIONS ON MAY 1, 2025 AND DECEMBER 1, 2025.
3. THE TOPOGRAPHIC DATA SHOWN IN UPLAND AREAS OUTSIDE THE PILOT STUDY VERNAL POOLS ARE BASED ON AN AERIAL LIDAR SURVEY PERFORMED BY BLUESKY GEOSPATIAL ON APRIL 29, 2025.
4. RIVER CENTERLINE, ROADWAYS, TOWNSHIP PARCELS, PROPERTY BOUNDARIES ACQUIRED FROM MASS GIS (2023).
5. AERIAL IMAGERY FROM MASS GIS (2023).
6. THE EDGE OF RIVER IS BASED ON BLUESKY'S APRIL 2025 AERIAL LIDAR SURVEY.

Table 1
Treatment Areas and Amendment Application Approaches for Treatment-Based Vernal Pools

Vernal Pool	Area (SF)	Amendment Application Approach
5A-VP-9	26,190	PAC/sand with mixing, method to be determined by Construction Manager and Contractor based on the results of mixing in vernal pool 5A-VP-15
5A-VP-12	11,890	Pelletized PAC delivery product
5A-VP-15 (West)	8,280	PAC/sand with till mixing
5A-VP-15 (East)	7,940	PAC/sand with tine mixing
5A-VP-22 (North)	17,700	PAC/sand surface application
5A-VP-22 (South)	17,950	Pelletized PAC delivery product
5A-VP-27	3,650	PAC/sand surface application

Table 2
Removal Areas and Depths for Removal-Based Vernal Pools

Vernal Pool ID	Total Removal Area (SF)	TSCA Remcval Area (SFi	Non-TSCA Removal Area (SF)	Minimum Required Removal Depth (FT)
5A-VP-4	6,330	0	6,330	1
5A-VP-7	12,570	10,550	2,020	1
5A-VP-16	810	0	810	1
5A-VP-52	2,160	2,160	0	1
5A-VP-57	14,370	7,520	6,840	1

ABBREVIATIONS

°	DEGREES
ø	DIAMETER
#	NUMBER
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAYS AND TRANSPORATION OFFICIALS
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICE
CCU	CAP CERTIFICATION UNIT
CFS	CUBIC FEET PER SECOND
CL	CENTERLINE
CP	CONTROL POINT
CY	CUBIC YARDS
DBH	DIAMETER AT BREAST HEIGHT
DCP	DYNAMIC CONE PENETROMETER
DI	DUCTILE IRON
DWG	DRAWING
E	EAST, EASTING
EG	EXISTING GRADE
ELEV	ELEVATION
ESC	EROSION AND SEDIMENT CONTROL
EX.	EXISTING
FT.	FOOT
GE	GENERAL ELECTRIC
GIS	GEOGRAPHIC INFORMATION SYSTEM
HDPE	HIGH-DENSITY POLYETHYLENE
H, HOR	HORIZONTAL
HL	HABITAT LAYER
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
L	LENGTH
LIDAR	LIGHT DIRECTION AND RANGING
LF	LINEAR FOOT
MASSDEP	MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
MASSGIS	MASSACHUSETTS BUREAU OF GEOGRAPHIC INFORMATION
MAX	MAXIMUM
MIN	MINIMUM
MLW	MEAN LOW WATER
N	NORTH, NORTHING
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NCD	NATURAL CHANNEL DESIGN
N/F	NOW OF FORMERLY (PROPERTY DEED INFORMATION)
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PAC	POWER ACTIVATED CARBON
PE	PROFESSIONAL ENGINEER
PSI	POUNDS PER SQUARE INCH
RCP	REINFORCED CONCRETE PIPE
RCU	RIVERBANK CERTIFICATION UNIT
ROW	RIGHT-OF-WAY
S	SOUTH
SS	SANITARY SEWER
ST	STORM
STA.	STATION
SF	SQUARE FOOT
T	TELEPHONE
TBD	TO BE DETERMINED
TOB	TOP OF BANK
TSCA	TOXIC SUBSTANCES CONTROL ACT
TYP	TYPICAL
VP	VERNAL POOL(S)
WSE	WATER SURFACE ELEVATION

BENCHMARK SURVEY CONTROL POINTS

UNITS - US SURVEY FOOT, NAD83 MASS. STATE PLANE COORDINATES, NAVD88 ELEVATIONS				
MONUMENT	EASTING	NORTHING	ELEVATION (NAVD88) U.S. SURVEY FEET	APPROXIMATE STATION AND OFFSET
GE RSA 28-ALUMINUM CAP ROD	186225.05	2981476.66	956.37	131+32, 42.4' RIGHT
GE RSA 32-ALUMINUM CAP ROD	186802.21	2984620.62	960.86	76+94, 95.2 LEFT
GE RSA 33-ALUMINUM CAP ROD	186880.59	2984996.26	961.84	84+61, 70.8 LEFT
GE RSA 35-ALUMINUM CAP ROD	185734.09	2986385.05	961.74	43+84, 62.9' LEFT

LEGEND

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY (BOTTOM OF BANK)
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8'
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- VERNAL POOL BOUNDARY
- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA. TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- ROAD USE RESTRICTED
- TRUCK ROUTE FOR EARTHEN MATERIAL IMPORT AND OFFSITE DISPOSAL
- GENERAL TRAVEL DIRECTION TO DISPOSAL
- TRUCK ROUTE TO BUILDING 64G WATER TREATMENT FACILITY
- PLANNED AIR MONITORING LABEL/LOCATION, LOCATION APPROXIMATE
- S — S SEWER LINE
- SEWER MANHOLE
- SEWER SIPHON
- SD — SD STORM LINE
- SD — SD STORM CULVERT
- STORM OUTFALL
- STORM CATCH BASIN
- STORM STRUCTURE
- STORM CHANNEL
- STORM CHANNEL STRUCTURE
- W — W WATER LINE
- WATER LATERAL
- WATER HYDRANT
- OHE — OHE OVERHEAD ELECTRIC LINE
- GE RSA 39 ACIR SURVEY CONTROL POINT
- EXISTING PIEZOMETER INSTALLED IN 2026

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488
EXP. DATE: 06/30/28
STATE: MASSACHUSETTS
DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest Date: 2026.06.19 14:28:00 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

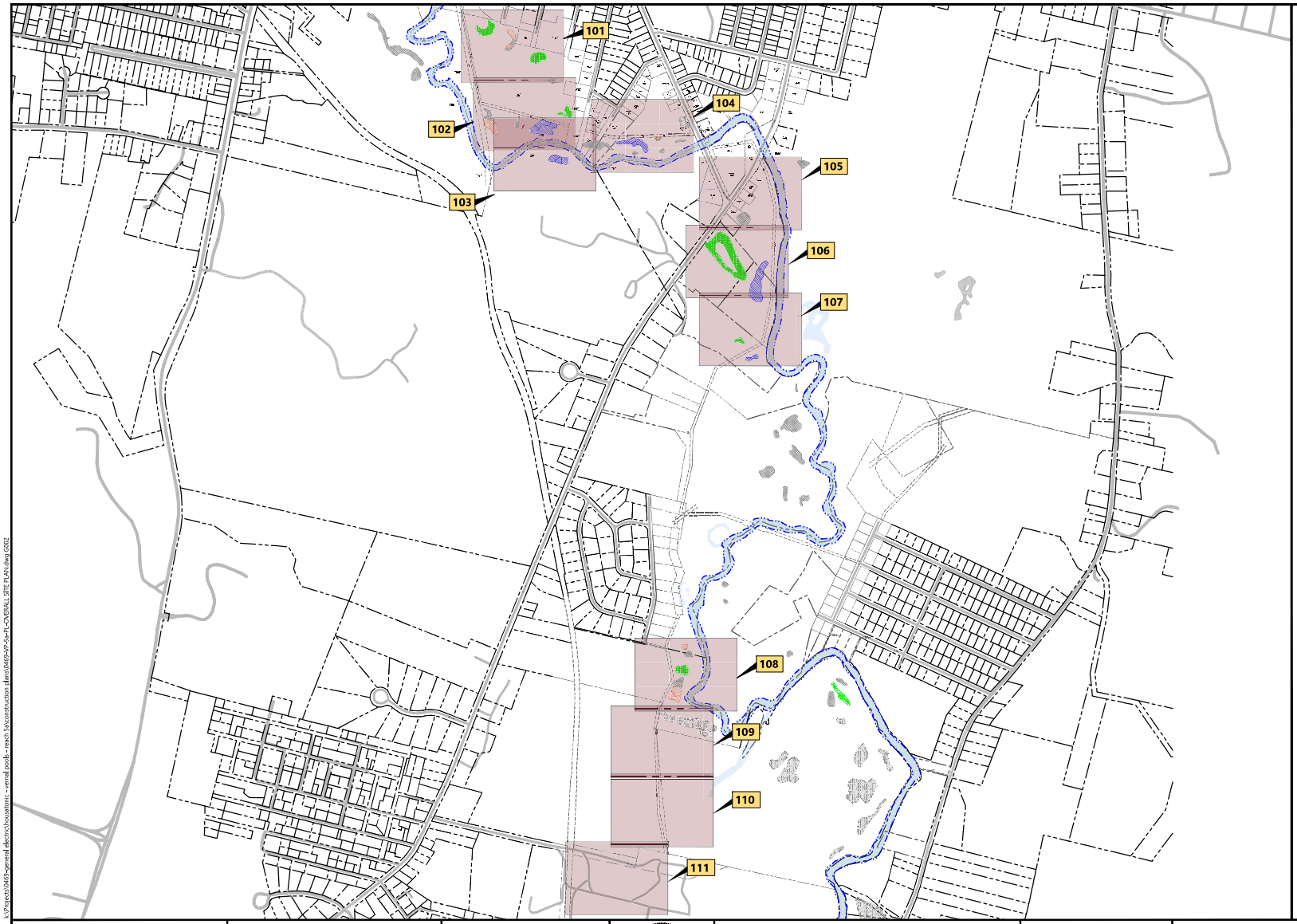
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

GENERAL NOTES AND LEGEND

G001

SHEET # 2 OF 42

Jun 19, 2026, 10:38am jmcabe K:\Projects\0468-general\electric\ousatonic - vernal pools - reach 5a\construction plans\0468-VP-5a-PL-Title Sheet.dwg G001



LEGEND:

- 101 — SHEET NAME AND DESIGNATION
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- ROADWAY
- RIVER
- **VERNAL POOLS (AECOM 2020, GE 2021)**
- OTHER NON-PILOT STUDY POOLS
- **VERNAL POOLS SELECTED FOR PILOT STUDY**
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET.

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

NORTH

0 500 1000

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

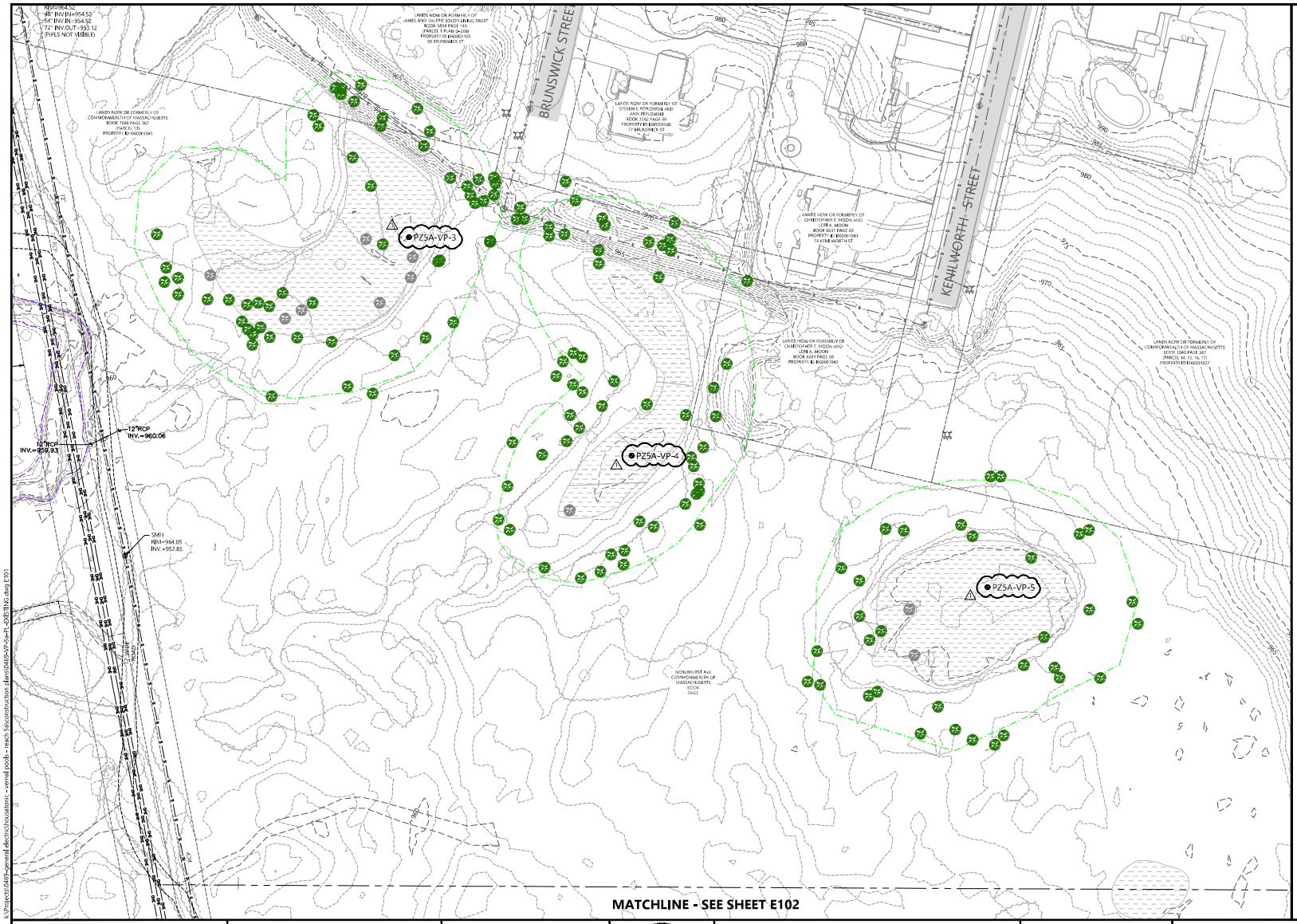
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

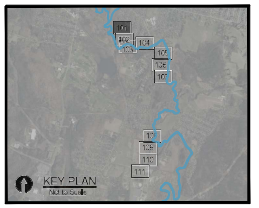
OVERALL SITE PLAN

G002

SHEET # 3 OF 42

Jun 19, 2026 | 1:23pm | rscalia
K:\Projects\0469-general electric\housatonic - vernal pools - reach 5\construction plans\0469-VP-5a-PL-OVERALL SITE PLAN.dwg G002





LEGEND:

- EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	**EXP. DATE** 06/30/28
STATE MASSACHUSETTS	**DATE SIGNED** 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

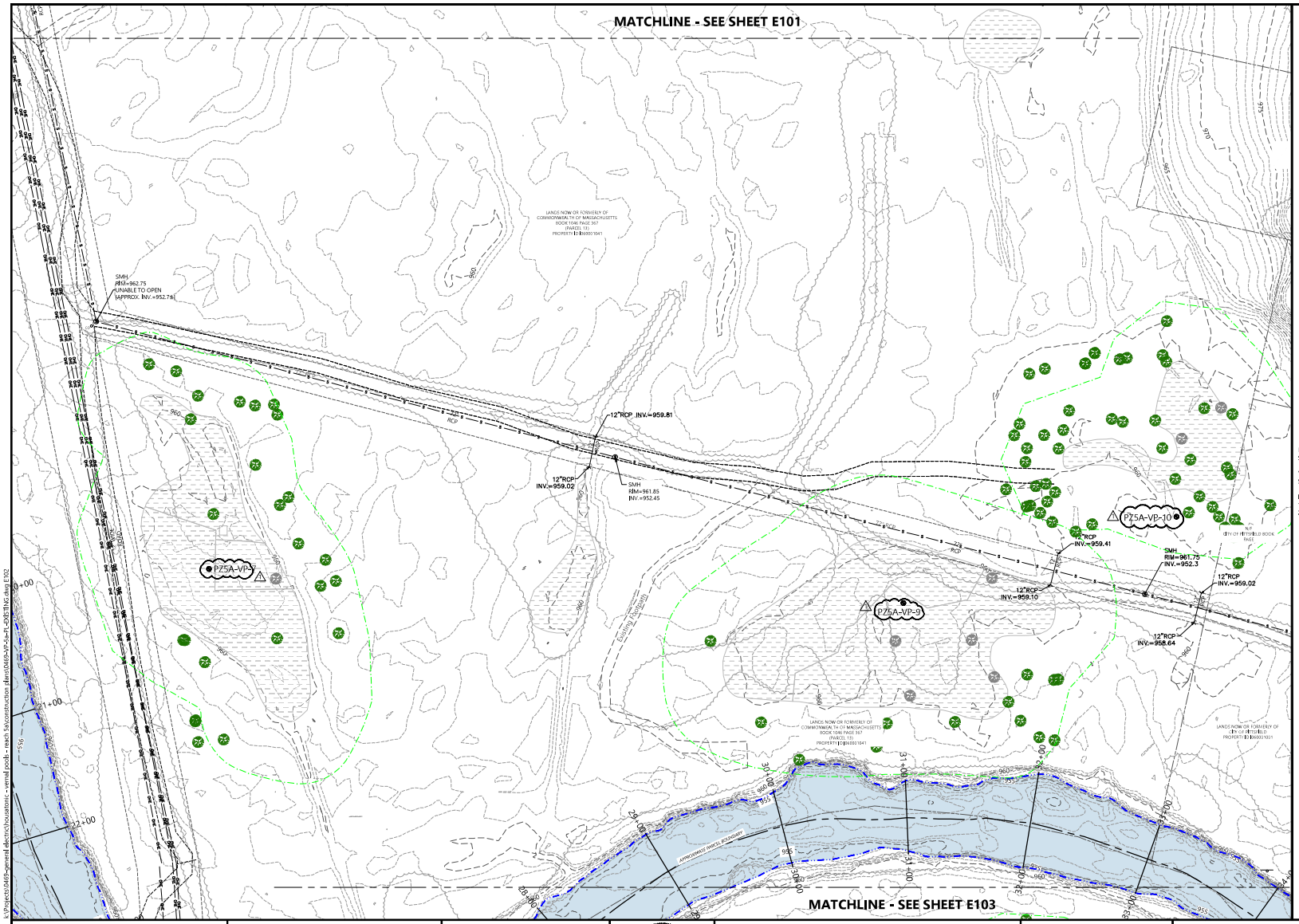
EXISTING PLAN VIEW
5A-VP-3, 5A-VP-4, 5A-VP-5

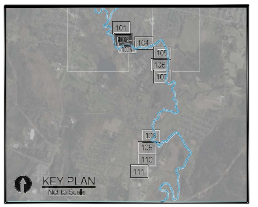
E101

SHEET # 4 OF 42

J:\Projects\0469-general electric\housatonic - vernal pools - reach 5A\construction plans\0469-VP-5A-PL-EXISTING.dwg E101

Jun 19, 2026 11:13am nicolaa





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BACKUP "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	**EXP. DATE** 06/30/28
STATE MASSACHUSETTS	**DATE SIGNED** 6/19/2026

COMMONWEALTH OF MASSACHUSETTS
CHARLES E GUEST
No. 58488
PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 13:02:57 -04'00'

REVISIONS

REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

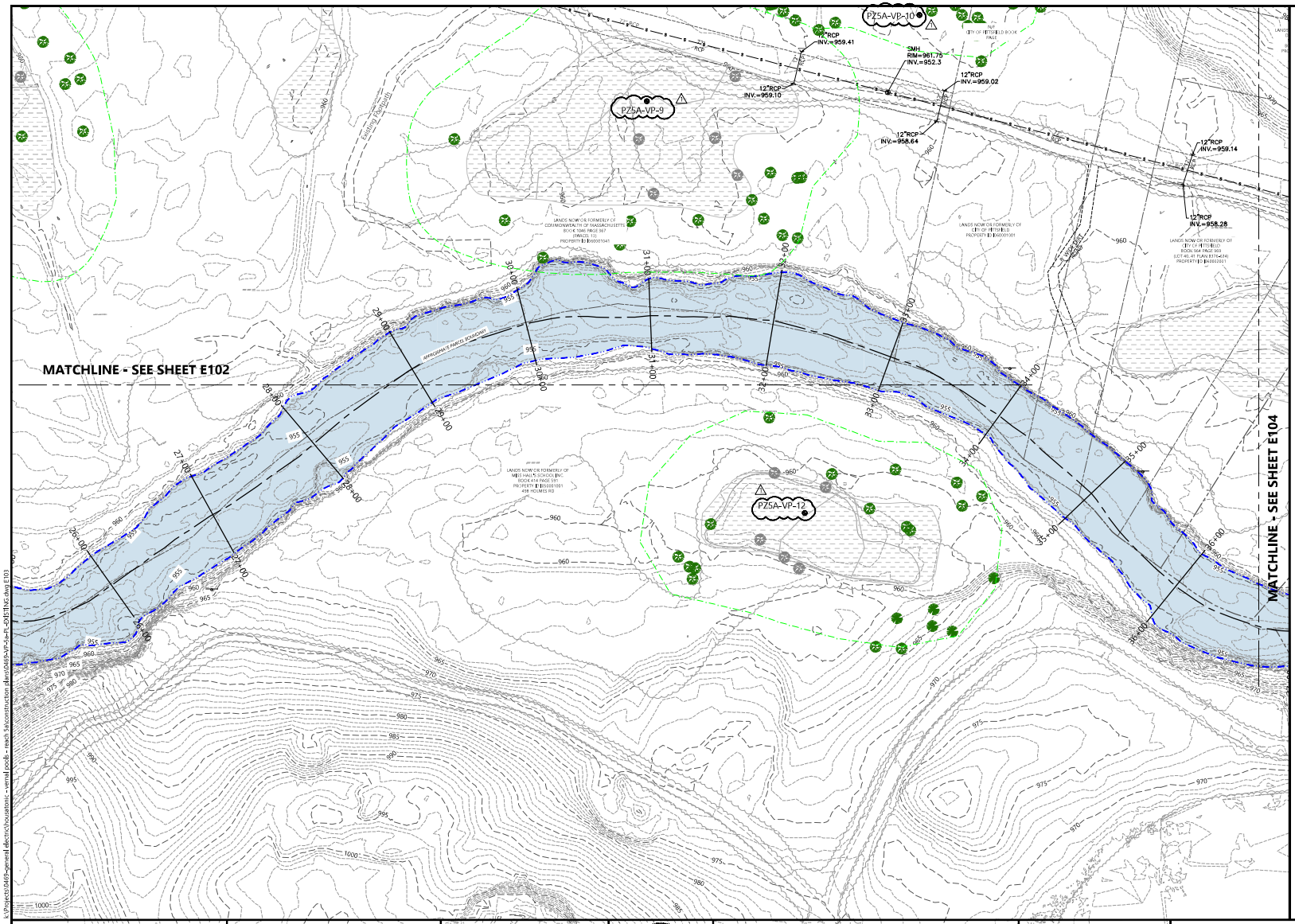
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

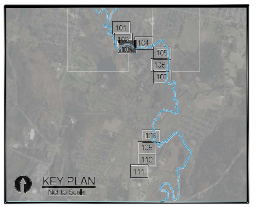
EXISTING PLAN VIEW
5A-VP-7, 5A-VP-9, 5A-VP-10

E102

SHEET # 5 OF 42

Jun 19, 2026 | 1:23pm rscalise
I:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PP_ENTIRE.dwg E102





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND PRINTED IN BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles E. Guest
Date: 2026.06.19 14:22:16 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

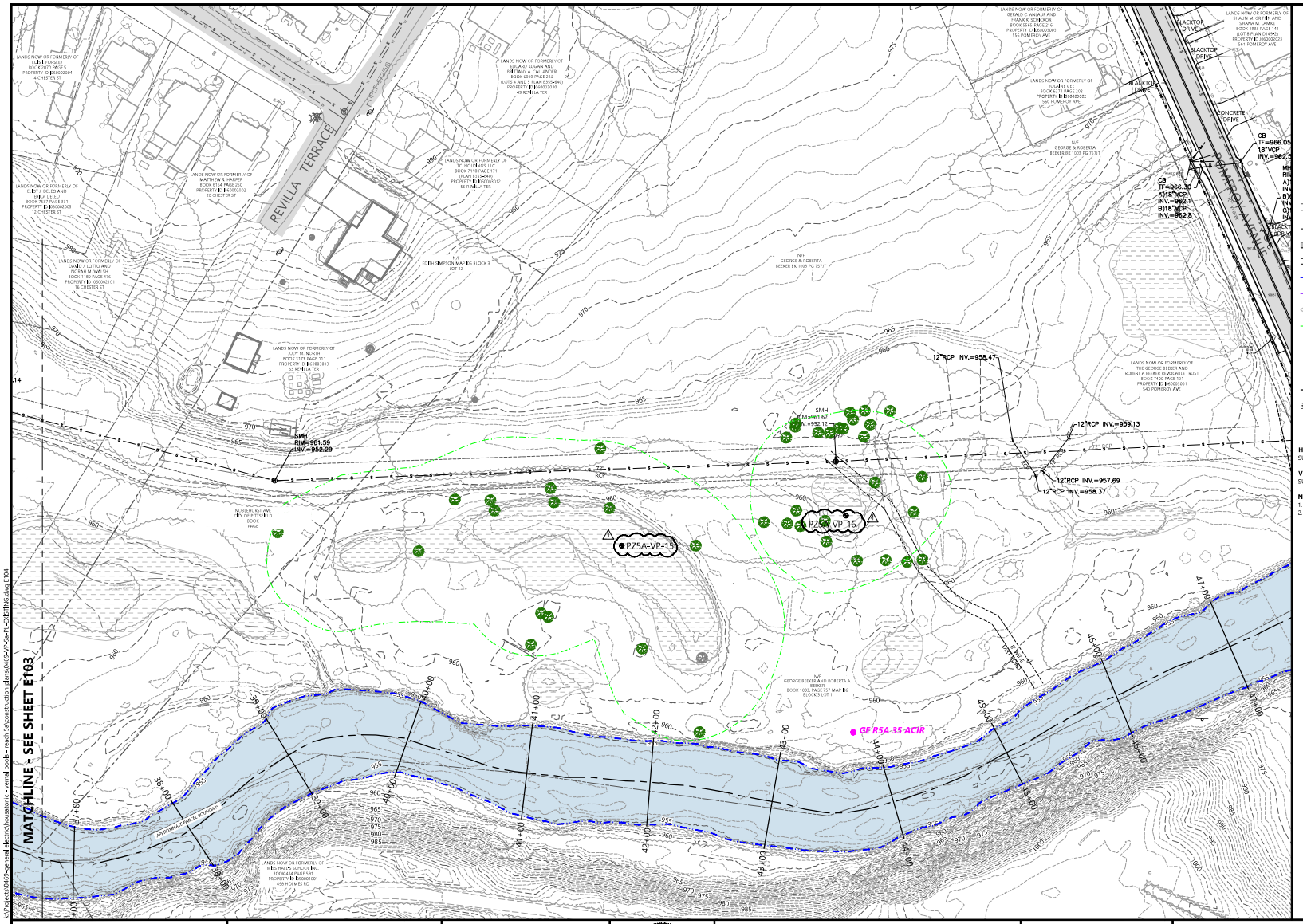
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

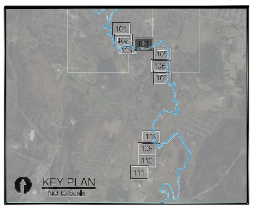
EXISTING PLAN VIEW
5A-VP-12

E103

SHEET # 6 OF 42

Jun 19, 2026 11:18am jacobs
K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PLAN-E003 TO E103.dwg E103





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NADB3), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. IF NOT IN COLOR, TEXT IN BLACK IS BLUE.

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST

PROFESSIONAL ENGINEER'S LICENSE NO.: 58488

EXP. DATE: 06/30/28

STATE: MASSACHUSETTS

DATE SIGNED: 6/17/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest Date: 2026.06.19 13:57:31 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKINEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

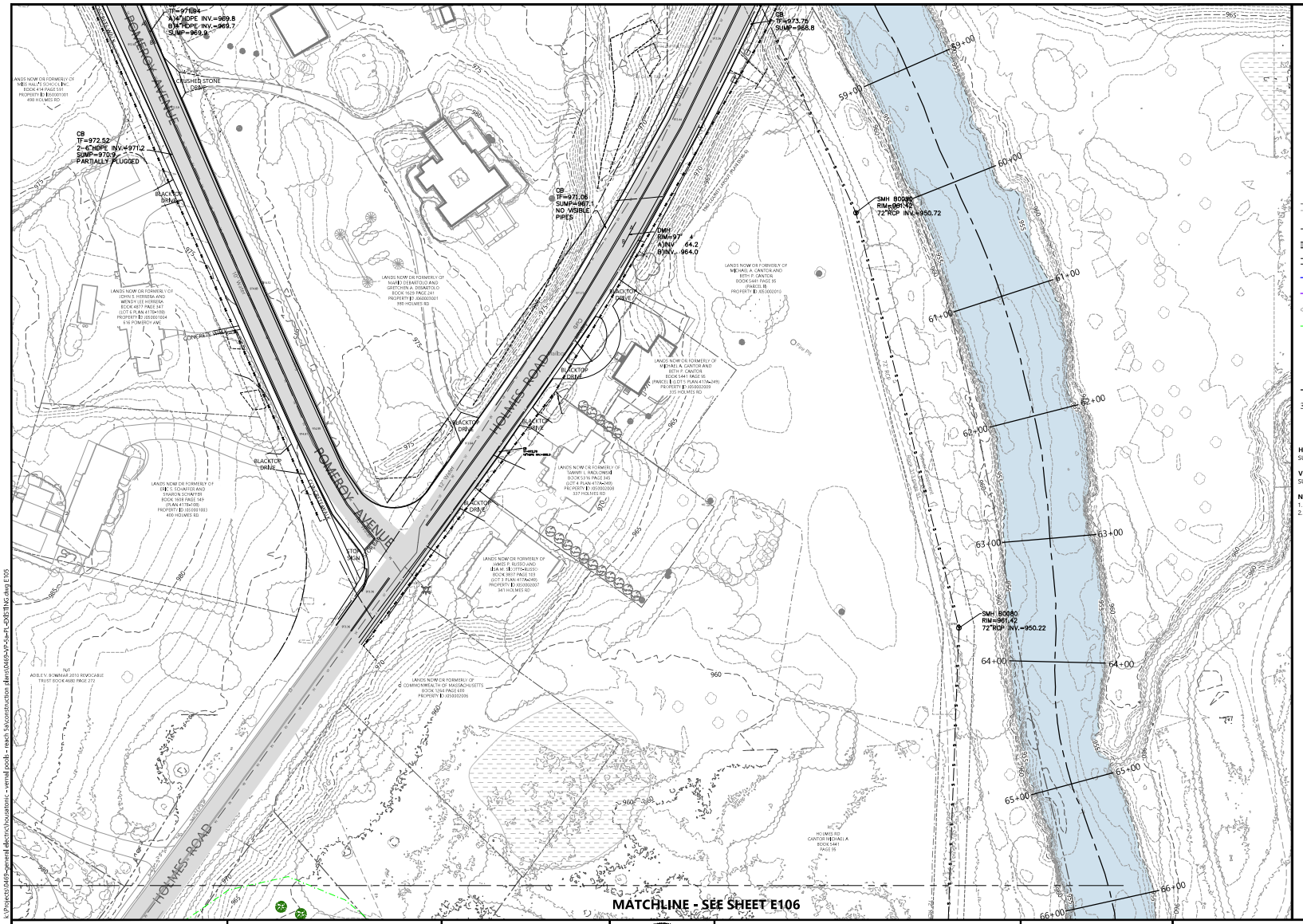
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

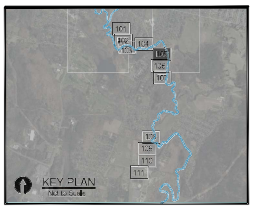
EXISTING PLAN VIEW
5A-VP-15, 5A-VP-16

E104

SHEET # 7 OF 42

Jun 19, 2026 | 10:05am jacobs
K:\Projects\0405-general electric\housatonic - vernal pools - reach 5a\construction plans\0405A-VP-5a-PL-E05TN01.dwg E104





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND PRINTED IN "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/1/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY:	E. GLAZA
DRAWN BY:	C. YARD / P. SCIABA
CHECKED BY:	C. GUEST / D. BINKNEY
APPROVED BY:	C. GUEST
SCALE:	AS NOTED
DATE:	MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

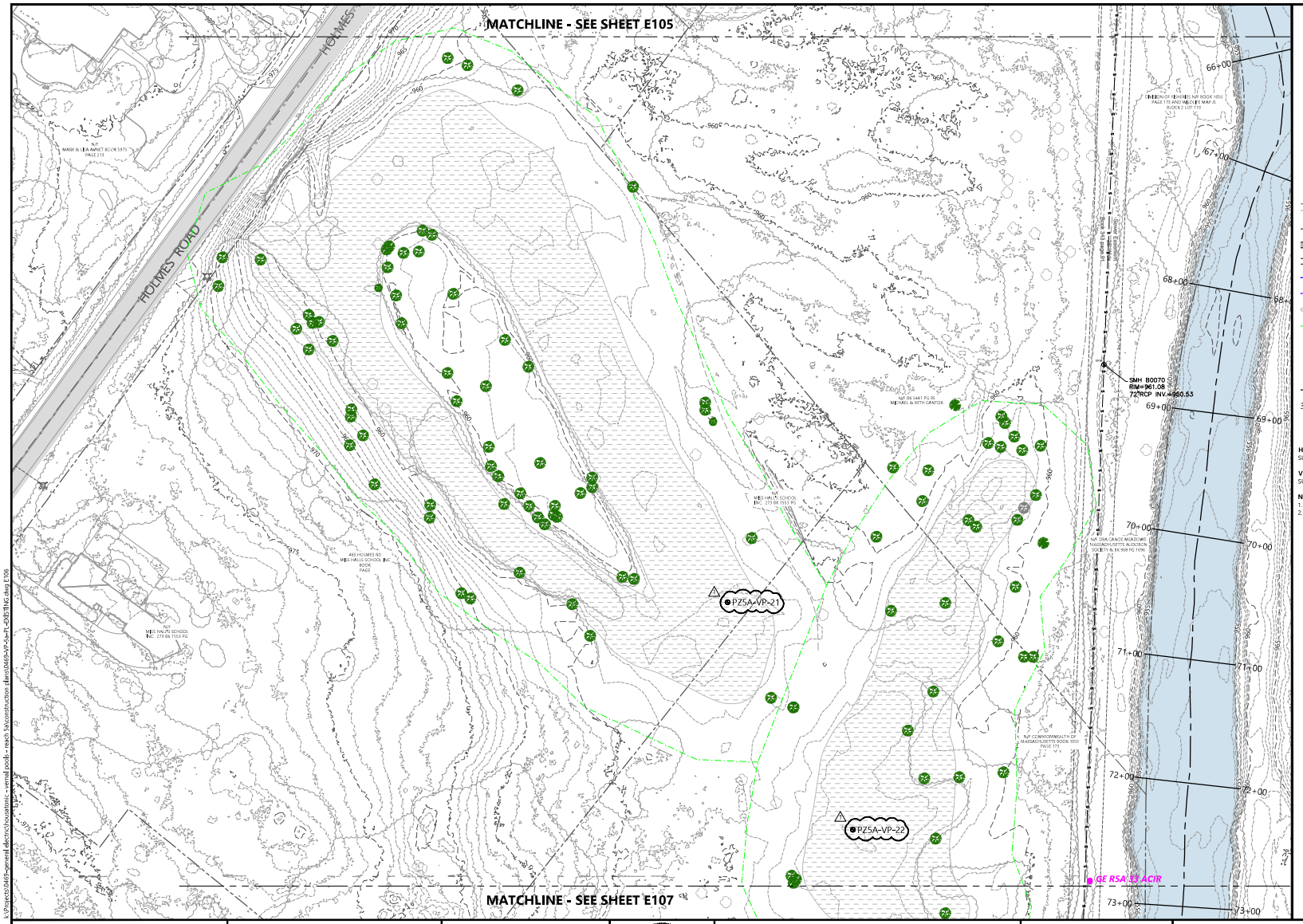
EXISTING PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM HOLMES ROAD

E105

SHEET # 8 OF 42

J:\Projects\0405-general electric\housatonic - vernal pools - reach 5\construction plans\0405-VP-5-ref_E001TNG.dwg E105

Jun 19, 2026 1:07pm nicolaba





LEGEND:

- EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

PLAN INTENDED TO BE VIEWED IN COLOR. ACTIVITY BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST

PROFESSIONAL ENGINEER'S LICENSE NO.: 58488 — EXP. DATE: 06/30/28

STATE: MASSACHUSETTS — DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

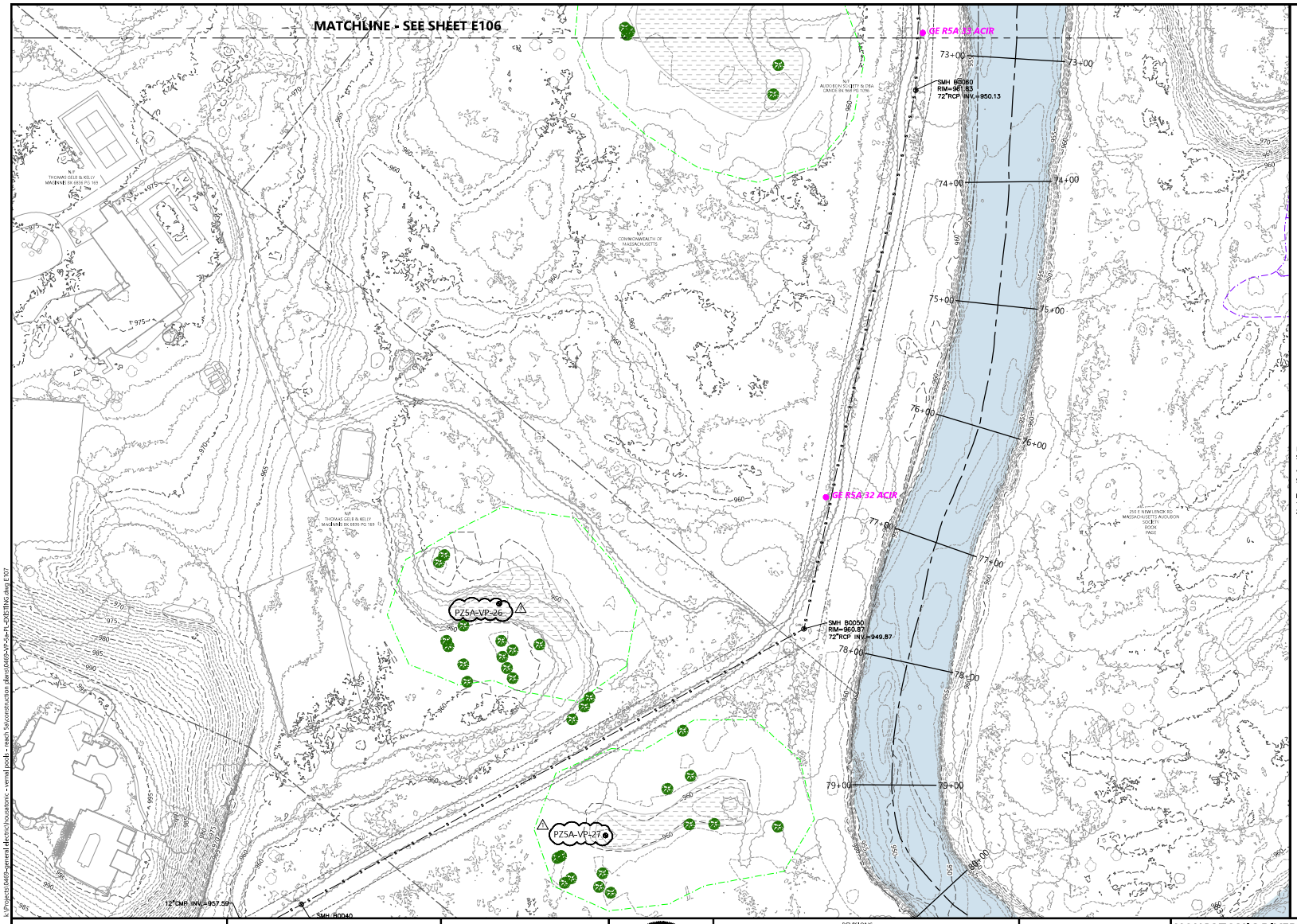
EXISTING PLAN VIEW
5A-VP-21, 5A-VP-22

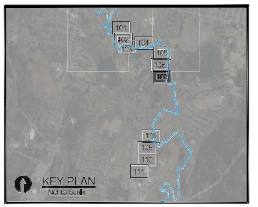
E106

SHEET # 9 OF 42

I:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\MXD\5A-VP-21-22_E105TO107.dwg E106

Jun 19, 2026 1:100mm resolve





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BACKGROUND "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/17/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

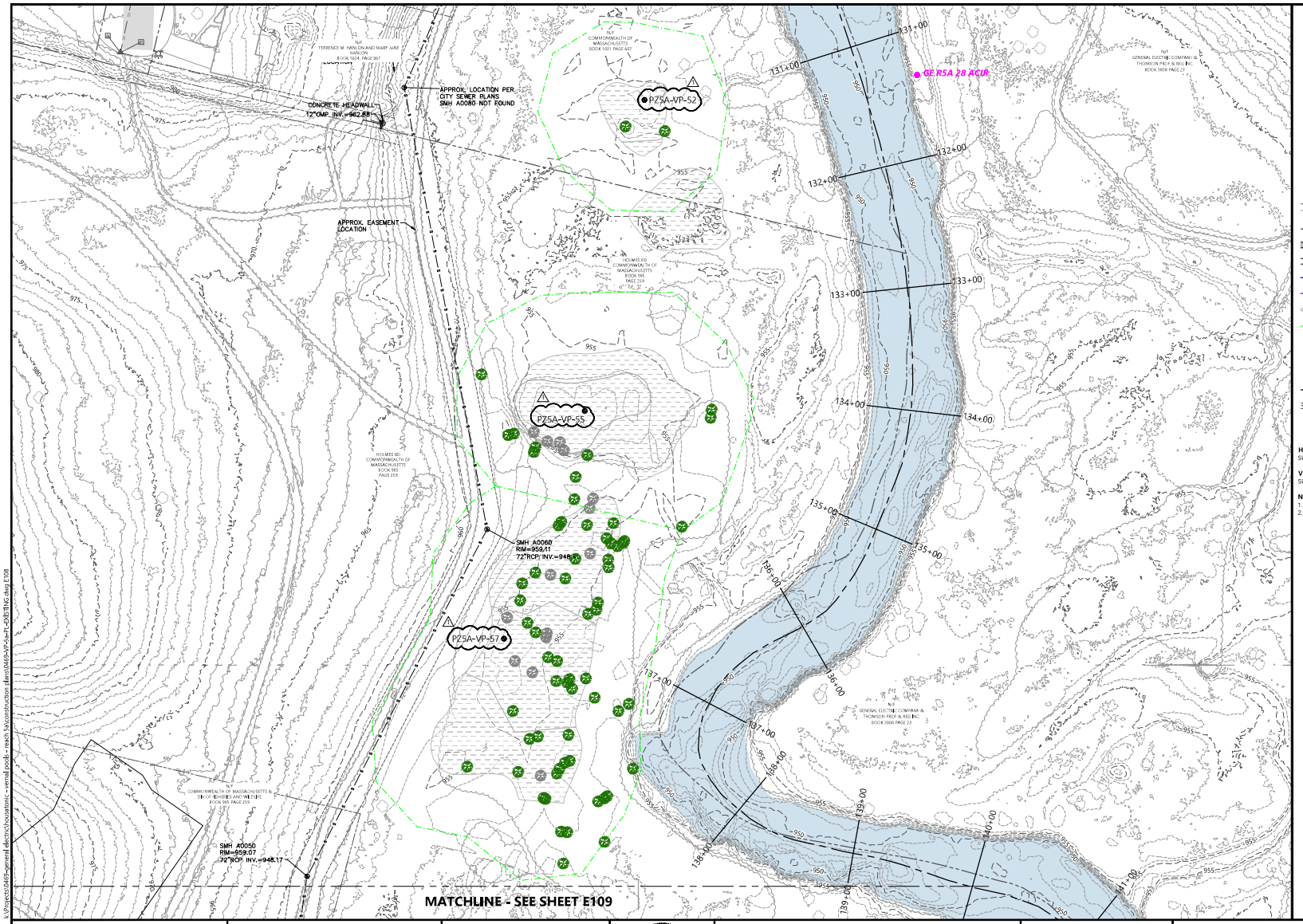
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

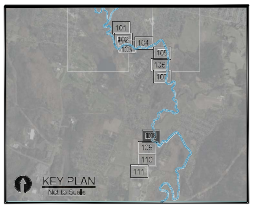
EXISTING PLAN VIEW
5A-VP-26, 5A-VP-27

E107

SHEET # 10 OF 42

Jun 19, 2026, 11:11am jmcabe
K:\Projects\0493-general electric\housatonic - vernal pools - reach 5A\construction plans\0493-VP-5A-PP_E001TNG.dwg E107





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJUST BACKGROUND "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 13:23:56 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

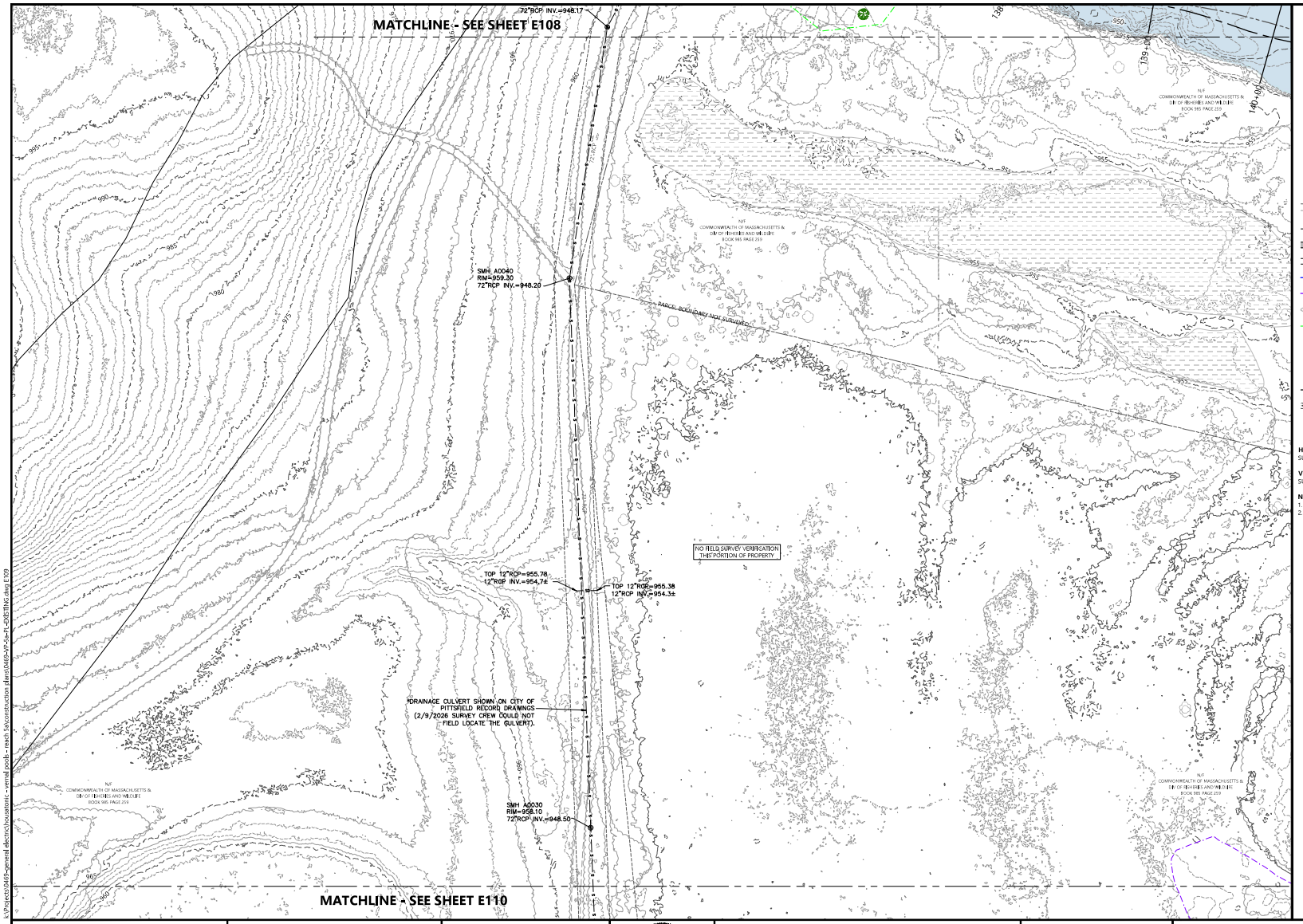
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

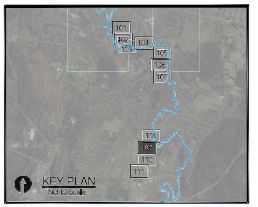
EXISTING PLAN VIEW
5A-VP-52, 5A-VP-55, 5A-VP-57

E108

SHEET # 11 OF 42

Jun 19, 2026 11:18am nicolaha
K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PP_E001TO1C.dwg E108





LEGEND:

- 950 EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- 72 LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJUSTMENT BASED ON "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS CHARLES E GUEST No. 58488 PROFESSIONAL ENGINEER

Digitally signed by Charles Guest Date: 2026.06.19 13:26:52 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

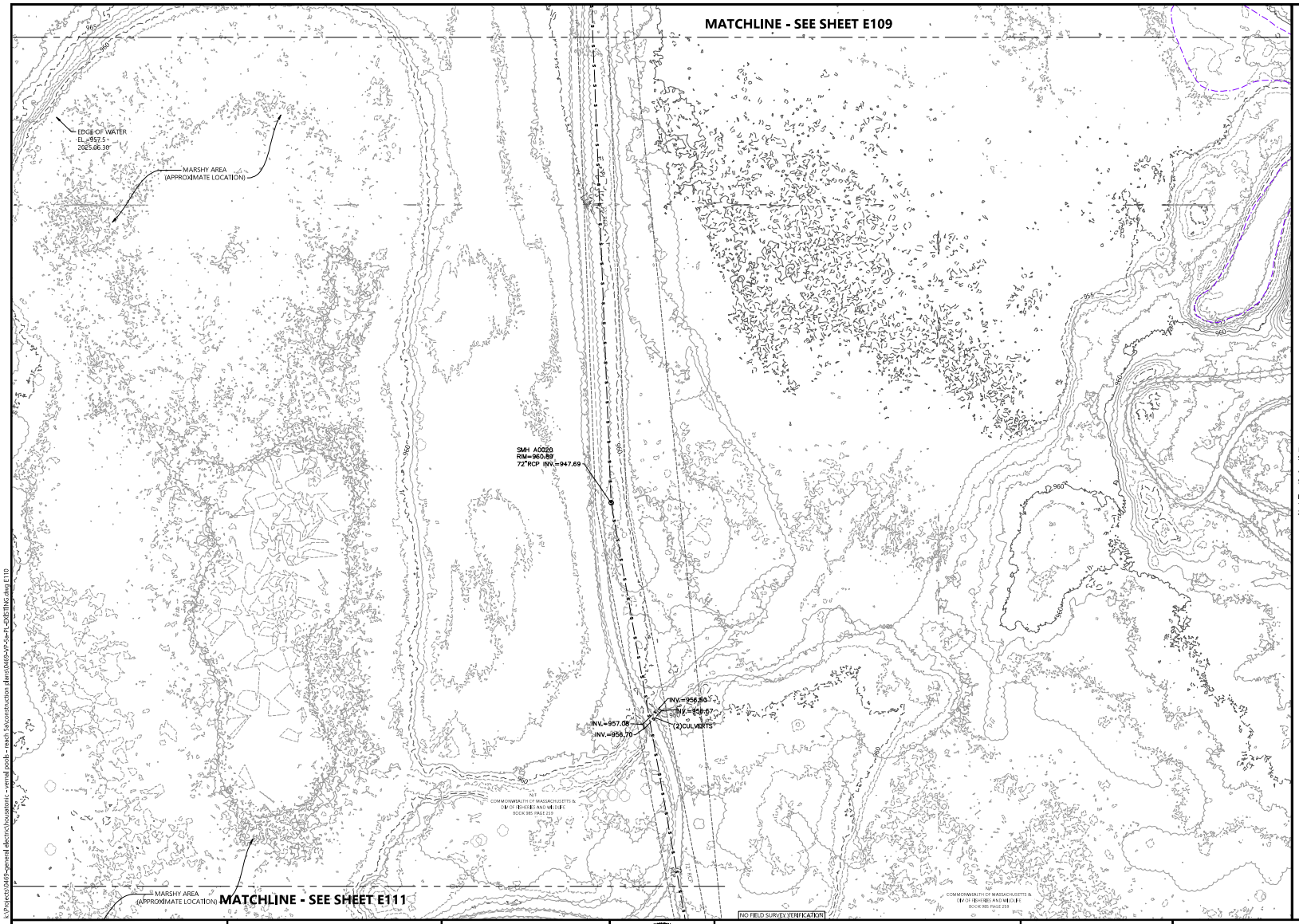
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

EXISTING PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 1)

E109

SHEET # 12 OF 42

Jun 19, 2026 11:13am nicolaba
X:\Projects\0468-general electric\housatonic - vernal pools - reach 5\4construction plans\0468-VP-5-PLAN-E001TN01.dwg E109





LEGEND:

- 950 EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- 75 LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND PRINTED IN "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles E Guest
Date: 2026.06.19 13:38:59 -04'00'

NO FIELD SURVEY VERIFICATION

REVISIONS

REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

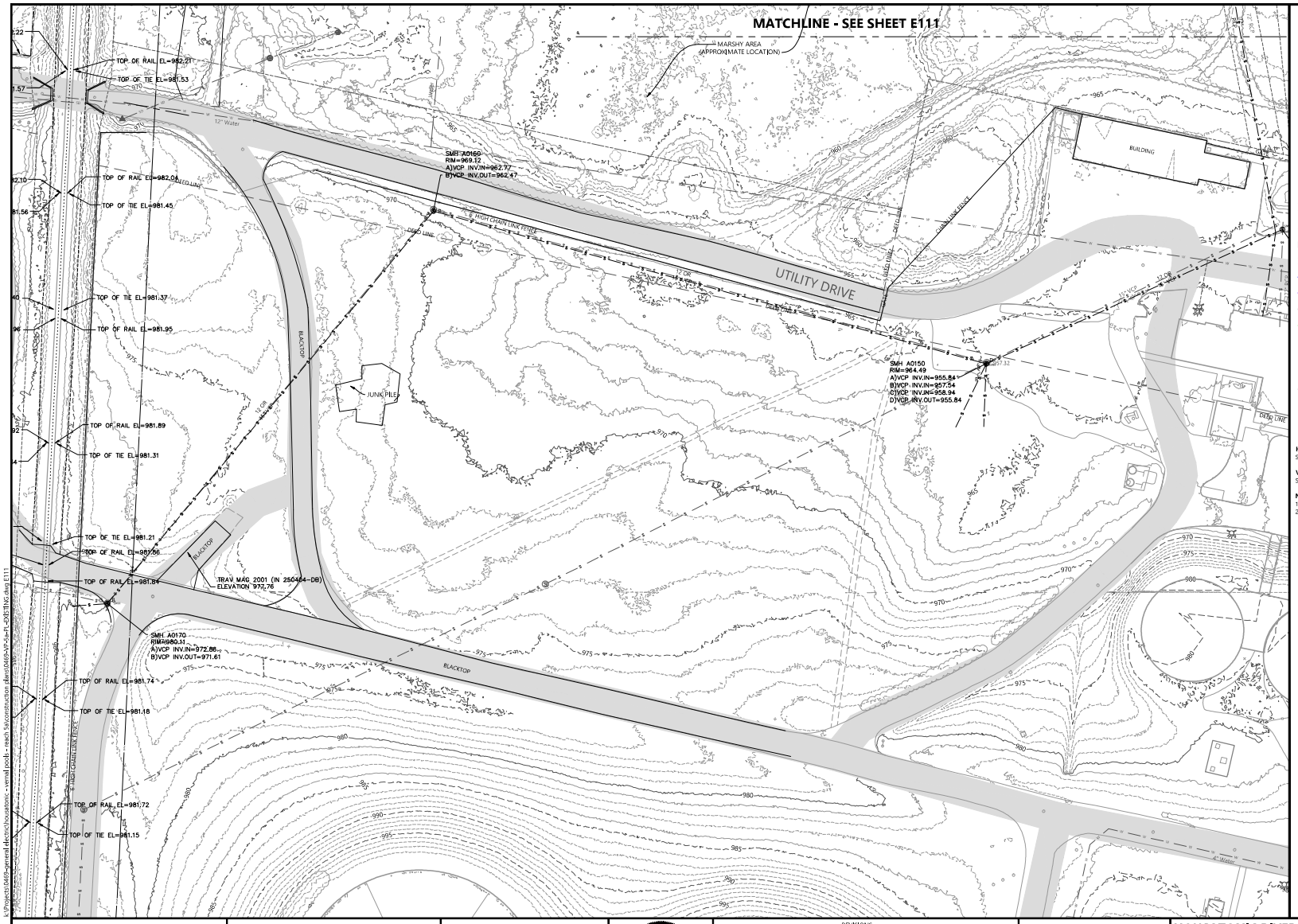
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

EXISTING PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 2)

E110

SHEET # 13 OF 42

Jun 19, 2026 1:20pm nicolba
K:\Projects\0469-general electric\cad\cad - vernal pools - main file\construction plans\0469-VP-Sht-PLAN-EXISTING.dwg E110



LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- VERNAL POOL BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- 75 LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJUSTMENT BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/17/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 13:32:09 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

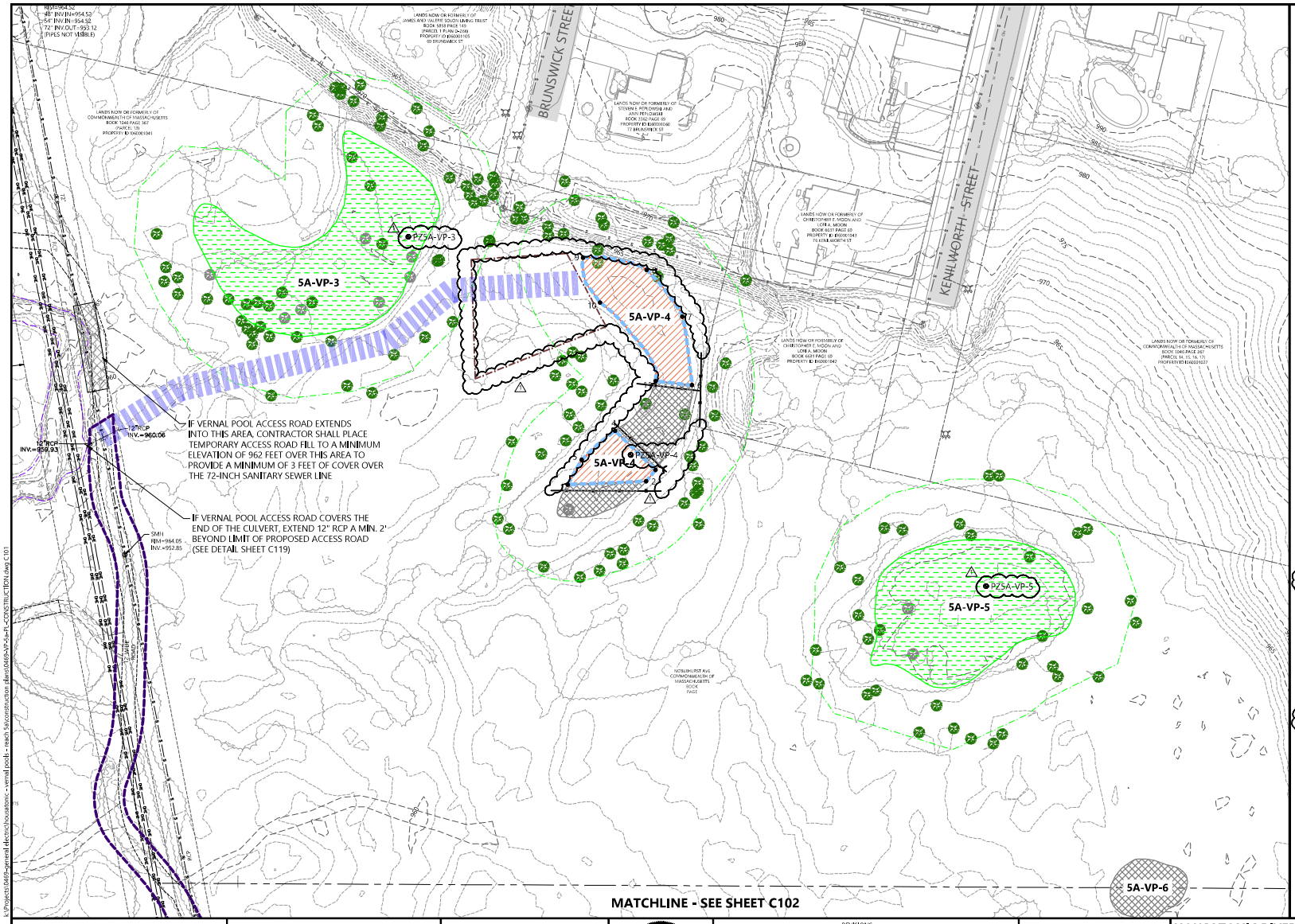
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

EXISTING PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 3)

E111

SHEET # 14 OF 42

Jun 19, 2026 | 10:04am | rscobie
V:\Projects\GE\general electric\housatonic - vernal pools - reach 5\construction plans\MXD\PVP-Sht-E111NC.dwg E111



ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488
EXP. DATE: 06/30/28
STATE: MASSACHUSETTS
DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS CHARLES E GUEST No. 58488 PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 13:34:58 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKINEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

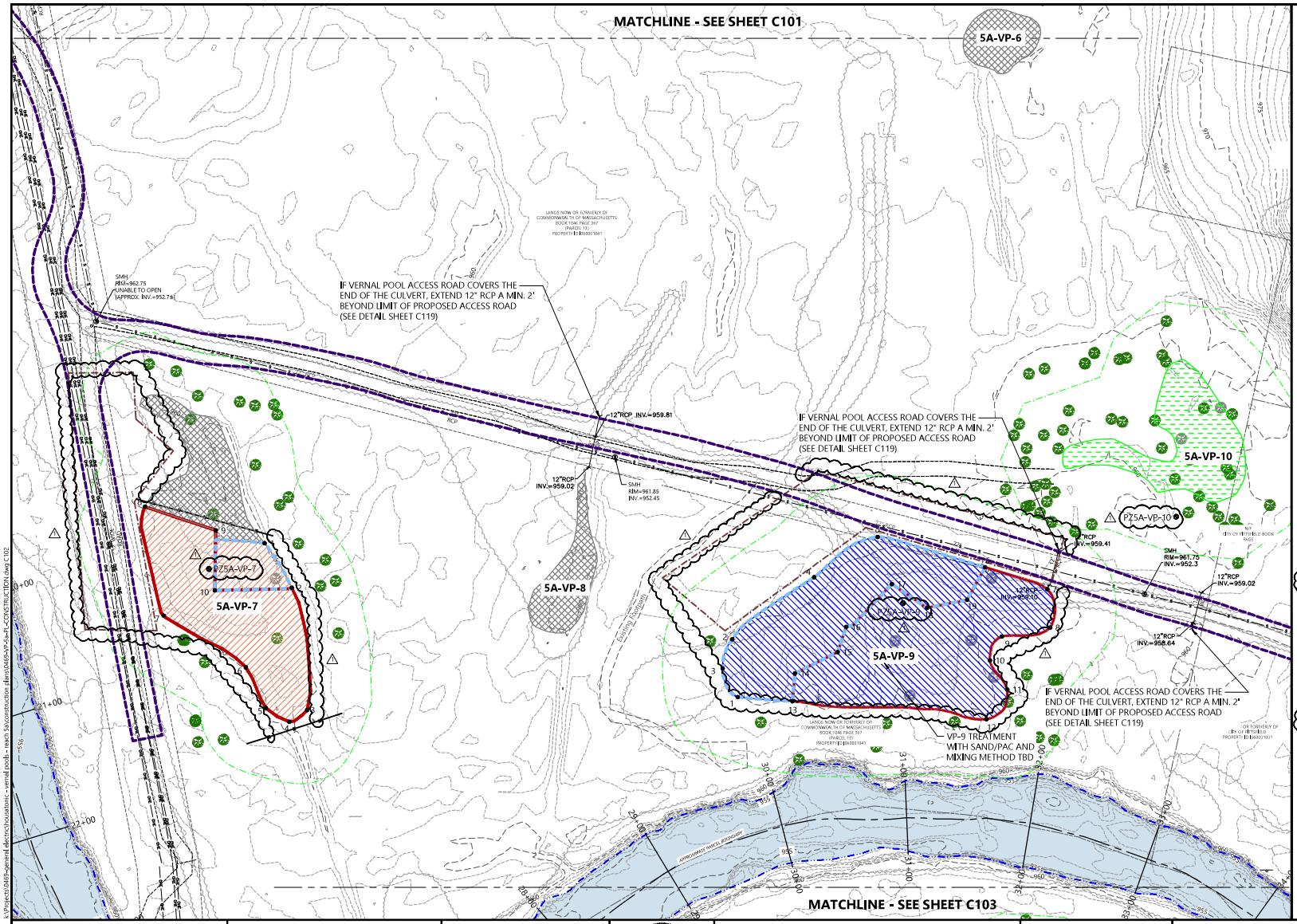
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

CONSTRUCTION PLAN VIEW
5A-VP-3, 5A-VP-4, 5A-VP-5

C101

SHEET # 15 OF 42

Jun 19, 2026 | 1:25pm | rscalise
X:\Projects\0489-general electric\housatonic - vernal pools - reach 5A\construction plans\0489-VP-5A-PL-CONSTRUCTION.dwg | C101



ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER
Digitally signed by Charles Guest
Date: 2026.06.19 13:36:40 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

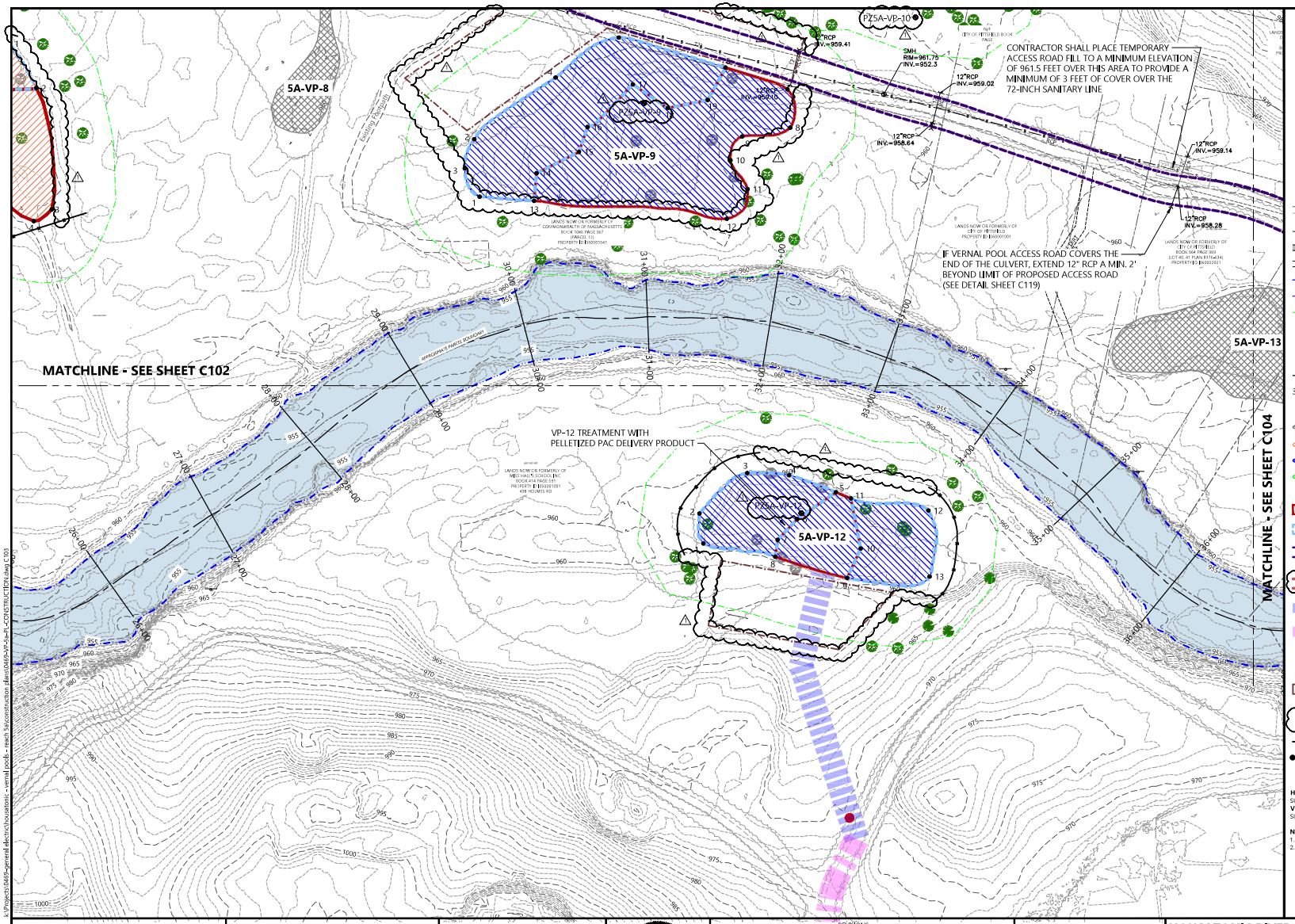
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

CONSTRUCTION PLAN VIEW
5A-VP-7, 5A-VP-9, 5A-VP-10

C102

SHEET # 16 OF 42

Jun 19, 2026 | 1:09pm | rscalise
K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-CONSTRUCTION.dwg C102





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX ● CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION. EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80
SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ANY BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 14:50:54 -04'00'

REVISIONS

REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

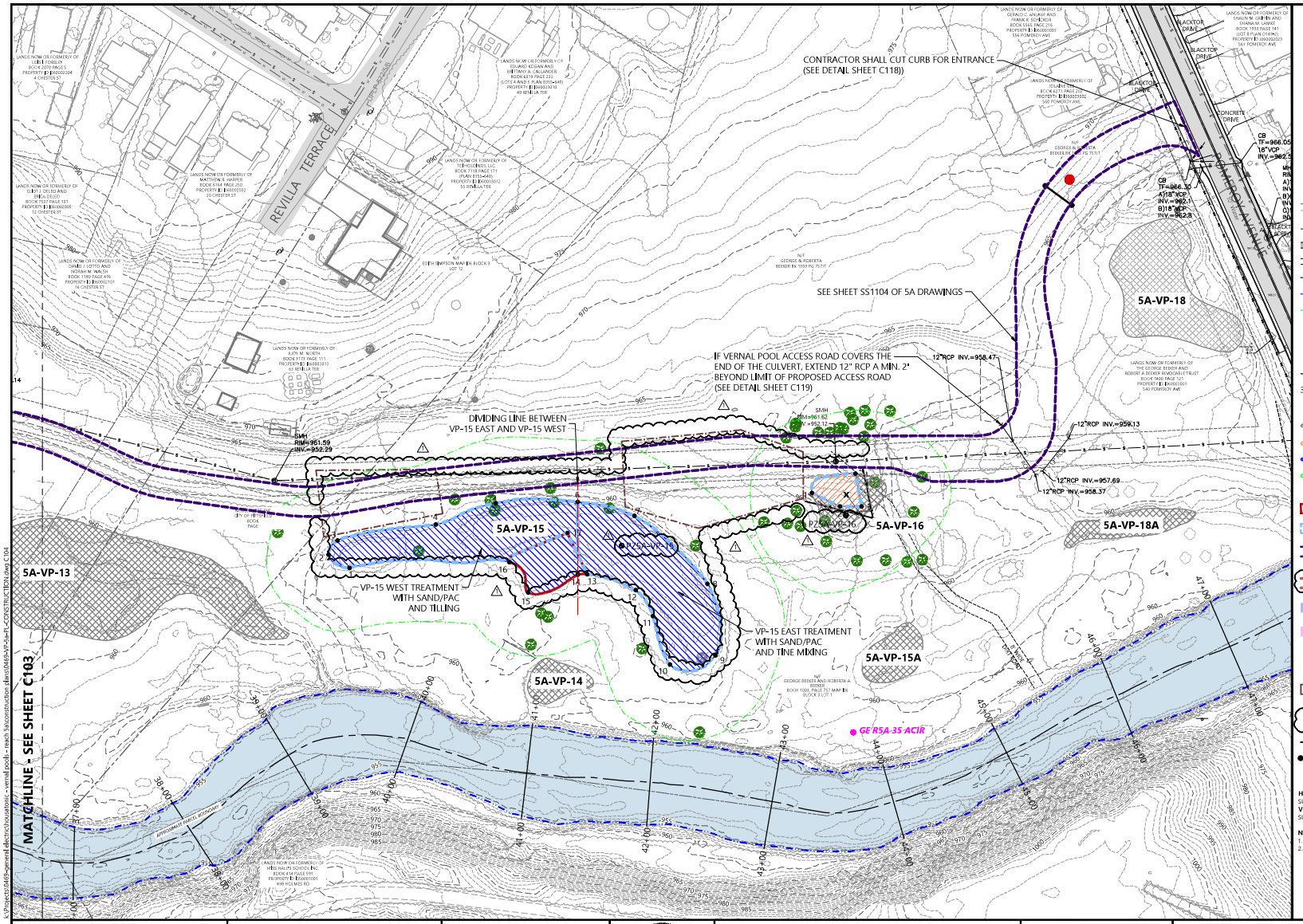
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

CONSTRUCTION PLAN VIEW
5A-VP-12

C103

SHEET # 17 OF 42

Jun 19, 2026 11:18am jmcabe
k:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-CONSTRUCTION.dwg C103



ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKINEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

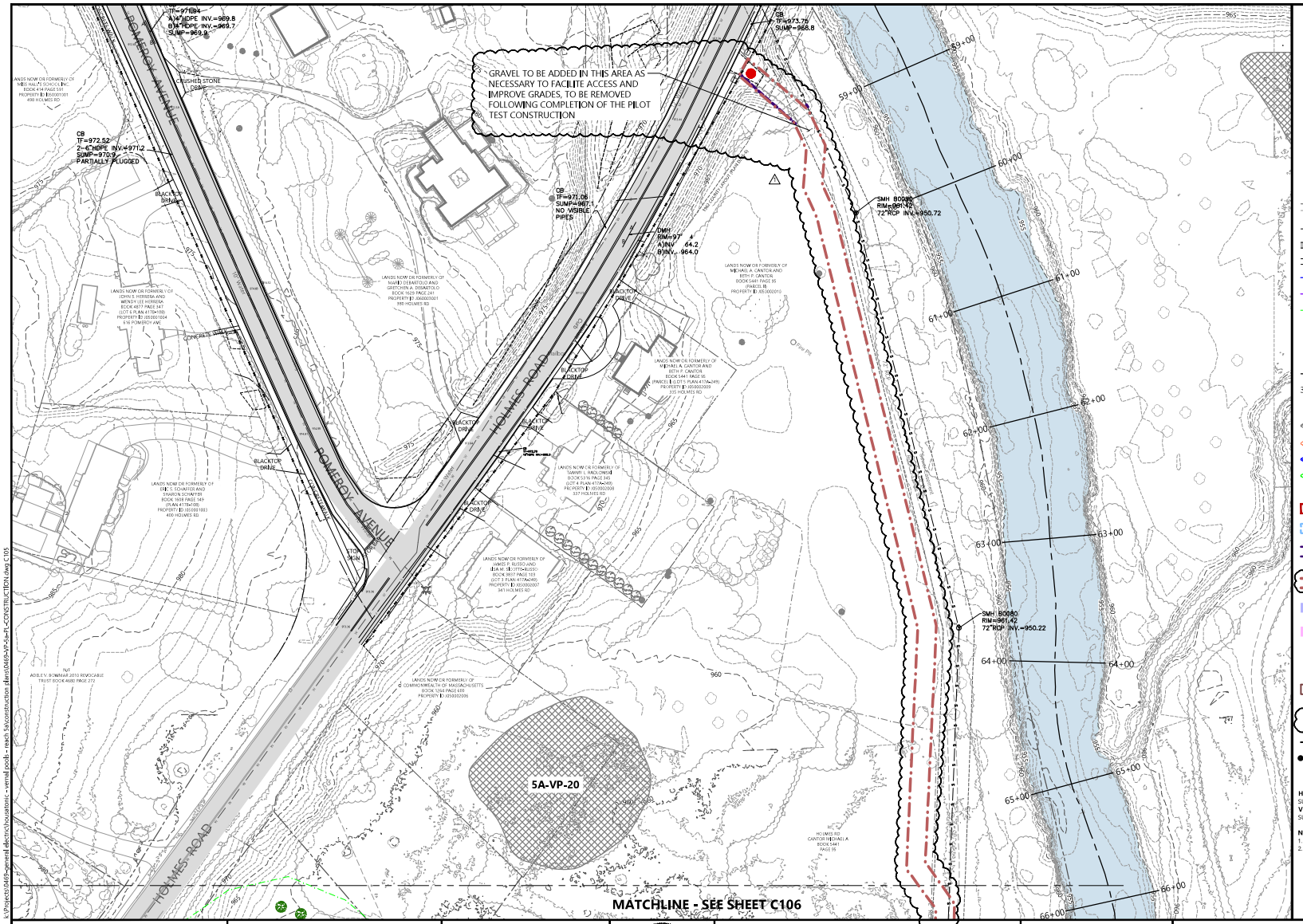
CONSTRUCTION PLAN VIEW
5A-VP-15, 5A-VP-16

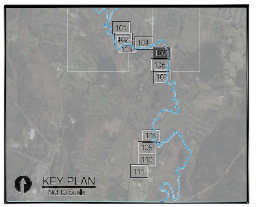
C104

SHEET # 18 OF 42

J:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-CONSTRUCTION.dwg C104

Jun 19, 2026 11:13am nicolaba





LEGEND:

- EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION. EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

0 40 80
SCALE IN FEET

NORTH

PLAN INTENDED TO BE VIEWED IN COLOR. PRINT BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 14:48:53 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

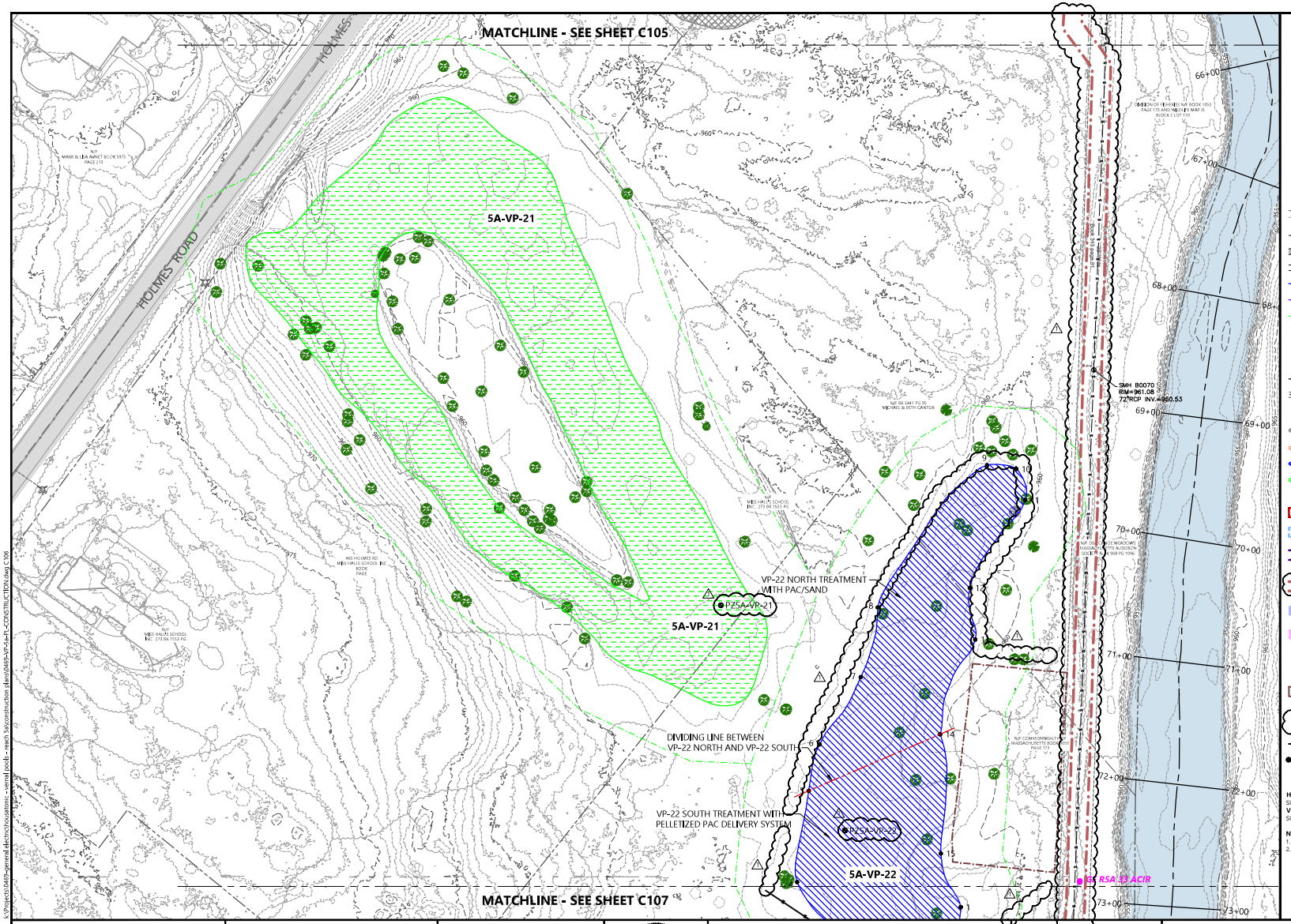
CONSTRUCTION PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM HOLMES ROAD

C105

SHEET # 19 OF 42

J:\Projects\0405-general electric\cad\cad\misc - vernal pools - reach 5A\construction plans\0405-VP-5A-PL-CONSTRUCTION.dwg C105

Jun 19, 2026 1:20pm nicolaba



ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488
EXP. DATE: 06/30/28
STATE: MASSACHUSETTS
DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

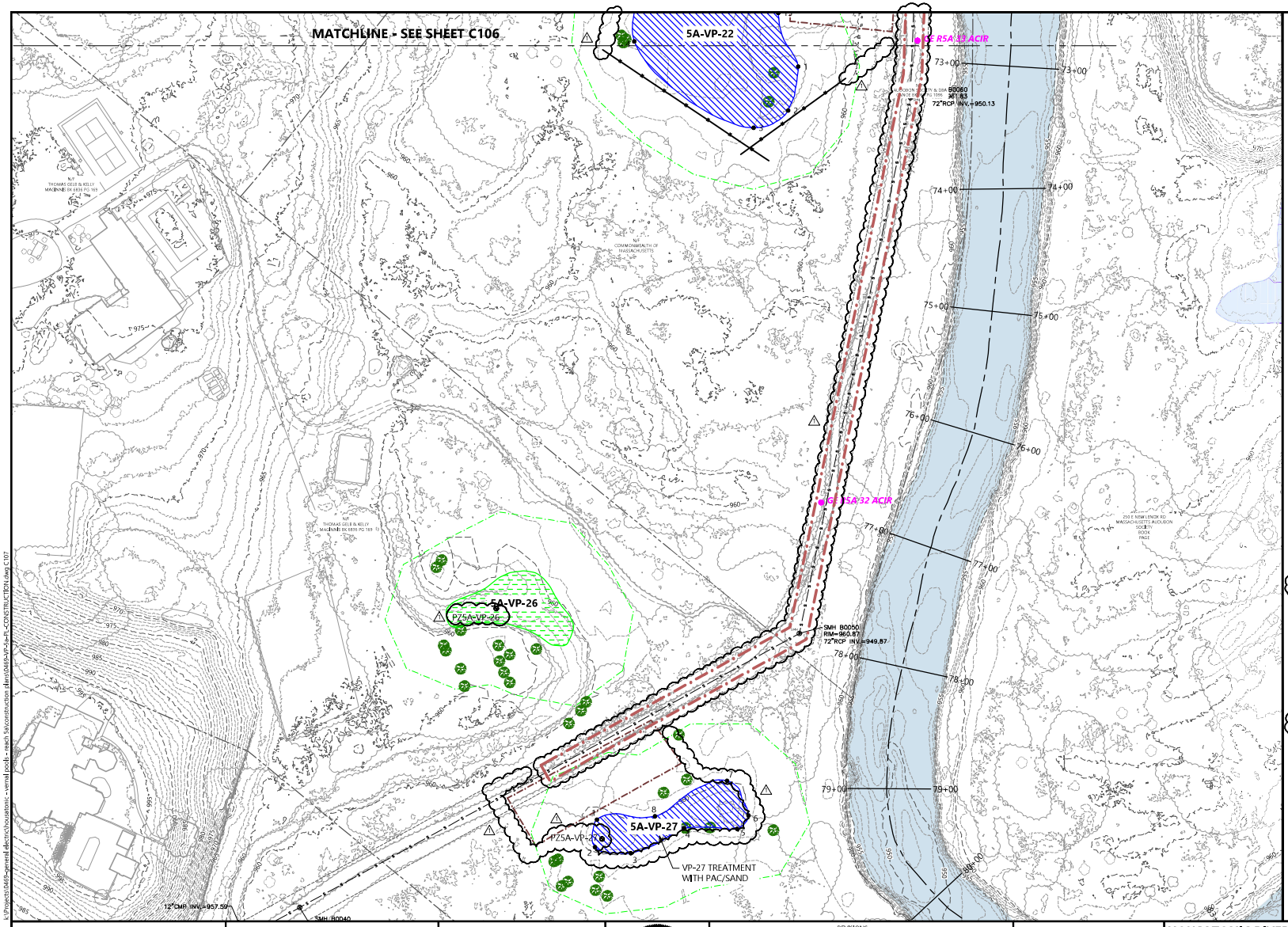
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

CONSTRUCTION PLAN VIEW
5A-VP-21, 5A-VP-22

C106

SHEET # 20 OF 42

Jun 19, 2026 - 11:02am rscalise
X:\Projects\0469-general electric\housatonic - vernal pools - reach 5A\construction plans\0469-VP-5A-PL-CONSTRUCTION.dwg C106



ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488
EXP. DATE: 06/30/28
STATE: MASSACHUSETTS
DATE SIGNED: 6/17/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.09 14:41:20 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

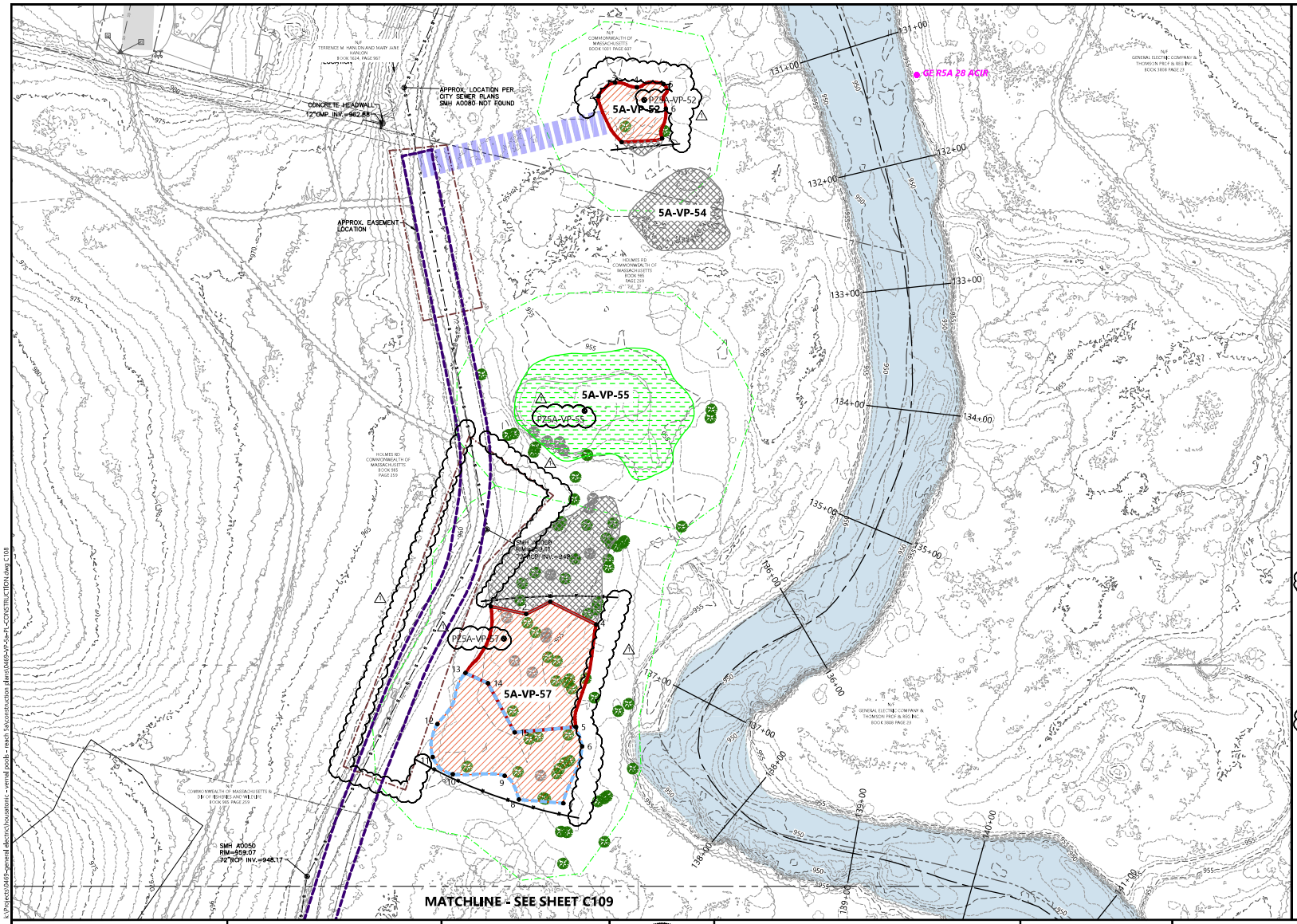
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

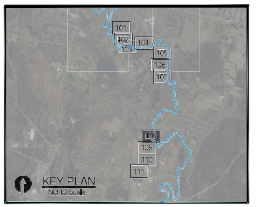
CONSTRUCTION PLAN VIEW
5A-VP-26, 5A-VP-27

C107

SHEET # 21 OF 42

Jun 19, 2026 | 1:107mm inside
k:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-CONSTRUCTION.dwg C107





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX ● CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION. EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

0 40 80
SCALE IN FEET

NORTH

PLAN INTENDED TO BE VIEWED IN COLOR. IF NOT IN COLOR, ADDITIONAL INFORMATION IN BLUE IS

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/17/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

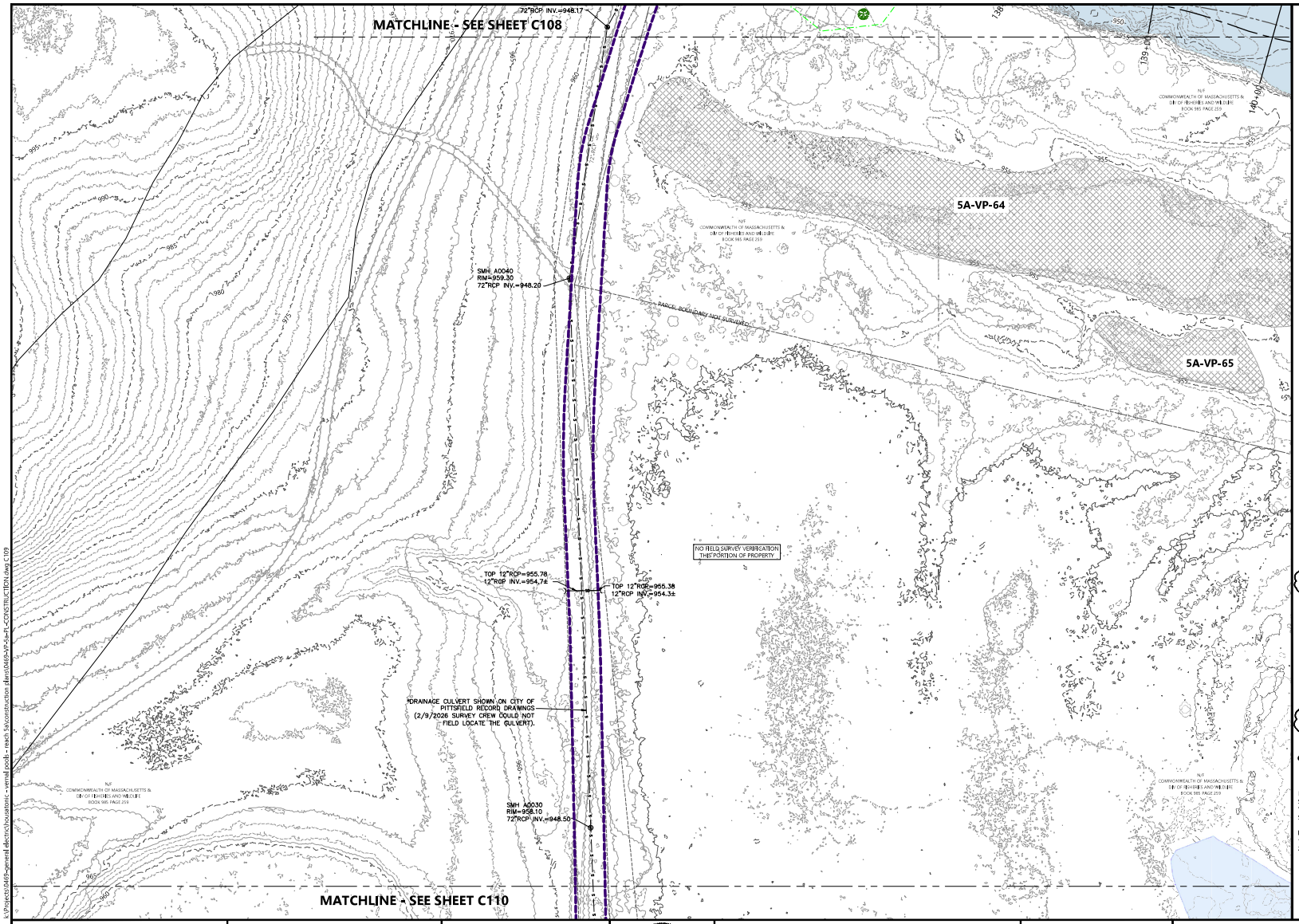
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

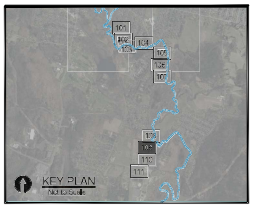
CONSTRUCTION PLAN VIEW
5A-VP-52, 5A-VP-55, 5A-VP-57

C108

SHEET # 22 OF 42

Jun 19, 2026 | 1:22pm | rsciaba
I:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-CONSTRUCTION.dwg | C108





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION. EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

NORTH

0 40 80
SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. IF NOT BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488
EXP. DATE: 06/30/28
STATE: MASSACHUSETTS
DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles E. Guest
Date: 2026.06.19 14:34:42 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

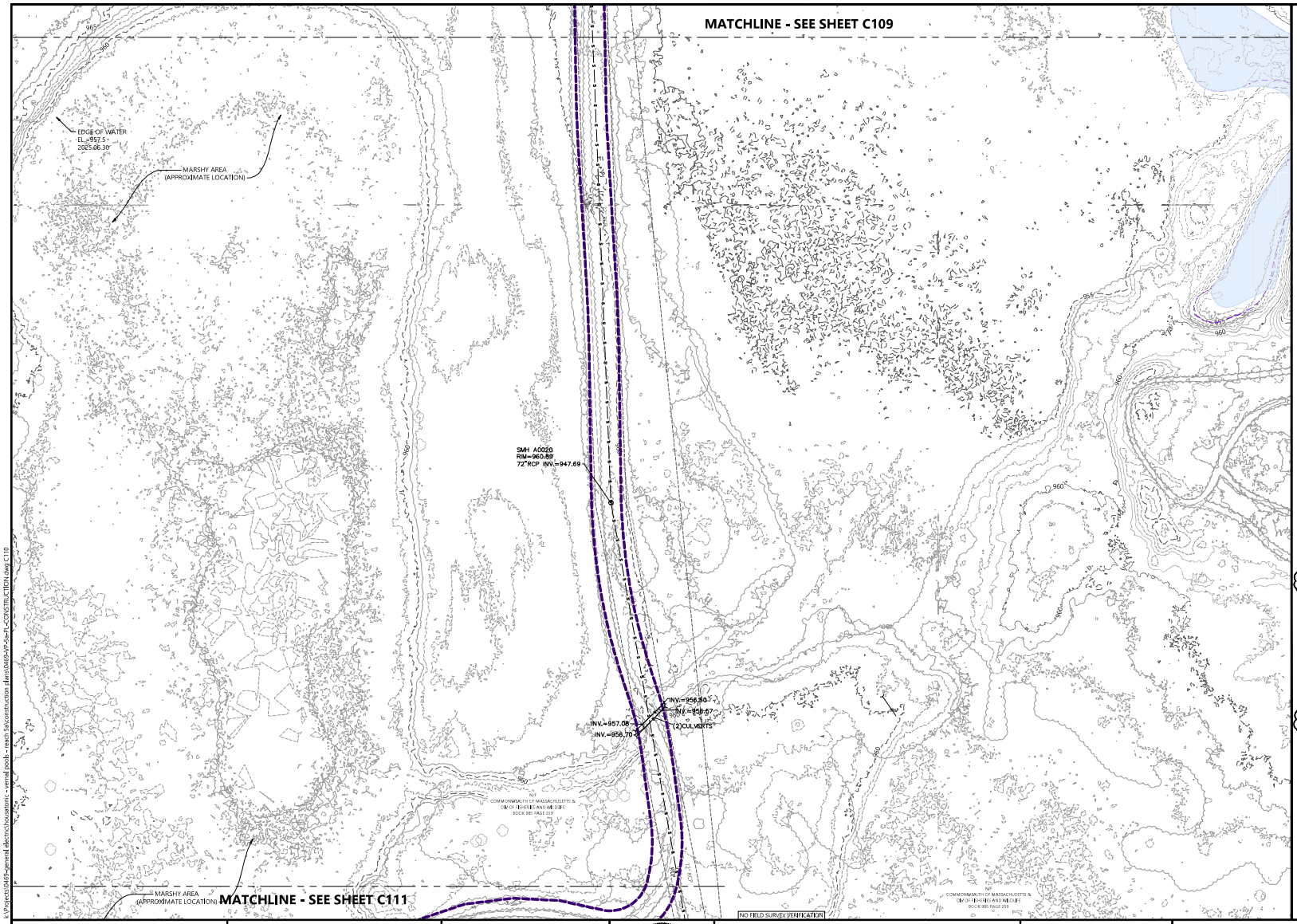
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

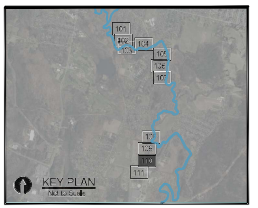
CONSTRUCTION PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 1)

C109

SHEET # 23 OF 42

Jun 19, 2026 | 11:02am jrscalia
X:\Projects\0468-general electric\housatonic - vernal pools - reach 5a\construction plans\0468-VP-5a-PL-CONSTRUCTION.dwg C109





LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION. EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

0 40 80
SCALE IN FEET

NORTH

PLAN INTENDED TO BE VIEWED IN COLOR AND/OR BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

NO FIELD SURVEY VERIFICATION

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488	EXP. DATE: 06/30/28
STATE: MASSACHUSETTS	DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS
CHARLES E GUEST
No. 58488
PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 14:57:42 -04'00'

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

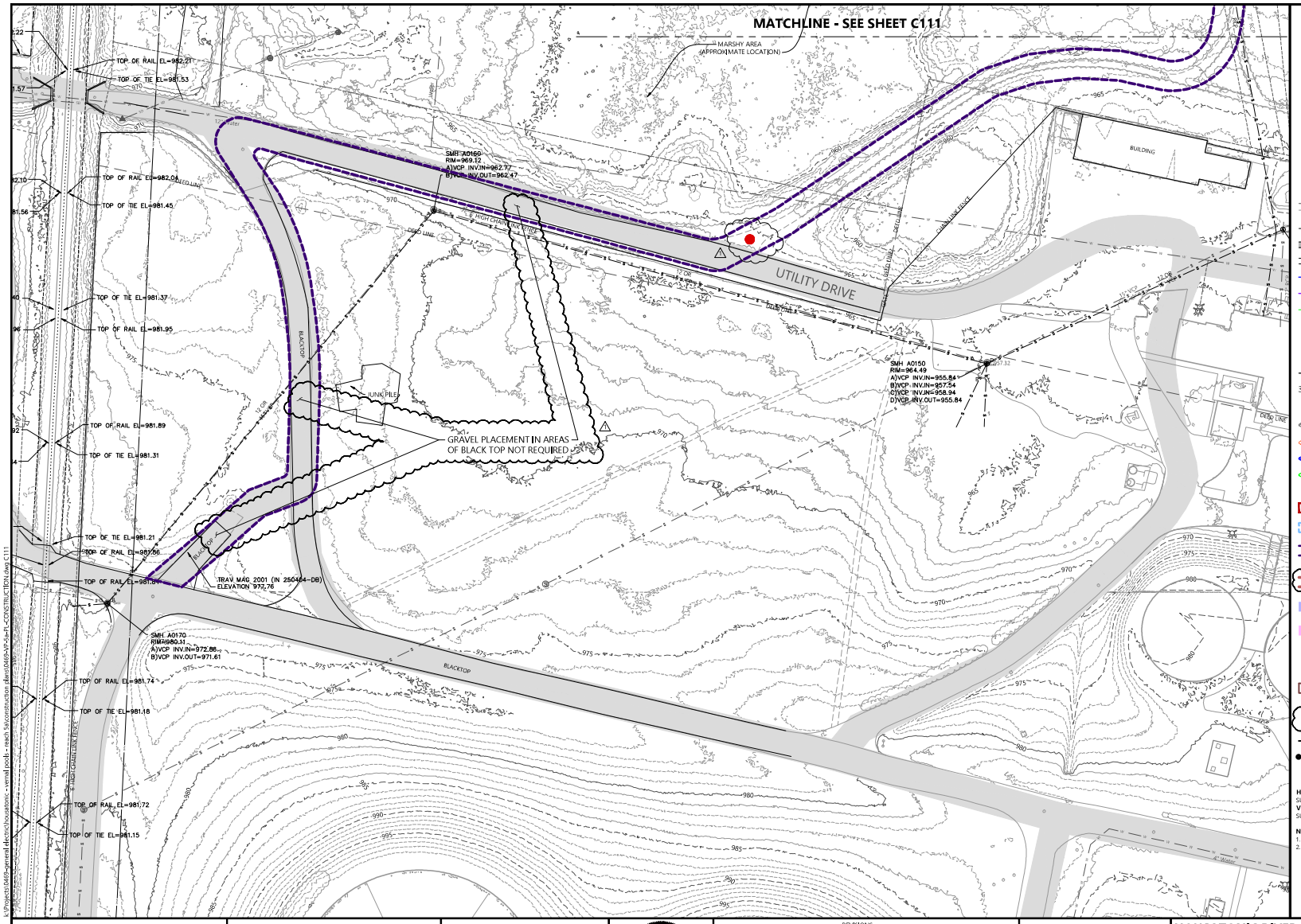
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

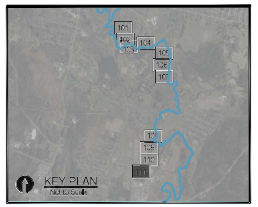
CONSTRUCTION PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 2)

C110

SHEET # 24 OF 42

Jun 19, 2026 1:09pm nicolaba
K:\Projects\0469-general electric\cad\construc - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-CONSTRUCTION.dwg C110





LEGEND:

- EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION. EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

0 40 80
SCALE IN FEET

NORTH

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/1/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

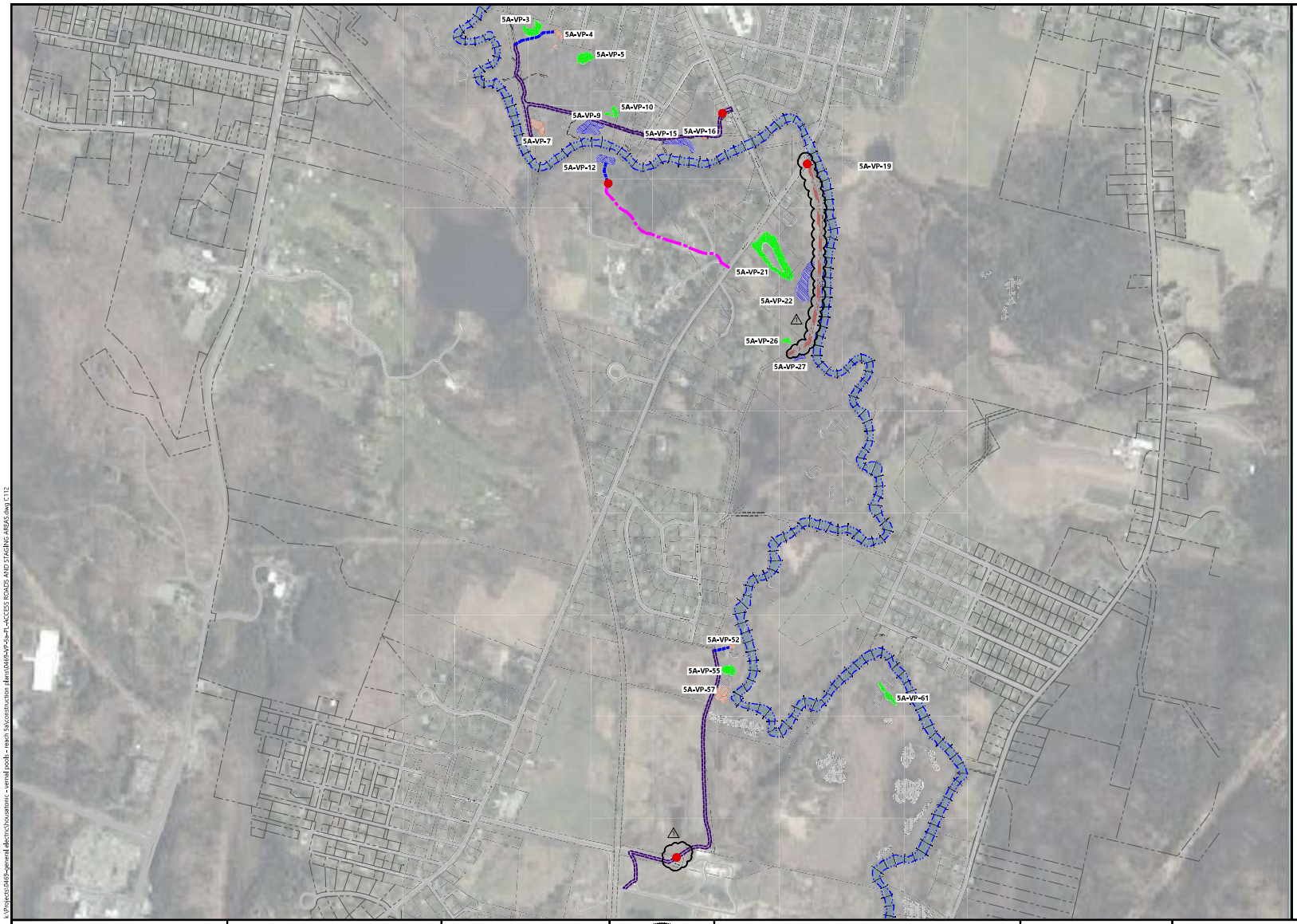
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

CONSTRUCTION PLAN VIEW
TEMPORARY CONSTRUCTION ROAD FROM WWTP (SHEET 3)

C111

SHEET # 25 OF 42

Jun 19, 2026 - 11:11am jmcabe
K:\Projects\0456-general electric\housatonic - vernal pools - reach 5a\construction plans\0456-VP-5a-PL-CONSTRUCTION.dwg C111



LEGEND:

- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- EXISTING RIVER CENTERLINE
- 3+00 — 3+00 EXISTING RIVER STATIONING

VERNAL POOLS (AECOM 2020, GE 2021)

- NOT PART OF PILOT TEST

VERNAL POOLS SELECTED FOR PILOT STUDY

- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NORTH

0 500 1000

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME
CHARLES E. GUEST

PROFESSIONAL ENGINEER'S LICENSE NO.
58488

EXP. DATE
06/30/28

STATE
MASSACHUSETTS

DATE SIGNED
6/19/2026

COMMONWEALTH OF MASSACHUSETTS
CHARLES E GUEST
No. 58488
PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 14:40:06 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

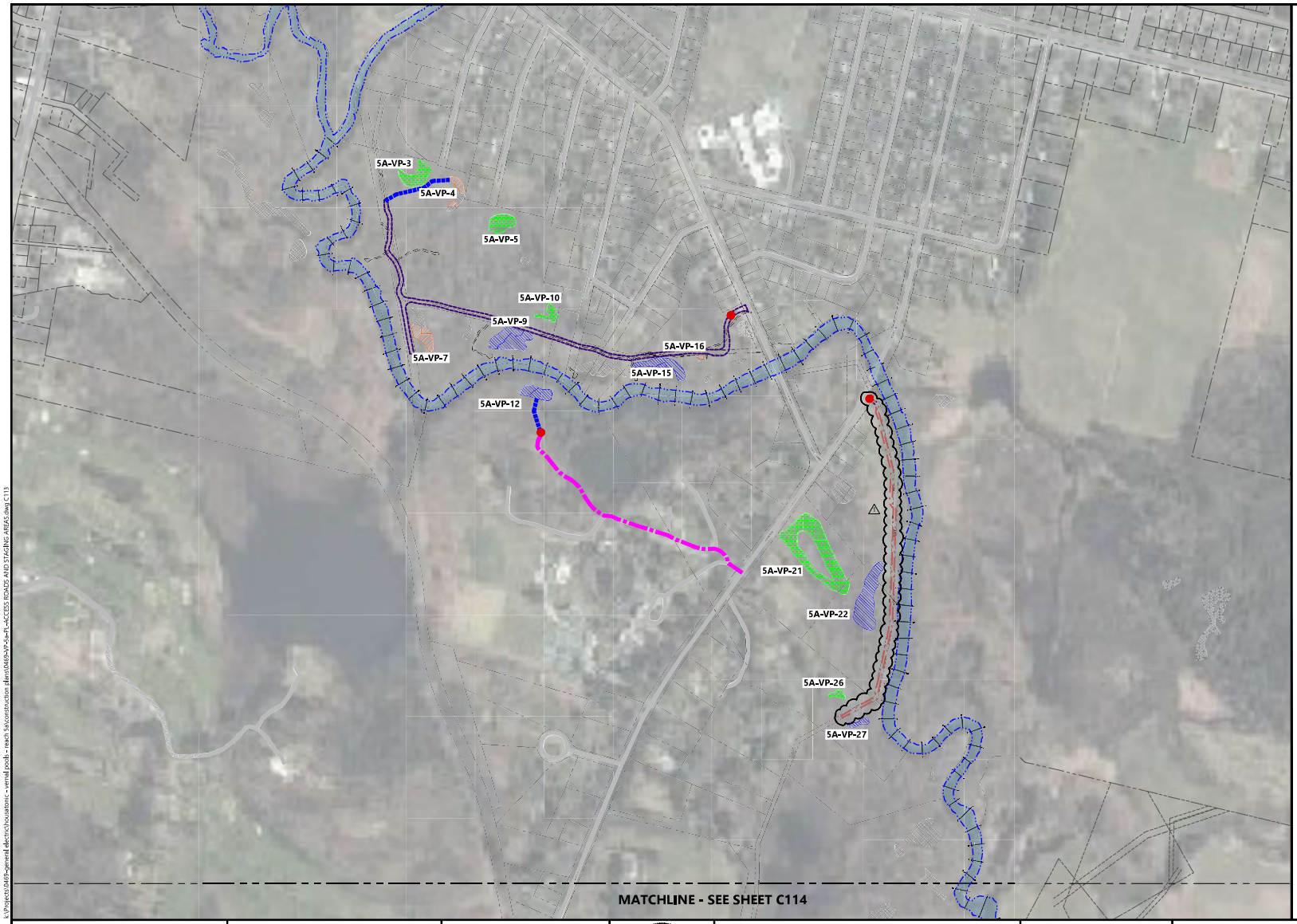
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

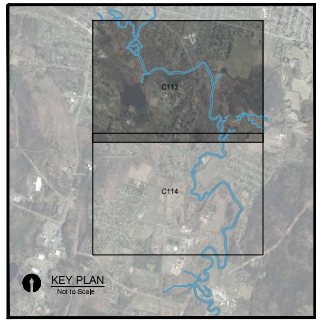
OVERALL ACCESS SITE PLAN

C112

SHEET # 26 OF 42

Jun 19, 2026 11:04am jmcabe
K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-ACCESS ROADS AND STAGING AREAS.dwg C112





LEGEND:

- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- EXISTING RIVER CENTERLINE
- 3+00——3+00 EXISTING RIVER STATIONING

VERNAL POOLS (AECOM 2020, GE 2021)

- NOT PART OF PILOT TEST

VERNAL POOLS SELECTED FOR PILOT STUDY

- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR. LOCATION APPROXIMATE
- EXISTING GRAVEL ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NORTH

0 300 600

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJUST BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles Guest
Date: 2026.06.19 14:49:00 -04'00'

REVISIONS

REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY:	E. GLAZA
DRAWN BY:	C. YARD / P. SCIABA
CHECKED BY:	C. GUEST / D. BINKNEY
APPROVED BY:	C. GUEST
SCALE:	AS NOTED
DATE:	MAY 8, 2026

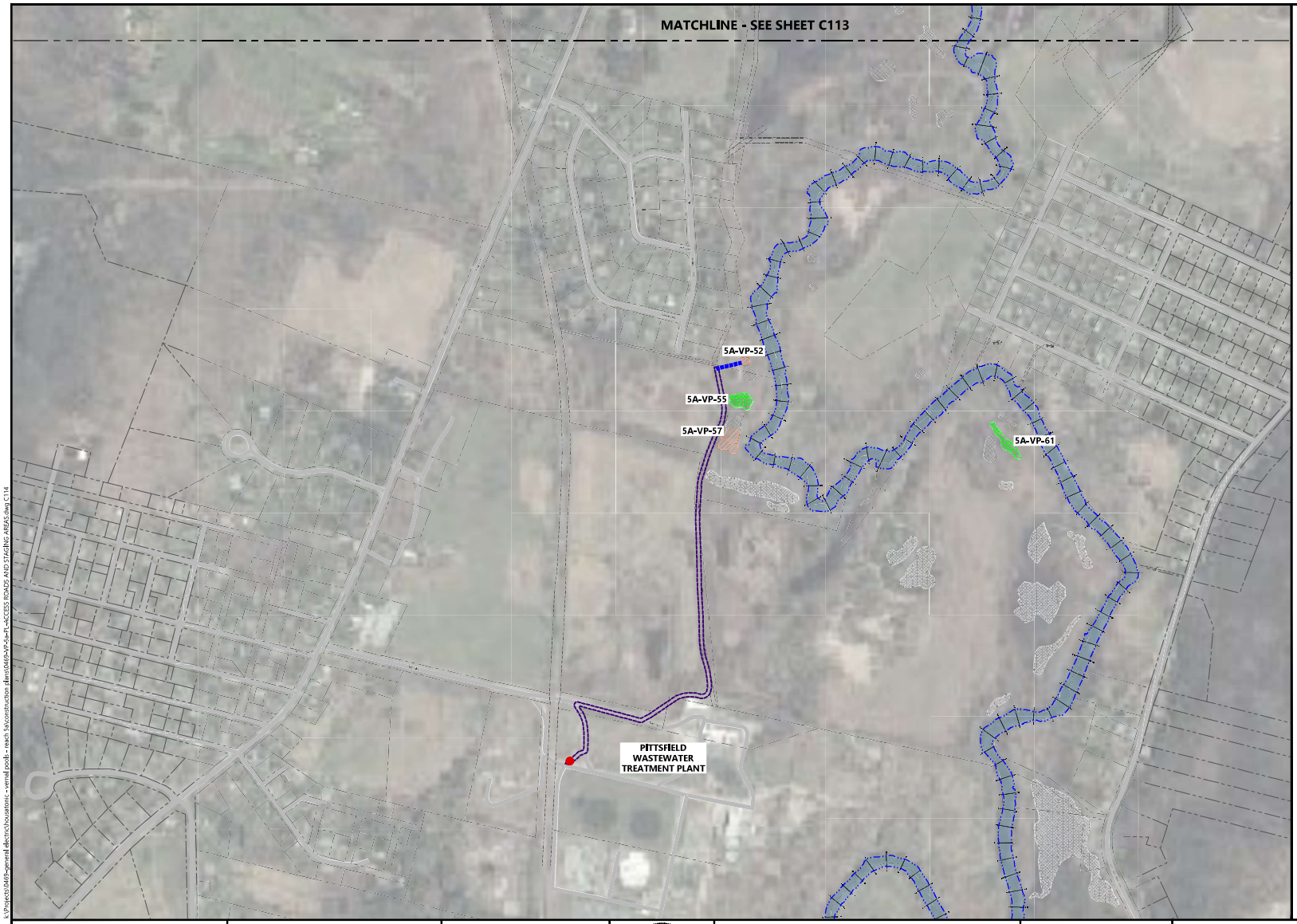
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

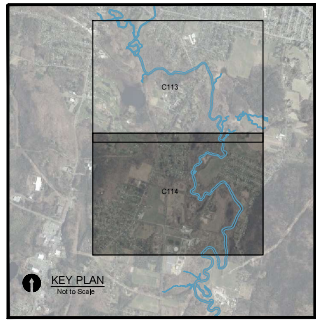
TEMPORARY CONSTRUCTION ROADS (NORTH)

C113

SHEET # 27 OF 42

Jun 19, 2026 - 11:11am jmcdaba K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-ACCESS ROADS AND STAGING AREAS.dwg C113





LEGEND:

- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- EXISTING RIVER CENTERLINE
- 3+00——3+00 EXISTING RIVER STATIONING

VERNAL POOLS (AECOM 2020, GE 2021)

- NOT PART OF PILOT TEST

VERNAL POOLS SELECTED FOR PILOT STUDY

- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS. VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD. CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR. LOCATION APPROXIMATE
- EXISTING GRAVEL ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NORTH

0 300 600

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND/OR BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

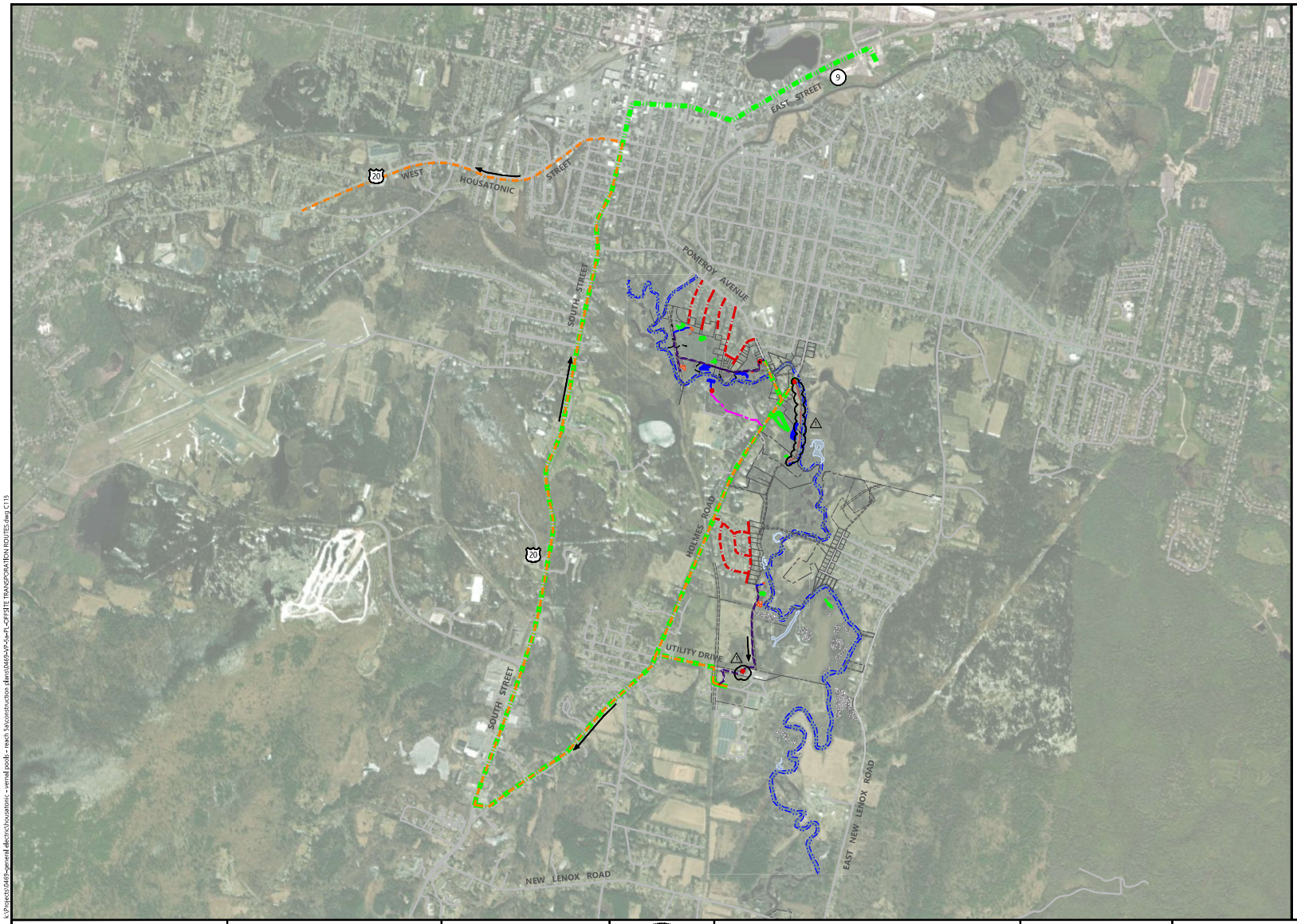
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

TEMPORARY CONSTRUCTION ROADS (SOUTH)

C114

SHEET # 28 OF 42

Jun 19, 2026 11:18am jacobs K:\Projects\0489-general electric\housatonic - vernal pools - reach 5a\construction plans\0489-VP-5a-TL-ACCESS ROADS AND STAGING AREAS.dwg C114



LEGEND:

- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- EXISTING RIVER CENTERLINE
- ROAD USE RESTRICTED
- TRUCK ROUTE FOR EARTHEN MATERIAL IMPORT AND OFF-SITE DISPOSAL
- GENERAL TRAVEL DIRECTION TO DISPOSAL
- TRUCK ROUTE TO BUILDING 64G WATER TREATMENT FACILITY

VERNAL POOLS (AECOM 2020, GE 2021)

- NOT PART OF PILOT TEST

VERNAL POOLS SELECTED FOR PILOT STUDY

- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING, LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ROAD ASSOCIATED WITH MIES HALLS SCHOOL
- TIRE CLEANING STATION

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NORTH

0 1200 2400

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJUST BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY:	E. GLAZA
DRAWN BY:	C. YARD / P. SCIABA
CHECKED BY:	C. GUEST / D. BINKNEY
APPROVED BY:	C. GUEST
SCALE:	AS NOTED
DATE:	MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

OFFSITE TRANSPORTATION ROUTES

C115

SHEET # 29 OF 42

Jun 19, 2026, 11:18am jacobs K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-OFFSITE TRANSPORTATION ROUTES.dwg C115

Vernal Pool VP-4 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-4	1	184192.37	2987488.39
5A-VP-4	2	184255.81	2987491.44
5A-VP-4	3	184263.36	2987500.58
5A-VP-4	4	184230.49	2987532.16
5A-VP-4	5	184203.62	2987508.51
5A-VP-4	6	184292.53	2987569.44
5A-VP-4	7	184284.46	2987624.75
5A-VP-4	8	184255.45	2987662.44
5A-VP-4	9	184203.88	2987672.05
5A-VP-4	10	184217.8	2987635.87
5A-VP-4	11	184263.08	2987572.53

Vernal Pool VP-7 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-7	1	184068.44	2986756.44
5A-VP-7	2	184090.35	2986720.44
5A-VP-7	3	184102.78	2986621.7
5A-VP-7	4	184088.33	2986612.26
5A-VP-7	5	184069.44	2986623.37
5A-VP-7	6	184053.33	2986656.15
5A-VP-7	7	183986.89	2986697.91
5A-VP-7	8	183971.84	2986785.94
5A-VP-7	9	184028.97	2986766.86
5A-VP-7	10	184028.25	2986718.41

Vernal Pool VP-9 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-9	1	184450.55	2986632.19
5A-VP-9	2	184446.16	2986678.83
5A-VP-9	3	184438.43	2986655.23
5A-VP-9	4	184512.23	2986728.94
5A-VP-9	5	184563.64	2986751.48
5A-VP-9	6	184650.33	2986737.05
5A-VP-9	7	184700.63	2986719.31
5A-VP-9	8	184702.95	2986638.27
5A-VP-9	9	184663.89	2986631.09
5A-VP-9	10	184654.39	2986651.77
5A-VP-9	11	184668.29	2986638.23
5A-VP-9	12	184651.42	2986614.24
5A-VP-9	13	184494.74	2986628.75
5A-VP-9	14	184496.8	2986651.31
5A-VP-9	15	184531.31	2986658.54
5A-VP-9	16	184538.21	2986638.85
5A-VP-9	17	184575.08	2986723.45
5A-VP-9	18	184603.45	2986704.21
5A-VP-9	19	184635.89	2986710.78

Vernal Pool VP-12 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-12	1	184632.32	2986350.38
5A-VP-12	2	184629.15	2986374.7
5A-VP-12	3	184667.97	2986407.61
5A-VP-12	4	184701.97	2986405.82
5A-VP-12	5	184739.96	2986392
5A-VP-12	6	184708.64	2986370.14
5A-VP-12	7	184692.73	2986353.39
5A-VP-12	8	184690.78	2986339.62
5A-VP-12	9	184749.17	2986322.38
5A-VP-12	10	184760.15	2986346.29
5A-VP-12	11	184752.25	2986386.95
5A-VP-12	12	184815.17	2986377.17
5A-VP-12	13	184816.12	2986323.43

Vernal Pool VP-15 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-15	1	185327.34	2986517.89
5A-VP-15	2	185310.39	2986528.58
5A-VP-15	3	185317.62	2986539.99
5A-VP-15	4	185397.02	2986552.88
5A-VP-15	5	185445.4	2986570.1
5A-VP-15	6	185511.6	2986571.1
5A-VP-15	7	185557.4	2986559.86
5A-VP-15	8	185616.35	2986504.97
5A-VP-15	9	185622.89	2986447.15
5A-VP-15	10	185572.33	2986478.91
5A-VP-15	11	185586.08	2986439.86
5A-VP-15	12	185558.48	2986499.93
5A-VP-15	13	185519.2	2986512.74
5A-VP-15	14	185503.3	2986546.1
5A-VP-15	15	185456.37	2986522.52
5A-VP-15	16	185471.45	2986498.01
5A-VP-15	17	185511.6	2986512.35

Vernal Pool VP-16 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-16	1	185700.68	2986578.41
5A-VP-16	2	185723.33	2986567.44
5A-VP-16	3	185740.84	2986567.44
5A-VP-16	4	185735.89	2986593.98

Vernal Pool VP-22 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-22	1	186783.53	2984975.21
5A-VP-22	2	186775.37	2984939.45
5A-VP-22	3	186747.22	2984925.37
5A-VP-22	4	186650.21	2984995.66
5A-VP-22	5	186659.65	2985070.03
5A-VP-22	6	186668.51	2985107.97
5A-VP-22	7	186702.01	2985162.71
5A-VP-22	8	186715.89	2985219.57
5A-VP-22	9	186805.05	2985335.48
5A-VP-22	10	186828.82	2985332.46
5A-VP-22	11	186836.08	2985307.14
5A-VP-22	12	186791.01	2985235.55
5A-VP-22	13	186795.32	2985193.4
5A-VP-22	14	186766.76	2985116.15
5A-VP-22	15	186767.32	2985018.93

Vernal Pool VP-27 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-27	1	186619.85	2984362.55
5A-VP-27	2	186618.26	2984340.15
5A-VP-27	3	186647.39	2984335.23
5A-VP-27	4	186690.61	2984355.64
5A-VP-27	5	186733.81	2984354.97
5A-VP-27	6	186743.17	2984365.91
5A-VP-27	7	186725.63	2984394.17
5A-VP-27	8	186667.01	2984365.28

Vernal Pool VP-52 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-52	1	185986.7	2981422.44
5A-VP-52	2	185968.03	2981459.41
5A-VP-52	3	185981.4	2981470.44
5A-VP-52	4	185998.92	2981466.73
5A-VP-52	5	186020.45	2981469.31
5A-VP-52	6	186022.42	2981449.44
5A-VP-52	7	186019.37	2981425.44

Vernal Pool VP-57 Control Points			
VP_ID	PtNum	Easting_X	Northing_Y
5A-VP-57	1	185881.01	2981047.44
5A-VP-57	2	185909.55	2981041.33
5A-VP-57	3	185928.97	2981051.23
5A-VP-57	4	185966.14	2981032.77
5A-VP-57	5	185949.84	2980950.05
5A-VP-57	6	185954.7	2980934.33
5A-VP-57	7	185939.65	2980888.44
5A-VP-57	8	185903.73	2980891.48
5A-VP-57	9	185892.26	2980910.6
5A-VP-57	10	185850.28	2980911.88
5A-VP-57	11	185834.1	2980925.75
5A-VP-57	12	185837.89	2980952.43
5A-VP-57	13	185860.54	2980993.75
5A-VP-57	14	185878.72	2980985.41
5A-VP-57	15	185900.27	2980945.68

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCKS IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME
CHARLES E. GUEST

PROFESSIONAL ENGINEER'S LICENSE NO.
58488

EXP. DATE
06/30/28

STATE
MASSACHUSETTS

DATE SIGNED
6/13/2026

COMMONWEALTH OF MASSACHUSETTS
CHARLES E GUEST
No. 58488
PROFESSIONAL ENGINEER

Digitally signed by Charles E. Guest
Date: 2026.06.19 15:19:22 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

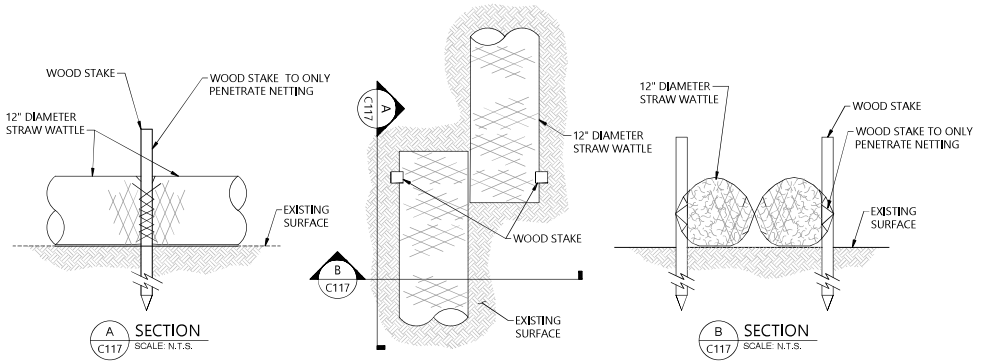
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

VERNAL POOL CONTROL POINTS

C116

SHEET # 30 OF 42

Jun 19, 2026 11:13am jmcisbo k:\Projects\0468-general electric\housatonic - vernal pools - reach 5a\construction plans\0468-VP-5a-PL-Title Sheet.dwg C116



A C117 SECTION SCALE: N.T.S.

B C117 SECTION SCALE: N.T.S.

STAKING DETAIL PLAN VIEW

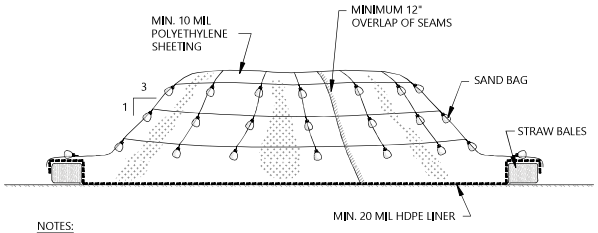
SCALE: NOT TO SCALE

NOTES:

1. STRAW WATTLE MUST BE PLACED IN A ROW WITH A MINIMUM 1-FOOT OVERLAP AT THE ENDS.
2. STRAW WATTLE MUST BE SECURELY ANCHORED IN PLACE BY TWO STAKES DRIVEN THROUGH THE STRAW WATTLE NETTING AS SHOWN IN THE STRAW WATTLE DETAIL. STAKES MUST BE DRIVEN FLUSH WITH THE STRAW WATTLE.
3. STRAW WATTLE MUST BE REMOVED AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
4. STRAW WATTLES PLACED ON SOIL MUST BE ANCHORED IN PLACE WITH STAKES DRIVEN THROUGH THE WATTLE EVERY 4 FEET AT A MINIMUM.
5. STRAW WATTLE TO BE PLACED AS NEEDED FOR EROSION AND RUNOFF CONTROL INCLUDING ALONG ROADWAYS WHERE SURFACE WATER FLOW IS EVIDENT (E.G., SCOUR ZONES OR SWALES).

1 STRAW WATTLE DETAIL

SCALE:NOT TO SCALE

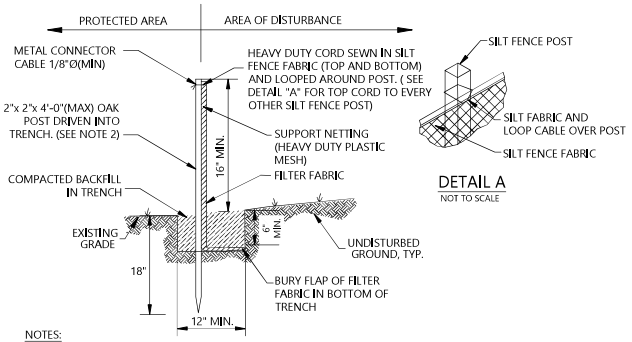


NOTES:

1. STOCKPILES MUST BE COVERED WITH MINIMUM 10 MIL POLYETHYLENE SHEETING WHENEVER LOADING OR PLACEMENT IS NOT OCCURRING.
2. STOCKPILE AREAS MUST BE SUBJECT TO DUST CONTROLS WHENEVER LOADING OR PLACEMENT IS OCCURRING AND AS DIRECTED BY OWNER'S REPRESENTATIVE.
3. SHEETING COVERING STOCKPILE MUST BE MAINTAINED TIGHTLY IN PLACE BY USING SAND BAGS ON ROPES WITH A MAXIMUM 10'-0" GRID SPACING IN ALL DIMENSIONS.
4. CONTRACTOR MUST PLACE STRAW BALE BERMS AROUND STOCKPILES.

4 TYPICAL STOCKPILE DETAIL

SCALE:NOT TO SCALE



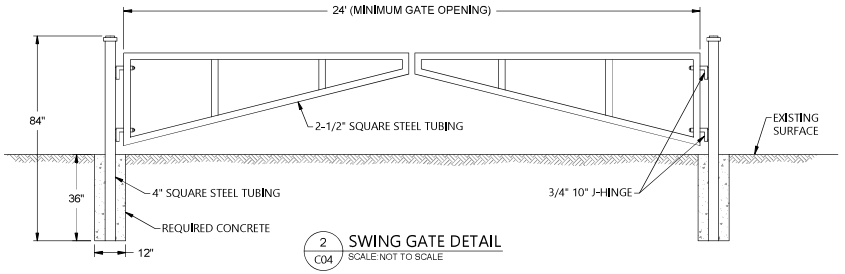
DETAIL A
NOT TO SCALE

NOTES:

1. POST FOR SILT FENCE AND TURTLE FENCE MUST BE LOCATED ON 8' CENTERS.
2. SILT FENCE AND TURTLE FENCE MUST BE INSTALLED PRIOR TO CONSTRUCTION.
3. INSPECTION MUST BE DAILY AND REPAIR / REPLACEMENT MUST BE MADE PROMPTLY AS NEEDED. ACCUMULATED SEDIMENT MUST BE REMOVED AND APPROPRIATELY DISPOSED OF BY THE CONTRACTOR.
4. SILT FENCE AND TURTLE FENCE MUST BE REMOVED ONLY AS DIRECTED BY OWNER'S REPRESENTATIVE.

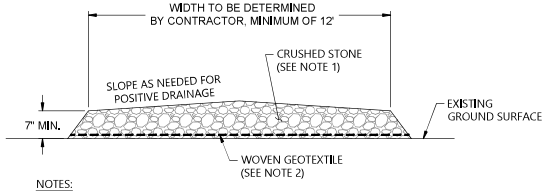
5 SILT FENCE AND TURTLE FENCE DETAIL (UNPAVED AREAS)

SCALE:NOT TO SCALE



2 SWING GATE DETAIL

SCALE:NOT TO SCALE

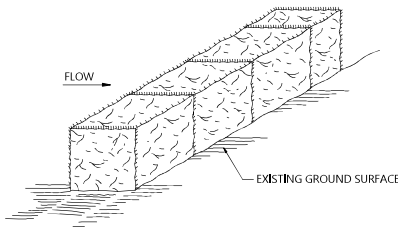


NOTES:

1. CRUSHED STONE SHALL BE M2.01.7 1" DENSE GRADED CRUSHED IN ACCORDANCE WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION.
2. WOVEN GEOTEXTILE SHALL MEET AASHTO MS288-05 CLASS I SURVIVABILITY REQUIREMENTS FOR SEPARATION GEOTEXTILES.

3 TEMPORARY GRAVEL ACCESS ROAD

SCALE:NOT TO SCALE



NOTES:

1. STRAW BALES MUST BE PLACED AS SHOWN IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT STRAW BALES.
2. STRAW BALES TO BE PLACED AS NEEDED FOR EROSION AND RUNOFF CONTROL.
3. INSPECTION MUST BE DAILY AND REPAIR / REPLACEMENT MUST BE MADE PROMPTLY AS NEEDED. ACCUMULATED SEDIMENT MUST BE REMOVED AND APPROPRIATELY DISPOSED BY CONTRACTOR.
4. STRAW BALES MUST BE REMOVED ONLY AS DIRECTED BY OWNER'S REPRESENTATIVE.

6 STRAW BALE DETAIL

SCALE:NOT TO SCALE

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488	EXP. DATE: 06/30/28
STATE: MASSACHUSETTS	DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

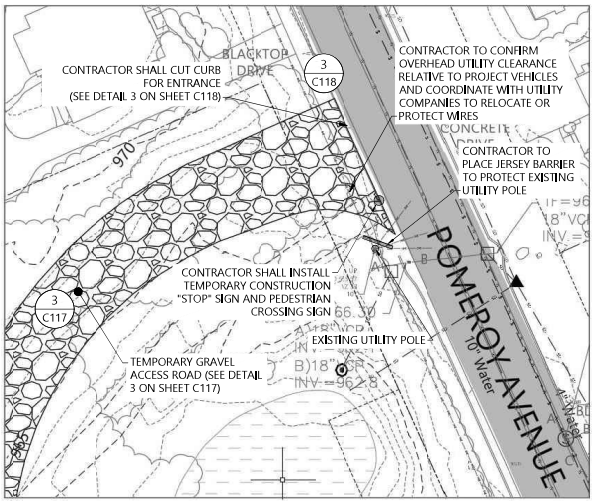
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

MISCELLANEOUS CONSTRUCTION DETAILS 1

C117

SHEET # 31 OF 42

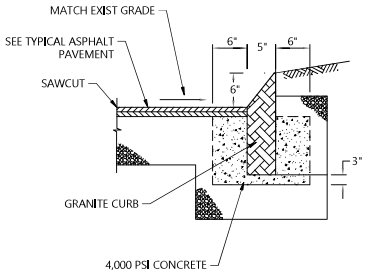
Jun 19, 2026 | 11:02am jmciaba K:\Projects\0468-general electric\construction plans\0468-VP-Sht-Pl-Detail1.dwg C117



1 C104 POMEROY AVENUE INTERSECTION DETAIL
SCALE: 1" = 20'

NOTES:

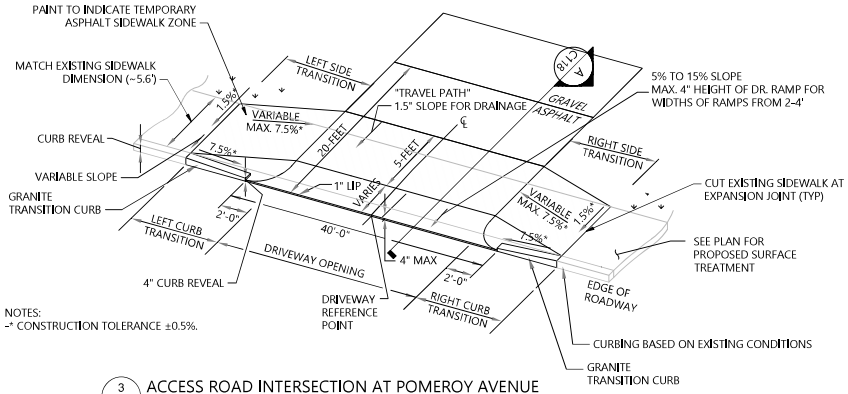
1. CONTRACTOR TO INSTALL ADDITIONAL SIGNAGE, INCLUDING: "CONSTRUCTION ACCESS ONLY. NOT A PUBLIC ROAD", AND "CONSTRUCTION ENTRANCE 500' AHEAD, TRUCKS TURNING". CONTRACTOR SHALL INSTALL SIGNAGE WHERE APPLICABLE.



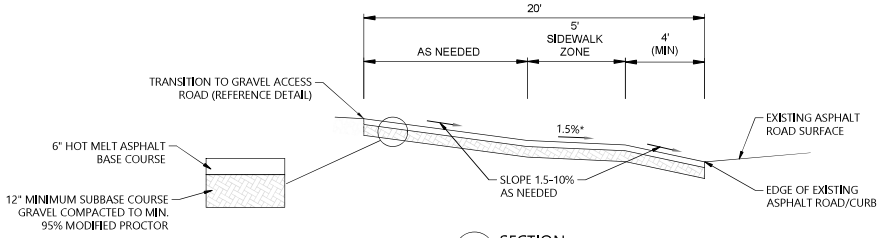
NOTES:

1. LENGTH OF CURB VARIES TO FIT RADIUS 2' MIN.
2. ENDS SHALL BE SQUARE TO TOP AND RADIAL TO FACE.
3. BUTT ENDS TOGETHER AS CLOSE AS POSSIBLE. MAXIMUM SPACE OF 1/2" ALLOWED. 8" DOWN FROM TOP. JOINT SHALL BE MORTARED FULL DEPTH.
4. 1/2" EXPANSION JOINT EVERY 100 50'±.
5. CURBS TO BE SET ON A RADIUS OF 100' OR LESS SHALL BE CUT TO THE CURVE REQUIRED, AND THEIR ENDS CUT ON RADIAL LINES.
6. 1 2" EXPANSION JOINT AND FILLER WHEN CURB IS ADJACENT TO CONCRETE SIDEWALK.
7. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BASE AND GRAVEL. REPLACE WITH CEMENT CONCRETE.
8. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.
9. REPLACEMENT CURB SHALL BE INSTALLED TO MATCH ADJACENT CONFIGURATION.

2 - GRANITE CURB TYPE VB 6" REVEAL
SCALE: NOT TO SCALE



3 - ACCESS ROAD INTERSECTION AT POMEROY AVENUE
SCALE: NOT TO SCALE



A C118 SECTION
SCALE: NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL PLACE SIGNS AT DISTANCES OF 200' AND 500' IN BOTH DIRECTIONS INDICATING "CONSTRUCTION AHEAD - TRUCKS ENTERING" OR APPROVED EQUAL, OR AS OTHERWISE DIRECTED BY THE CITY OF PITTSFIELD.
2. CONTRACTOR SHALL MAINTAIN A FLAGGER DURING ACTIVE WORK HOURS TO FACILITATE VEHICLES ENTERING AND EXITING POMEROY AVE.
3. CONTRACTOR TO PROVIDE POLICE DETAIL FOR TRAFFIC ALONG POMEROY AVE. DURING ACTIVE WORK HOURS.

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCKS IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

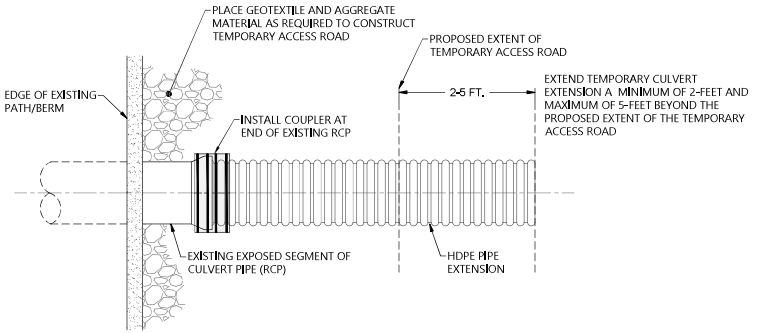
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

MISCELLANEOUS CONSTRUCTION DETAILS 2

C118

SHEET # 32 OF 42

Jun 19, 2026 11:04am jmcabo K:\Projects\0468-general electric\housatonic - vernal pools - reach 5a\construction plans\0468x-VP-5a-P4-Details.dwg C118



NOTES:

1. CULVERT PIPE EXTENSIONS SHALL BE HDPE, CORRUGATED METAL PIPE, OR OTHER APPROVED MATERIAL CAPABLE OF TRAFFIC LOADING.
2. INSTALL CULVERT PIPE EXTENSION TO ABUT EXISTING CULVERT. EXTENSION SHALL BE OF SUFFICIENT LENGTH TO EXTEND A MINIMUM OF 2 FEET AND MAXIMUM OF 5 FEET BEYOND THE PROPOSED EXTENT OF THE TEMPORARY ACCESS ROAD.
3. CONNECT EXTENSION TO EXISTING CULVERT PIPE USING A COUPLER (MARMAC CONSTRUCTION PRODUCTS DISSIMILAR PIPE COUPLER, OR APPROVED EQUAL). INSTALL PER MANUFACTURER'S DIRECTIONS.
4. INSTALL GEOTEXTILE TO COVER HDPE PIPE PRIOR TO PLACING AGGREGATE MATERIAL.
5. PIPE EXTENSION SHALL BE INSTALLED TO MATCH EXISTING GRADE/SLOPE OF RCP SO THAT WATER FLOW IS UNIMPEDED.
6. CONTRACTOR SHALL REMOVE CULVERT EXTENSIONS AND RESTORE DRAINAGE CHANNELS WHEN TEMPORARY ACCESS ROADS ARE REMOVED, UNLESS OTHERWISE APPROVED.

1 – TEMPORARY CULVERT EXTENSION PLAN
SCALE: NOT TO SCALE

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

Jun 19, 2026 1:12am jmcaba k:\Projects\0468-general electric\housatonic - vernal pools - reach 5a\construction plans\0468-VP-5a-PI-2detail.dwg C119

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/1/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles E Guest
Date: 2026.06.01 10:24:21 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

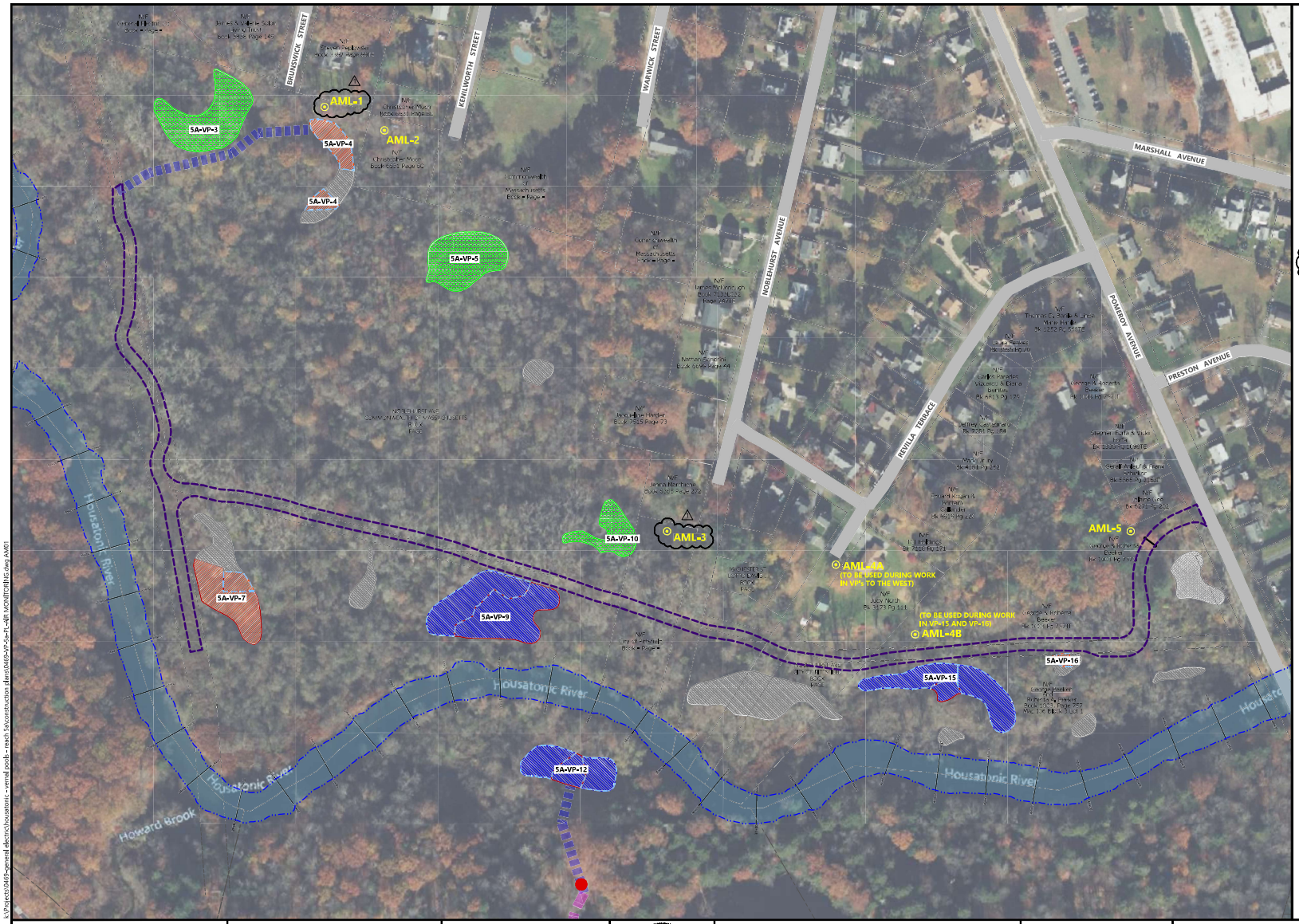
DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

MISCELLANEOUS CONSTRUCTION DETAILS 3

C119

SHEET # 33 OF 42



LEGEND:

- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS.
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION
- PRELIMINARY AREA IDENTIFIED FOR LOCAL TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED AIR MONITORING LABEL/LOCATION, LOCATION APPROXIMATE

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEETS G001 FOR GENERAL NOTES AND LEGEND.

NORTH

0 100 200

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR AND WITH BLOCKS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.	58488
EXP. DATE	06/30/28
STATE	MASSACHUSETTS
DATE SIGNED	6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY:	E. GLAZA
DRAWN BY:	C. YARD / P. SCIABA
CHECKED BY:	C. GUEST / D. BINKNEY
APPROVED BY:	C. GUEST
SCALE:	AS NOTED
DATE:	MAY 8, 2026

HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

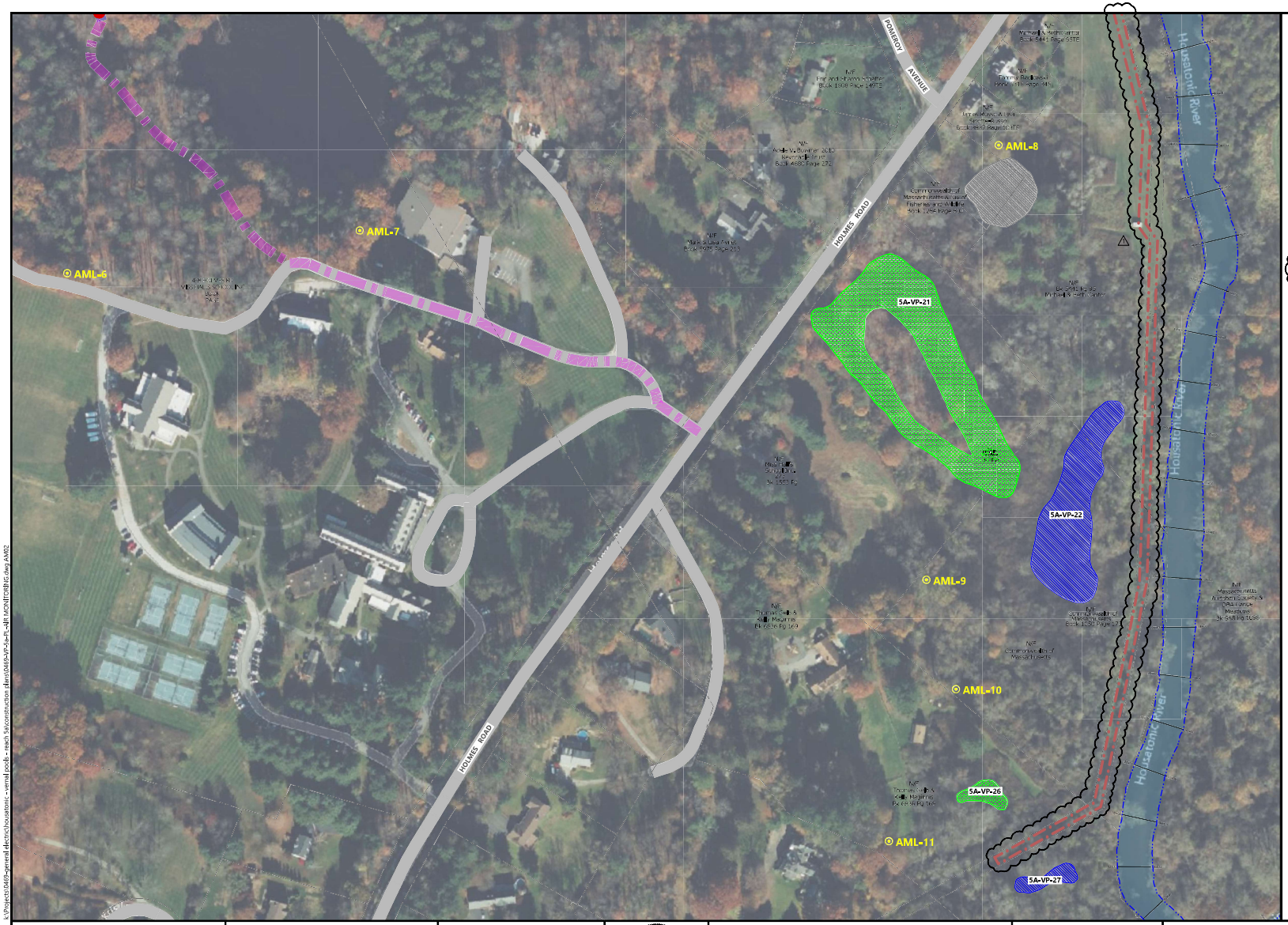
AIR MONITORING LOCATIONS (NORTH AREA)

AM01

SHEET # 34 OF 42

K:\Projects\0485-general electric\housatonic - vernal pools - reach 5a\construction plans\0485-VP-5a-PL-AIR MONITORING.dwg AM01

Jun 19, 2026, 1:00pm rscalia



LEGEND:

- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS.
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION
- PRELIMINARY AREA IDENTIFIED FOR LOCAL TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED AIR MONITORING LABEL/LOCATION, LOCATION APPROXIMATE

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEETS G001 FOR GENERAL NOTES AND LEGEND.

NORTH
0 100 200
SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ANY PRINTING IN BLACK IS "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME: CHARLES E. GUEST
PROFESSIONAL ENGINEER'S LICENSE NO.: 58488
EXP. DATE: 06/30/28
STATE: MASSACHUSETTS
DATE SIGNED: 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKINEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

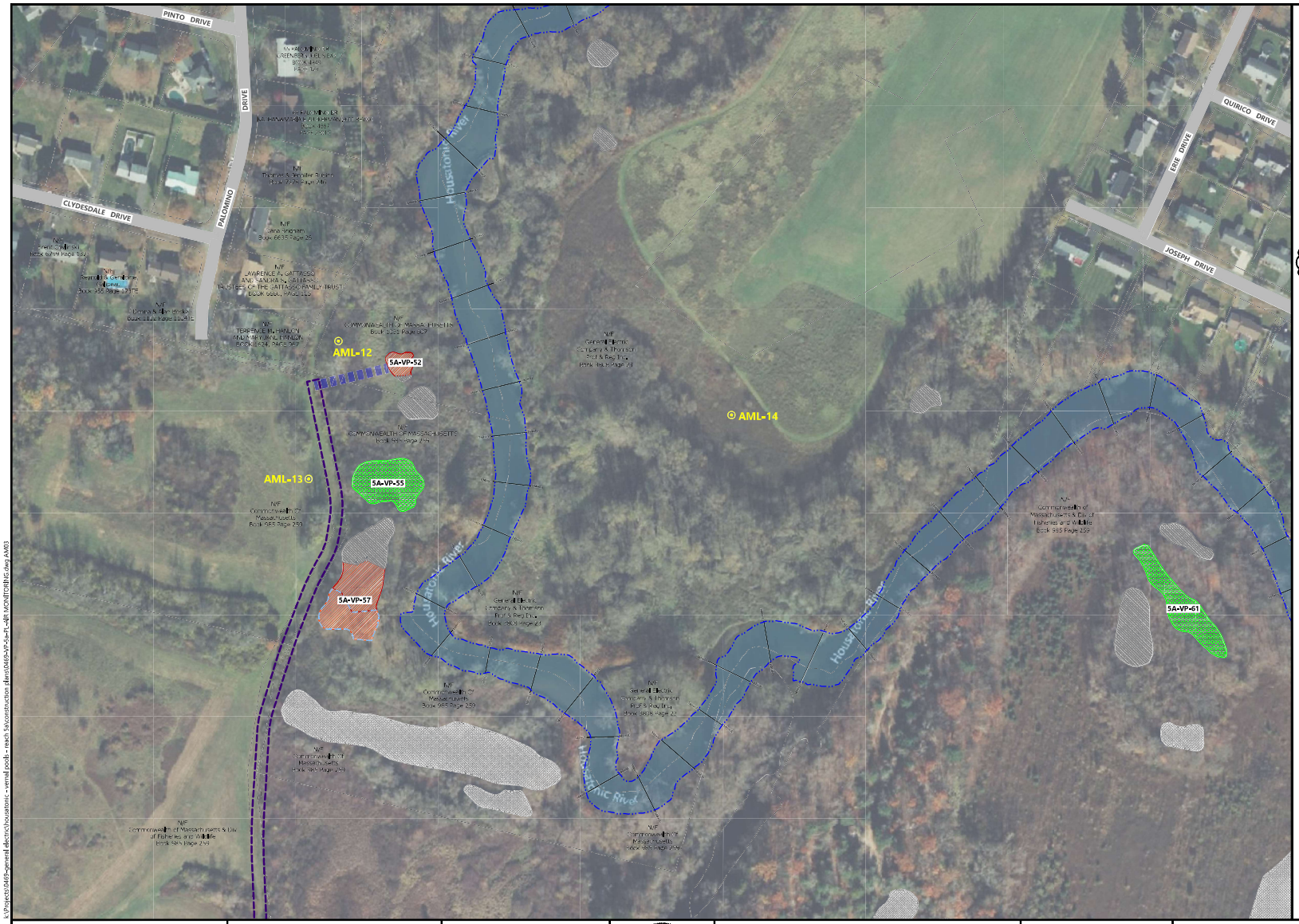
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

AIR MONITORING LOCATIONS (CENTRAL AREA)

AM02

SHEET # 35 OF 42

K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-AIR MONITORING.dwg AM02
Jun 19, 2026, 1:12 pm nicolaba



LEGEND:

- PROPERTY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- RIVER SHORELINE BOUNDARY
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS.
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE ⚠
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- TIRE CLEANING STATION
- PRELIMINARY AREA IDENTIFIED FOR LOCAL TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED AIR MONITORING LABEL/LOCATION, LOCATION APPROXIMATE

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:

1. SEE SHEETS G001 FOR GENERAL NOTES AND LEGEND.

NORTH

0 150 300

SCALE IN FEET

PLAN INTENDED TO BE VIEWED IN COLOR. ADJUST BACKLIT "BLUE"

ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

ANCHOR QEA

PROFESSIONAL ENGINEER'S NAME	
CHARLES E. GUEST	
PROFESSIONAL ENGINEER'S LICENSE NO. 58488	EXP. DATE 06/30/28
STATE MASSACHUSETTS	DATE SIGNED 6/19/2026

COMMONWEALTH OF MASSACHUSETTS — CHARLES E GUEST No. 58488 — PROFESSIONAL ENGINEER

Digitally signed by Charles E. Guest
Date: 2026.06.19 15:59:33 -04'00'

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION
⚠1	06/19/26	PJS	ECG	FOR INCLUSION IN SUPPLEMENTAL INFORMATION PACKAGE

DESIGNED BY: E. GLAZA
DRAWN BY: C. YARD / P. SCIABA
CHECKED BY: C. GUEST / D. BINKNEY
APPROVED BY: C. GUEST
SCALE: AS NOTED
DATE: MAY 8, 2026

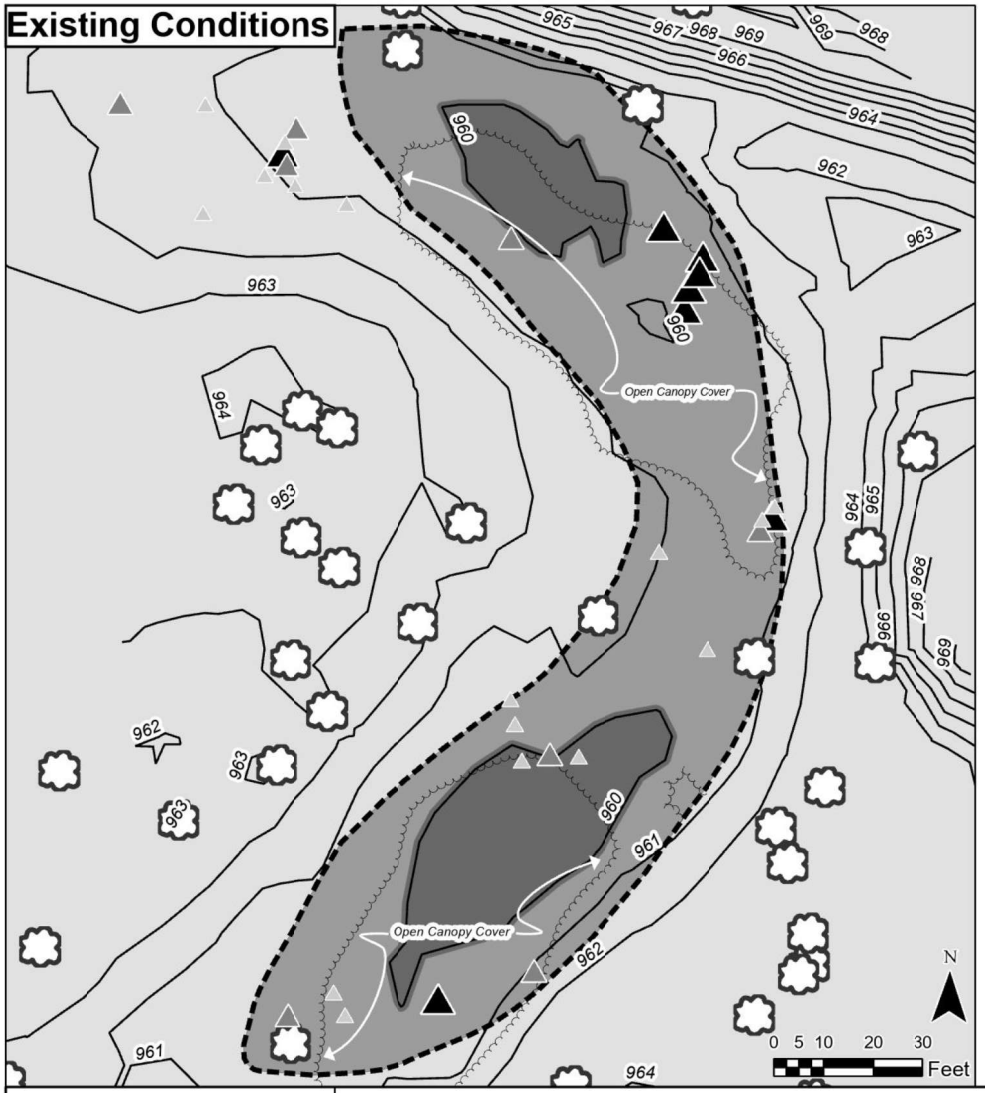
HOUSATONIC RIVER - VERNAL POOL PILOT STUDY
GENERAL ELECTRIC COMPANY
PITTSFIELD, MA

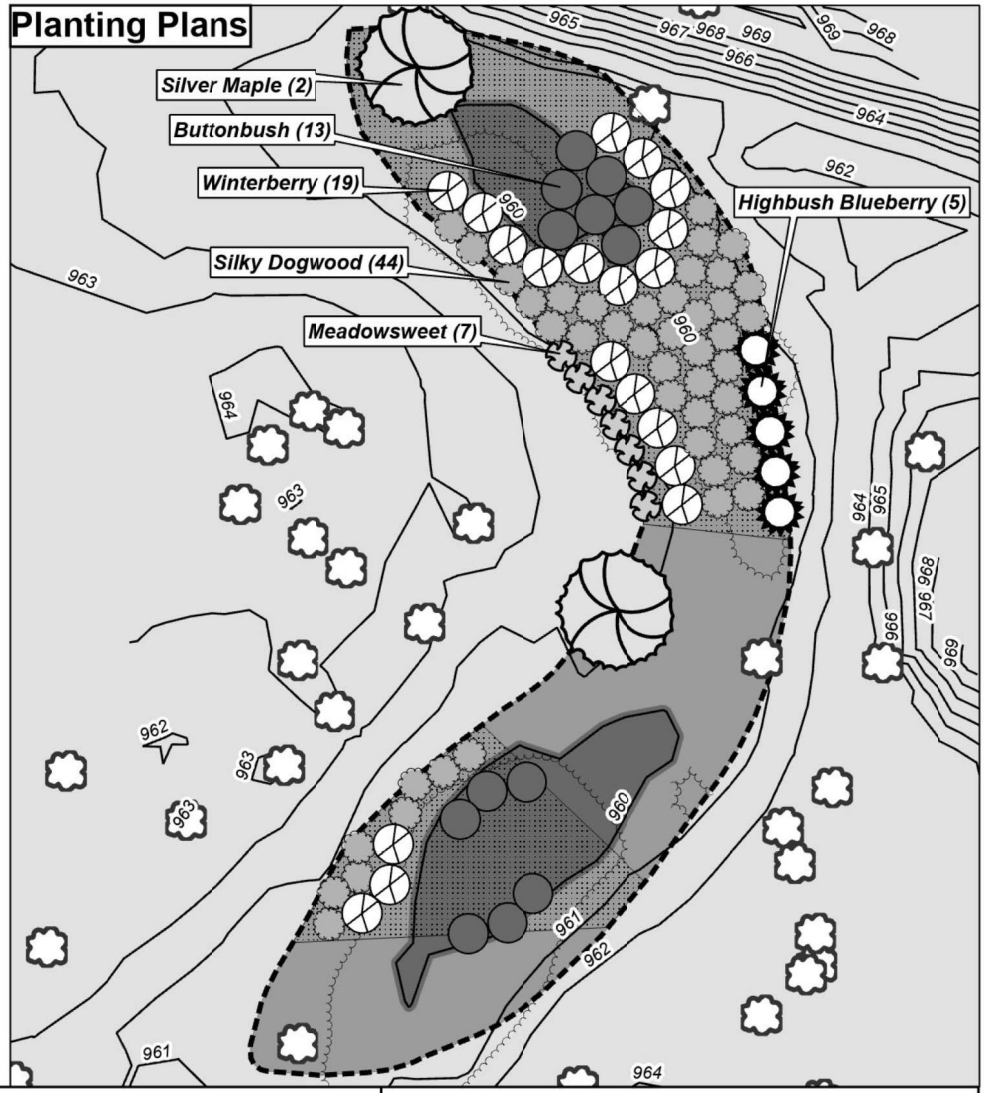
AIR MONITORING LOCATIONS (SOUTH AREA)

AM03

SHEET # 36 OF 42

Jun 19, 2026, 1:12 pm jmcabe
K:\Projects\0469-general electric\housatonic - vernal pools - reach 5a\construction plans\0469-VP-5a-PL-AIR MONITORING.dwg AM03





Notes:

- Coarse woody debris to be replaced as directed by wetland scientist.
- Wetland seed mix to be applied to all disturbed portions of the pool with bare soil.

Legend

- Canopy Cover
- Pool Boundary
- 1-Foot Contour
- Deeply Flooded Pocket
- Limits of Seasonal Flooding
- Existing Trees
- Vernal Pool Remediation Areas

Existing Coarse Woody Debris

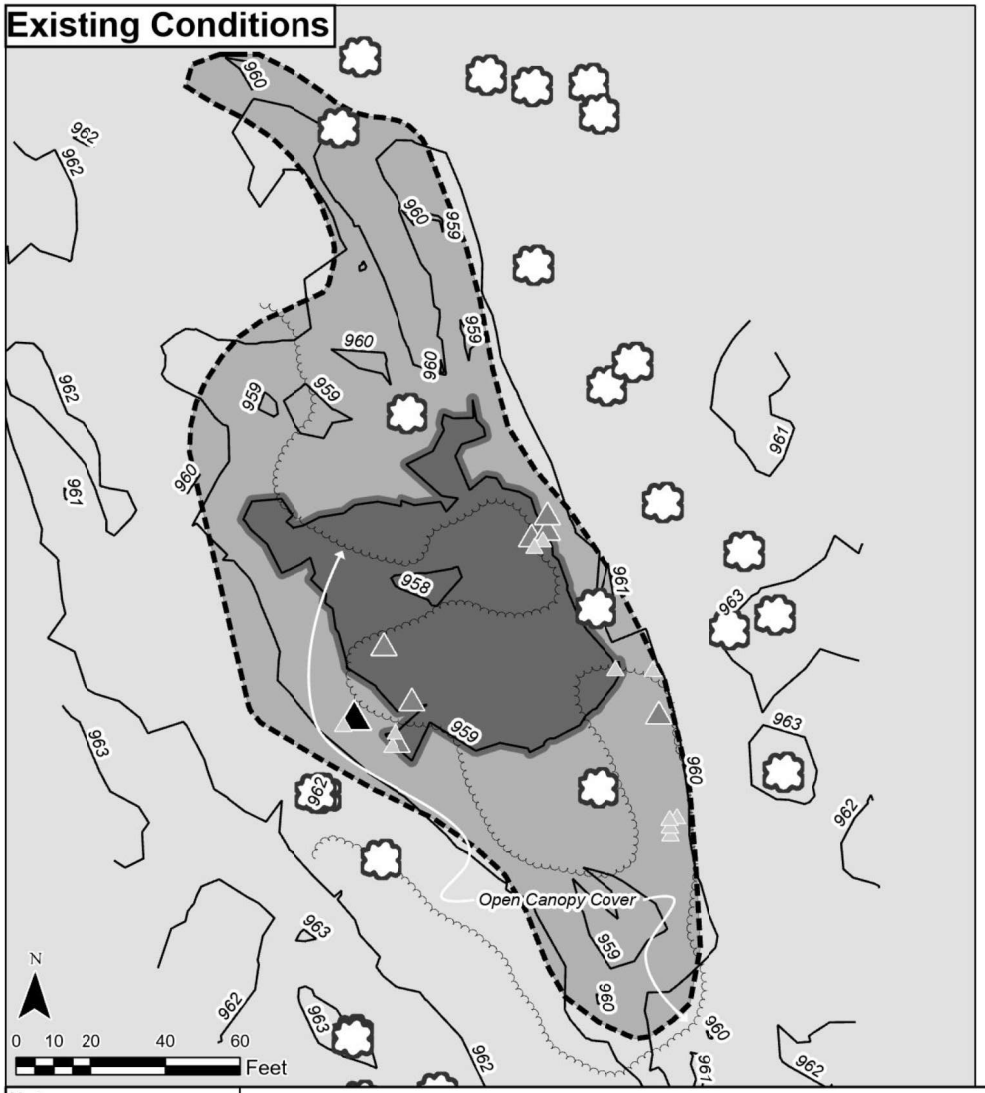
- <1-10 SF
- 11-20 SF
- 21-50 SF

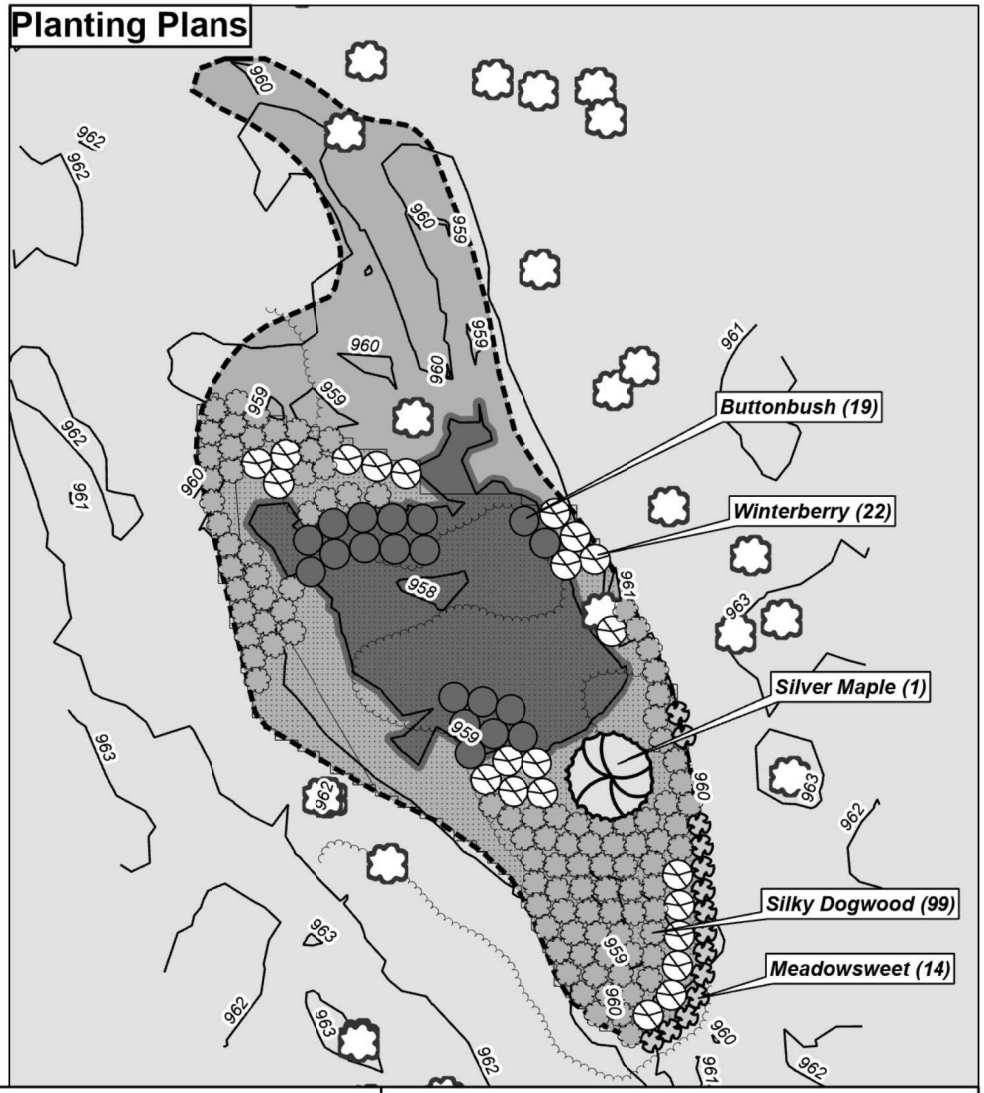
Existing Conditions & Planting Plan
5A-VP-4
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:300	6/18/2025	60670015

AECOM

Figure R1
Map Sheet 1 of 6





Notes:
- Coarse woody debris to be replaced as directed by wetland scientist.
- Wetland seed mix to be applied to all disturbed portions of the pool with bare soil.

Legend

- Canopy Cover
- Pool Boundary
- 1-Foot Contour
- Deep Flooded Pocket
- Limits of Seasonal Flooding
- Existing Trees
- Vernal Pool Remediation Areas

Existing Coarse Woody Debris

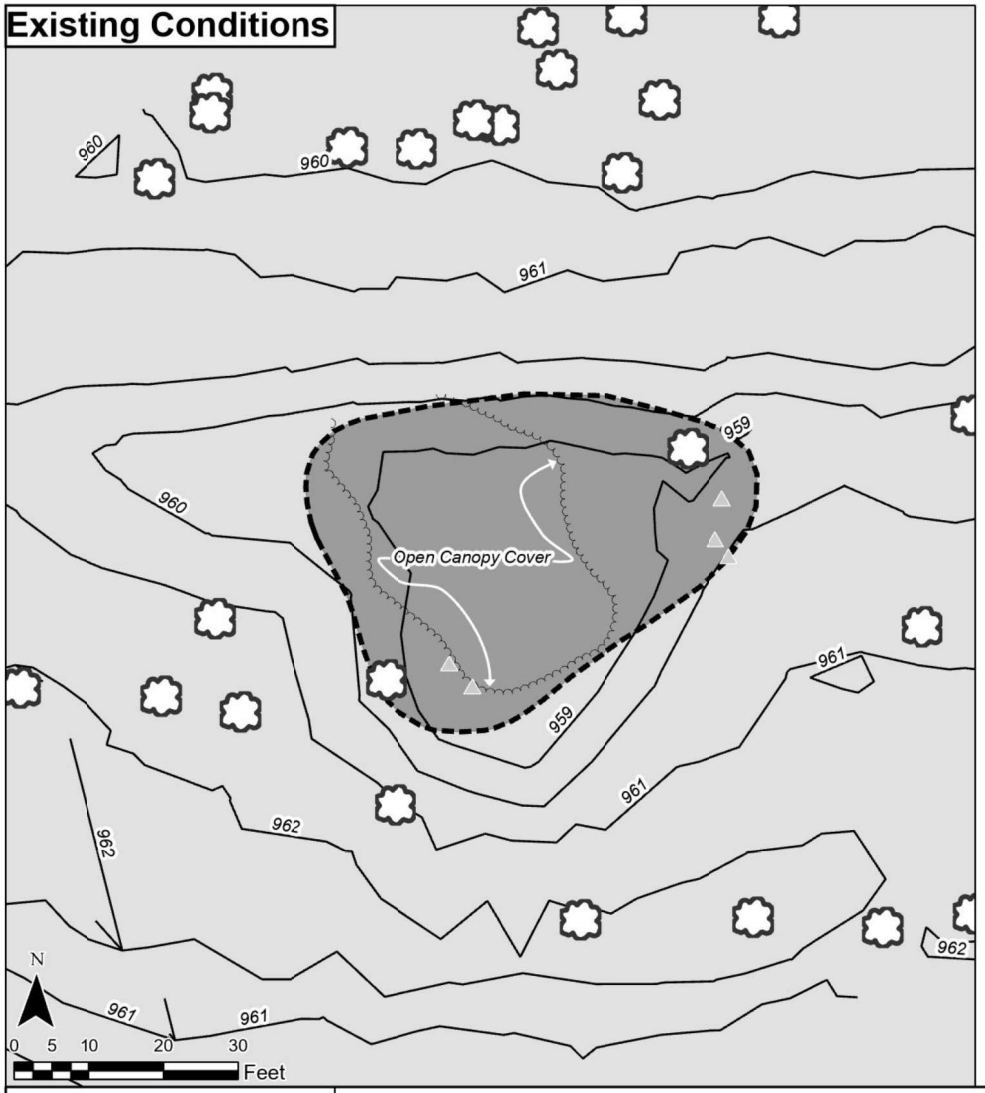
- <1-10 SF
- 11-20 SF
- 21-50 SF

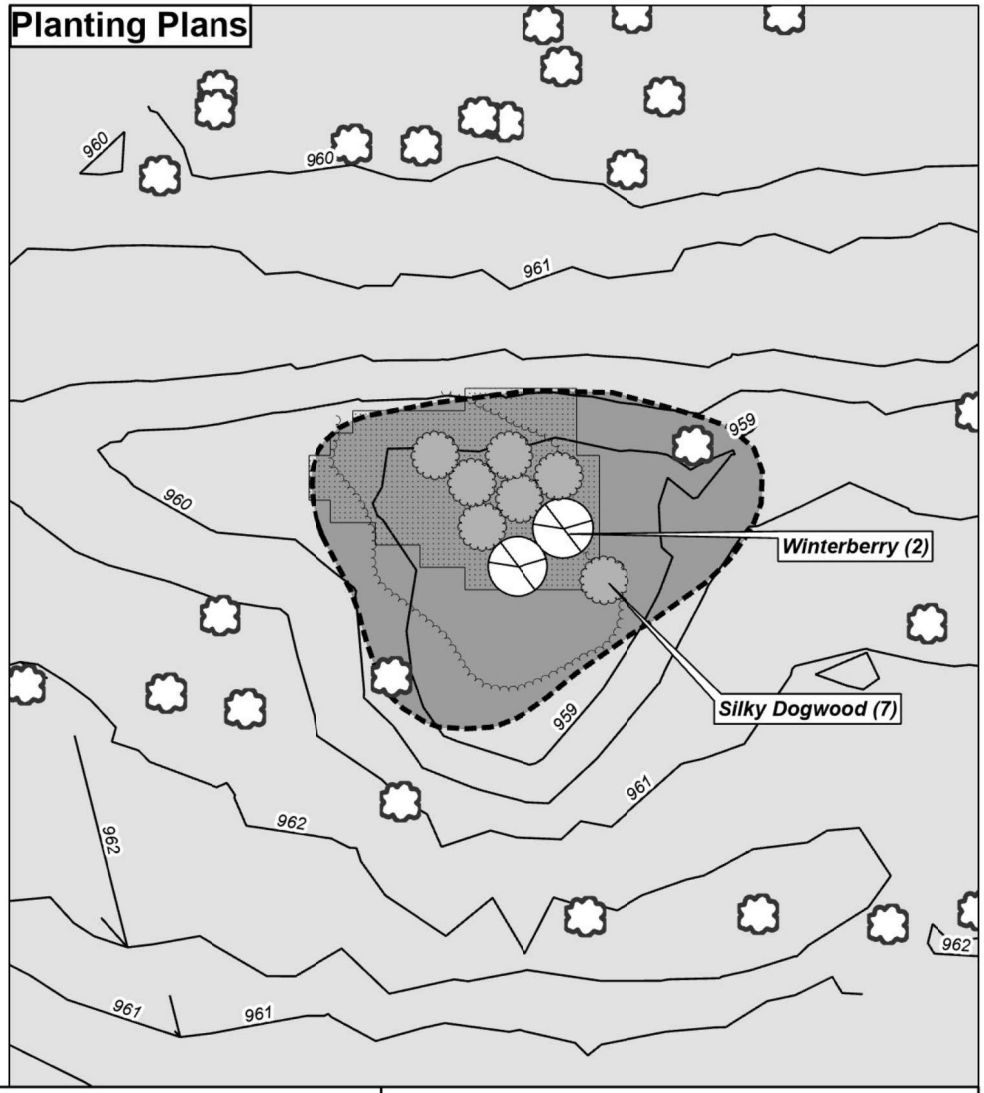
Existing Conditions & Planting Plan
5A-VP-7
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:400	6/18/202	60670015

AECOM

Figure R2
Map Sheet 2 of 6





Notes:

- Coarse woody debris to be replaced as directed by wetland scientist.
- Wetland seed mix to be applied to all disturbed portions of the pool with bare soil.

Legend

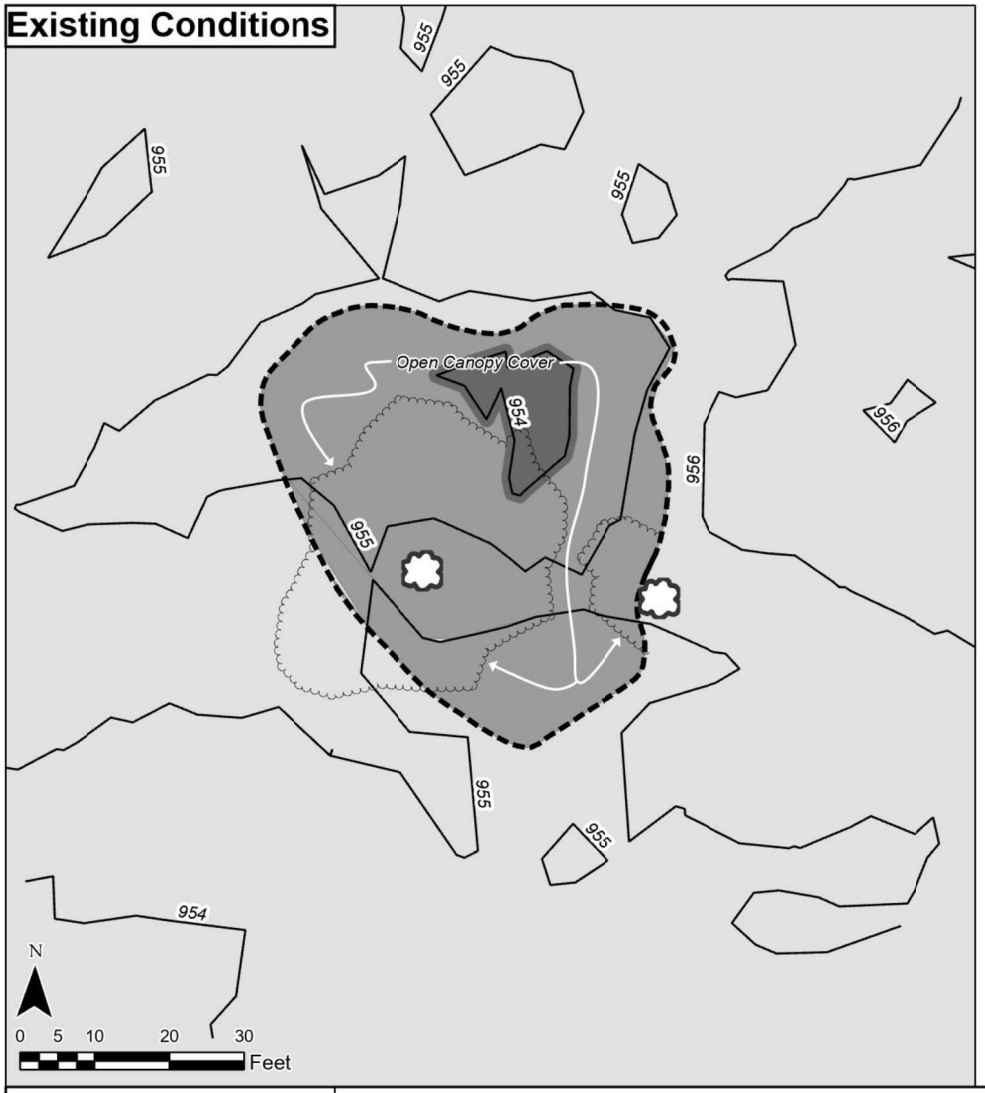
- Canopy Cover
- 1-Foot Contour
- Pool Boundary
- Vernal Pool Remediation Areas
- Deeply Flooded Pocket
- Limits of Seasonal Flooding
- Existing Trees
- **Existing Coarse Woody Debris**
  - <1-10 SF

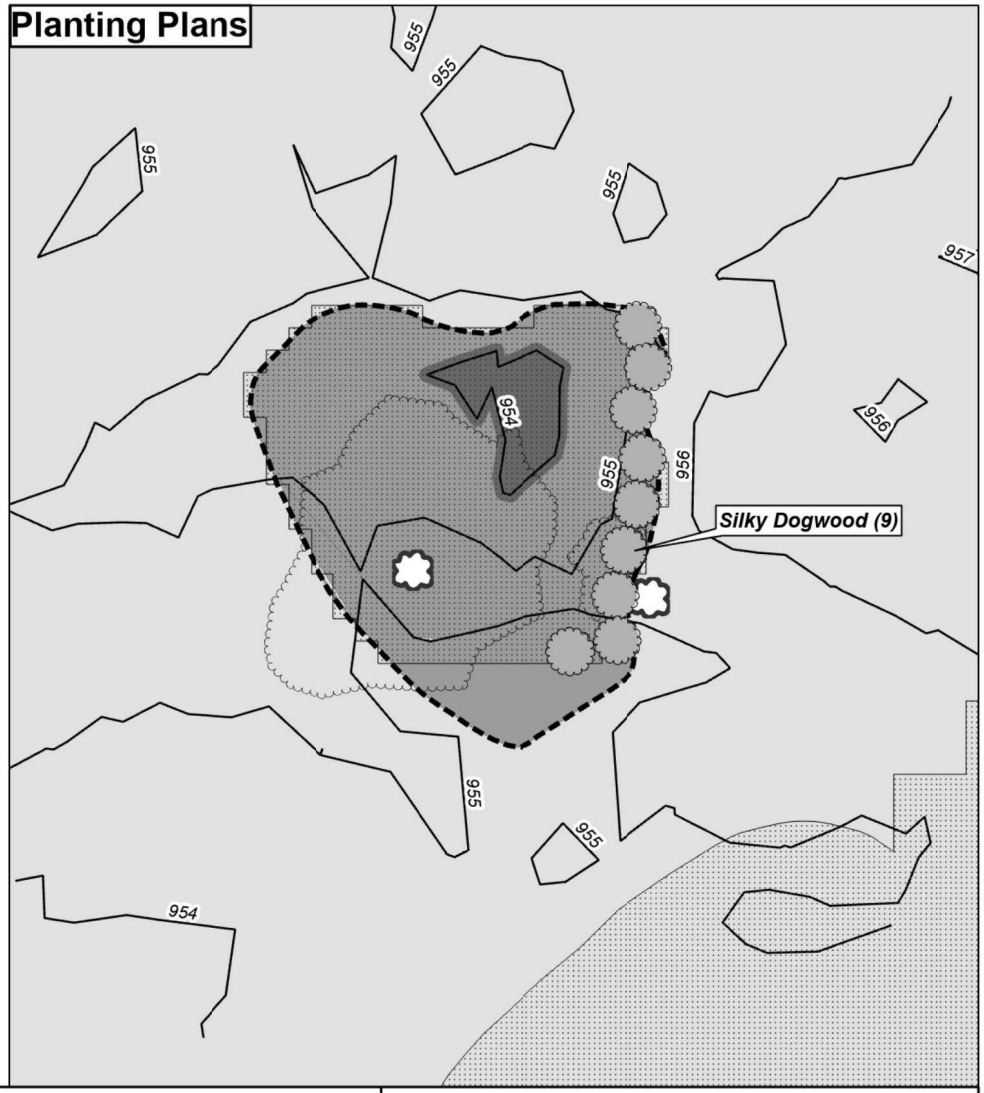
Existing Conditions & Planting Plan 5A-VP-16 Housatonic River - Pittsfield, MA		
SCALE	DATE	PROJECT NO.
1:200	6/18/2025	60670015

AECOM

Figure R3

Map Sheet 3 of 6





Note:

- Wetland seed mix to be applied to all disturbed portions of the pool with bare soil.

Legend

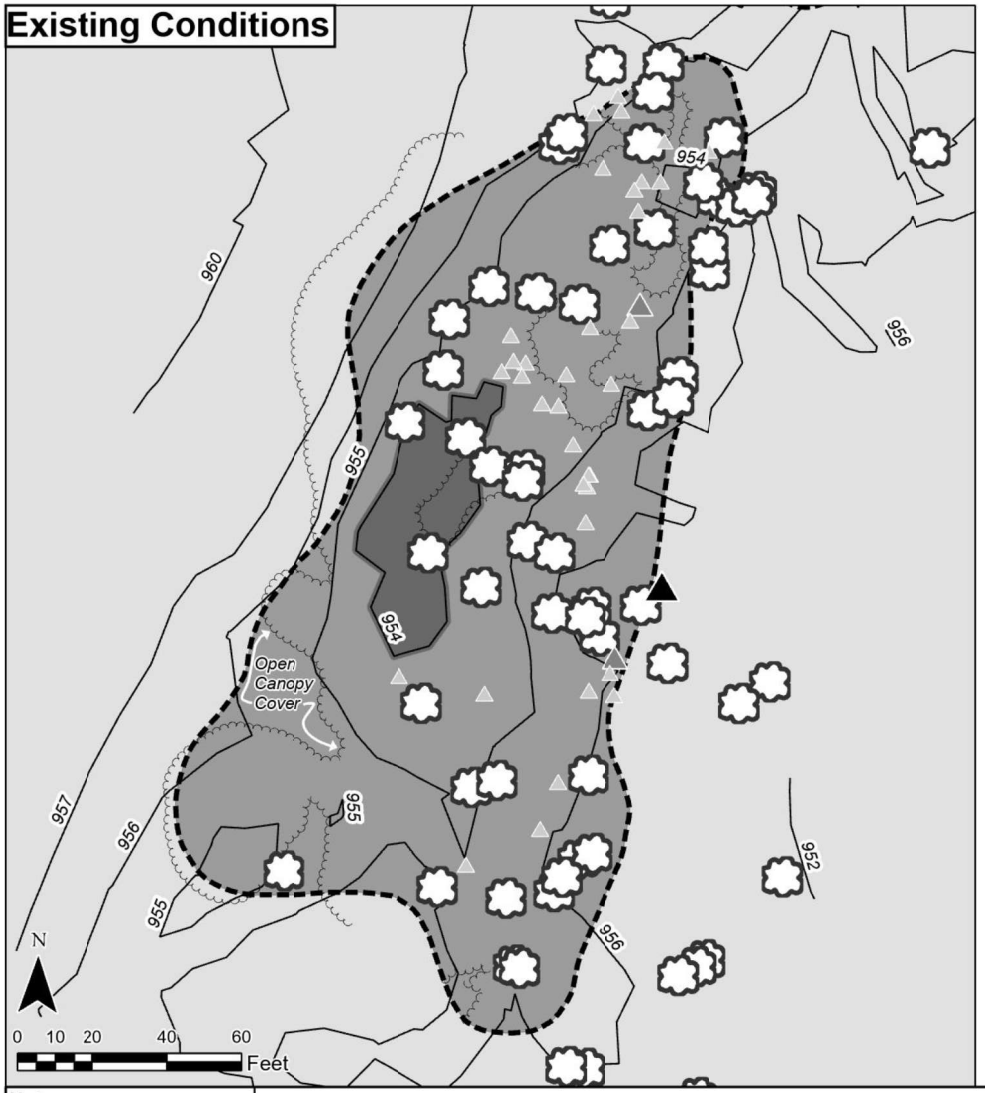
- Canopy Cover
- 1-Foot Contour
- Deeply Flooded Pocket
- Existing Trees
- Pool Boundary
- Vernal Pool Remediation Areas
- Limits of Seasonal Flooding

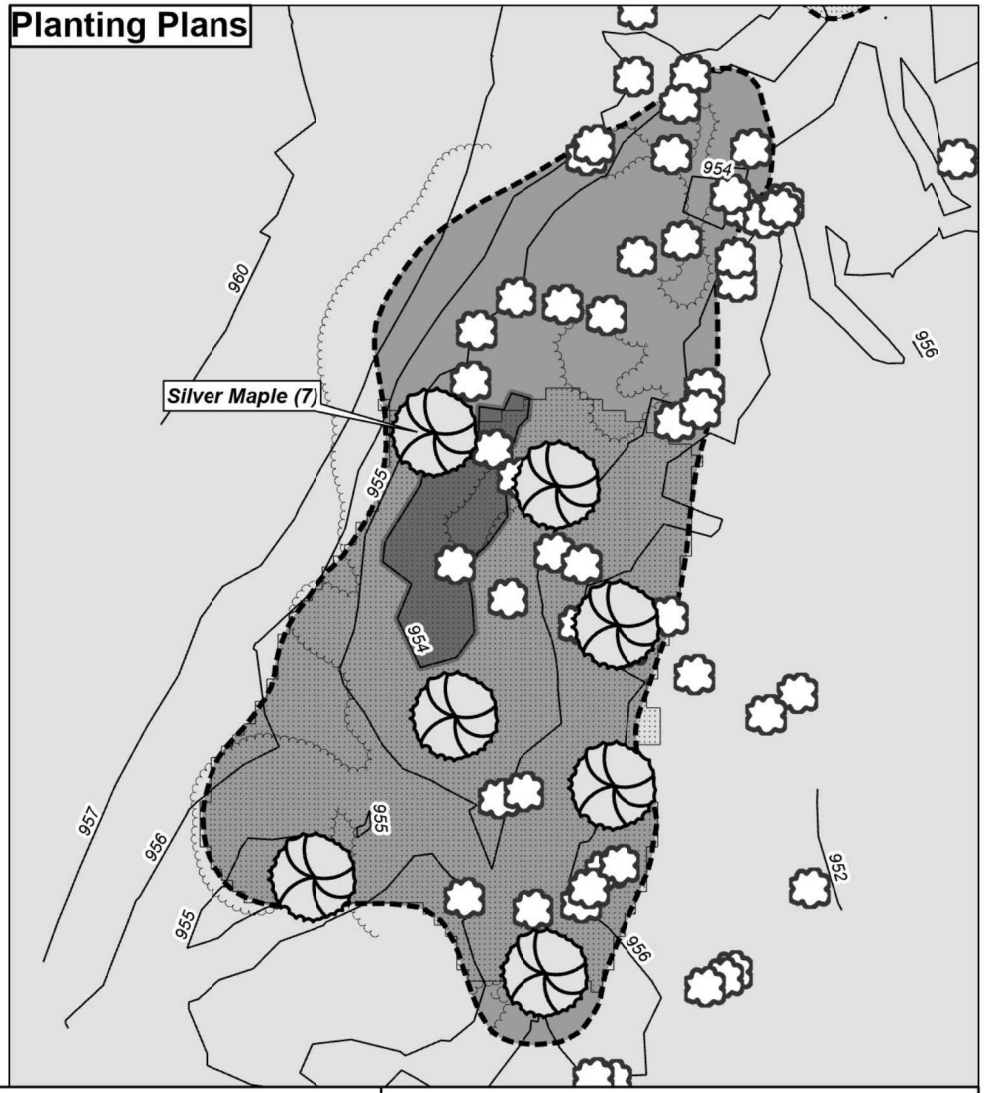
Existing Conditions & Planting Plan
5A-VP-52
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:200	6/18/2025	60670015

AECOM

Figure R4
Map Sheet 4 of 6





Notes:
- Coarse woody debris to be replaced as directed by wetland scientist.
- Wetland seed mix to be applied to all disturbed portions of the pool with bare soil.

Legend

- Canopy Cover
- 1-Foot Contour
- Pool Boundary
- Vernal Pool Remediation Areas
- Deeply Flooded Pocket
- Limits of Seasonal Flooding
- Existing Trees

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF

Existing Conditions & Planting Plan
5A-VP-57
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:400	6/18/2025	60670015

AECOM

Figure R5
Map Sheet 5 of 6

Table 1. New England Wetland Plants "WetMix"

Botanical Name	Common Name	Indicator
Carex vulpinoidea	Fox Sedge	OBL
Carex scoparia	Blunt Broom Sedge	FACW
Carex lurida	Lurid Sedge	OBL
Carex lupulina	Hop Sedge	OBL
Poa palustris	Fowl Bluegrass	FACW
Bidens frondosa	Beggar Ticks	FACW
Scirpus atrovirens	Green Bulrush	OBL
Asclepias incarnata	Swamp Milkweed	OBL
Carex crinita	Fringed Sedge	OBL
Vernonia noveboracensis	New York Ironweed	FACW
Juncus effusus	Soft Rush	FACW
Symphyotrichum lateriflorum	Starved/Calico Aster	FACW
Iris versicolor	Blue Flag	OBL
Glyceria grandis	American Mannagrass	OBL
Mimulus ringens	Monkey Flower	OBL
Eutrochium maculatum	Spotted Joe Pye Weed	OBL

Apply seed mix at the recommended rates:

1. New England WetMix to be applied at 1 pound per 2,500 square feet

Table 2. FACW Wetland Meadow Mix - ERNMX-122

Botanical Name	Common Name	Indicator
Carex vulpinoidea, PA Ecotype	Fox Sedge	OBL
Carex lurida, PA Ecotype	Lurid Sedge	OBL
Elymus virginicus, Madison-NY Ecotype	Virginia Wildrye	FACW
Juncus effusus	Soft Rush	OBL
Verbena hastata, PA Ecotype	Blue Vervain	FACW
Carex scoparia, PA Ecotype	Blunt Broom Sedge	FACW
Asclepias incarnata, PA Ecotype	Swamp Milkweed	OBL
Zizia aurea, PA Ecotype	Golden Alexanders	FAC
Glyceria striata, PA Ecotype	Fowl Mannagrass	OBL
Verbena urticifolia, PA Ecotype	White Vervain	FAC
Eupatorium perfoliatum, PA Ecotype	Boneset	FACW
Onoclea sensibilis	Sensitive Fern	FACW
Symphyotrichum puniceum, PA Ecotype	Purplestem Aster	OBL
Carex crinita, PA Ecotype	Fringed Sedge	OBL
Lobelia siphilitica, PA Ecotype	Great Blue Lobelia	FACW
Heliopsis helianthoides, PA Ecotype	Oxeye Sunflower	FACU
Mimulus ringens, PA Ecotype	Square Stemmed Monkeyflower	OBL
Scirpus cyperinus, PA Ecotype	Woolgrass	OBL
Solidago rugosa, PA Ecotype	Wrinkleleaf Goldenrod	FAC
Lycopus americanus, PA Ecotype	American Water Horehound	OBL

Apply seed mix at the recommended rates:

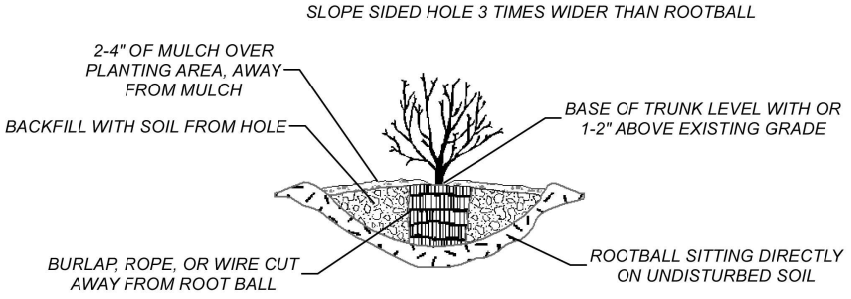
1. FACW Wetland Meadow Mix - ERNMX-122 to be applied at 20 pounds per acre, or 1/2 pound per 1,000 square feet.

Table 3. Proposed tree and shrub plantings in the restored vernal pools

Pool ID	Scientific Name	Common Name	Layer	Count
5A-VP-4	*Acer saccharinum*	Silver maple	Tree	2
	Cephalanthus occidentalis	Buttonbush	Shrub	13
	Ilex verticillata	Winterberry	Shrub	19
	Cornus amomum	Silky dogwood	Shrub	44
	Spirea alba	Meadowsweet	Shrub	7
	Vaccinium corymbosum	Highbush blueberry	Shrub	5
5A-VP-7	*Acer saccharinum*	Silver maple	Tree	1
	Cephalanthus occidentalis	Buttonbush	Shrub	19
	Ilex verticillata	Winterberry	Shrub	22
	Cornus amomum	Silky dogwood	Shrub	99
	Spirea alba	Meadowsweet	Shrub	14
5A-VP-16	*Ilex verticillata*	Winterberry	Shrub	2
	Cornus amomum	Silky dogwood	Shrub	7
5A-VP-52	*Cornus amomum*	Silky dogwood	Shrub	9
5A-VP-57	*Acer saccharinum*	Silver maple	Tree	7

1. All trees and shrubs shall not exceed a one-gallon container size or be planted at depths greater than 12 inches

See Section 32 30 00 – Restoration, Planting and Seeding Specifications located in Appendix F of the Final Revised Vernal Pool Pilot Study Work Plan.



PLANTING DETAIL 3
NOT TO SCALE

NO	DATE	REVISIONS	BY	CHK	APP
1	2/2/26	REPLACED SHEET			

AECOM
AECOM Environment
250 Apollo Drive
Chelmsford, MA 01824

Planting and Construction Notes

Proposed Vernal Pool Restoration Plan
Reach 5A Pilot Study Pools
Pittsfield, Massachusetts

DATE: 6/18/2025

PROJ. NO.: 60605466

DRAWING NUMBER:
R6

SHEET NUMBER:
6 OF 6

Mar 17, 2026 1:07pm pscalba K:\Projects\0469-General Electric\Housatonic - Vernal Pools - Reach 5A\Construction Plans\0469-VP-5-ph-Series-AECOM-Drawings.dwg | R6

Appendix C
Contractor's Stormwater Pollution Prevention Plan

GE-Pittsfield/Housatonic River Site
Vernal Pool Pilot Study
Contract 40

Stormwater Pollution Prevention Plan (SWPPP)

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, NY 14305

Contractor SWPPP submitted May 2026 by Sevenson

Table of Contents

Table of Contents 2
Abbreviations 4
Appendices 4
1 Introduction 5
Regulatory Requirements and Applicable Standards 6
2 Contact Information / Responsible Parties 7
2.1 Construction Operator(s) and Subcontractor(s) 7
2.2 Stormwater Team 7
3 Site Evaluation, Assessment, and Planning 9
3.1 Project/Site Information 9
3.2 Discharge Information 9
3.3 Nature of the Construction Activities 9
3.3.1 General Description of Project 9
3.3.2 Construction Site Conditions 10
3.3.3 Pollutant-Generating Activities 10
3.4 Sequence and Estimated Dates of Construction Activities 10
3.5 Authorized Non-Stormwater Discharges 11
3.6 Site Maps 12
4 Documentation of Compliance with Other Federal Requirements 13
4.1 Endangered Species Protection 13
4.2 Historic Property Screening Process 13
4.3 Safe Drinking Water Act Underground Injection Control Requirements 13
Pre-Construction Requirements 14
5 Erosion and Sediment Controls and Dewatering Practices 14
5.1 Natural Buffers or Equivalent Sediment Controls 14
5.2 Perimeter Controls 14
5.3 Sediment Track-Out 17
5.4 Stockpiles or Land Clearing Debris Piles Comprised of Sediment or Soil 18
5.5 Minimize Dust 18
5.6 Minimize Steep Slope Disturbances 18
5.7 Topsoil 18
5.8 Soil Compaction 18
5.9 Storm Drain Inlets 18
5.10 Constructed Site Drainage Feature 19
5.11 Sediment Basins or Similar Impoundments 19
5.12 Chemical Treatment 19
5.13 Dewatering Practices 19
5.14 Other Stormwater Controls 19
5.15 Site Stabilization 19

6 Pollution Prevention Controls 23
6.1 Potential Sources of Pollution 23
6.2 Spill Prevention and Response 23
6.3 Fueling and Maintenance of Equipment or Vehicles 23
6.4 Washing of Equipment and Vehicles 23
6.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes 23
6.5.1 Construction Products 23
6.5.2 Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Chemicals 23
6.5.3 Hazardous or Toxic Waste 23
6.5.4 Construction and Domestic Waste 24
6.5.5 Sanitary Waste 24
6.5.6 Application of Fertilizers 24
7 Inspection, Maintenance, and Corrective Action for Erosion and Sediment Controls 25
7.1 Inspection Personnel and Procedures 25
7.2 Corrective Action 26
7.3 Inspection Documentation and Recordkeeping 27
7.4 Maintenance Requirements 27
7.5 Delegation of Authority 28
8 Turbidity Benchmark Monitoring for Dewatering Discharges 29
9 Certification and Notification 30
Supplemental Operational Procedures 31
ESC Control Removal 31
Work Area Coverage 31
SWPPP Submittal Requirements 31
10 References 33
Appendix A 34
Copy of 2022 Construction General Permit 34
Appendix B 35
Site Inspection Report Form 35
Appendix C 36
Corrective Action Log 36
Appendix D 37
SWPPP Amendment Log 37
Appendix E 38
Subcontractor Certifications and Agreements 38
Appendix F 39
Grading and Stabilization Activities Log 39
Appendix G 40
Training Documentation 40
Appendix H 41
Delegation of Authority 41

Abbreviations

BMP	Best management practice
CFR	Code of Federal Regulations
CGP	2022 Construction General Permit
EPA / USEPA	U.S. Environmental Protection Agency
ESC	Erosion and sediment control
GE	General Electric Company
MNHES(P)	MassWildlife's Natural Heritage & Endangered Species (Program)
MS4	Municipal separate storm sewer system
N/A	Not applicable
NPDES	National Pollutant Discharge Elimination System
PAC	Powdered activated carbon
PCB	Polychlorinated biphenyl
PM/QCM	Project Manager / Quality Control Manager
project	Vernal Pool Pilot Study (Contract 40)
SIP	Supplemental Information Package
site	GE-Housatonic Rest-of-River Site
SWPPP	Stormwater Pollution Prevention Plan
TBD	To be determined

Appendices

Appendix A Copy of 2022 Construction General Permit
Appendix B Site Inspection Report Form
Appendix C Corrective Action Log
Appendix D SWPPP Amendment Log
Appendix E Subcontractor Certifications and Agreements
Appendix F Grading and Stabilization Activities Log
Appendix G Training Documentation
Appendix H Delegation of Authority

1 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) was prepared by Sevenson Environmental Services, Inc. (Sevenson) as the prime contractor for Contract 40, the GE Vernal Pool Pilot Study, part of the Housatonic River – Rest of River Remediation Project in Pittsfield, Massachusetts. The draft SWPPP was originally prepared by Anchor QEA in January 2026 and serves as the basis for this contractor-developed final SWPPP.

The project will be conducted at multiple vernal pool locations in the City of Pittsfield, Massachusetts, at the GE-Housatonic Rest-of-River Site in support of the overall remedial program. The project involves implementing multiple remedial technologies to address polychlorinated biphenyl (PCB) contamination within vernal pools at the site. These activities include placing powdered activated carbon (PAC)-based amendments to enhance contaminant uptake in five vernal pools, excavation, backfilling, and restoration in five vernal pools, and conducting general construction activities at four work areas (Pomeroy Avenue, Holmes Road, Miss Hall's School, and Utility Drive).

The primary objectives of this SWPPP are to:

- Protect wetlands, vernal pools, and other water resources not subject to active remediation from erosion, sedimentation, and stormwater pollutants.
- Define installation, maintenance, and removal procedures for all temporary ESC best management practices (BMPs).
- Establish a regular inspection schedule that meets NPDES and MassDEP requirements.
- Assign clear roles and responsibilities to Sevenson field personnel for SWPPP compliance throughout the project.

This SWPPP outlines the methodologies and approaches for minimizing erosion and sediment transport within the site and to off-site locations. The SWPPP was developed to support compliance with the National Pollutant Discharge Elimination System (NPDES) program and incorporates elements of the U.S. Environmental Protection Agency's (EPA's) 2022 SWPPP template, including applicable sections and documentation.

No land disturbance activities will commence until the SWPPP has been approved as part of the Supplemental Information Package (SIP) and USEPA review is complete.

Regulatory Requirements and Applicable Standards

All ESC and SWPPP activities will comply with the following regulatory requirements and standards:

Regulation / Standard	Applicability
Clean Water Act – NPDES, 40 CFR 122.26(c)(1)(ii)(C) and 122.44(k)	Federal stormwater permit requirements for construction sites
Massachusetts Clean Water Act, 314 CMR 9.00 et seq. (incl. 9.06, 9.07)	State water quality certification for stormwater discharges
MA Wetlands Protection Act – 310 CMR 10.05(6)(k) and 314 CMR 9.06(6)(a)	Stormwater management standards for work near wetlands and vernal pools
MassDEP Stormwater Handbook and Stormwater Standards	BMP design, installation, and maintenance guidance
FHWA FP-03, Section 713.17	Specification for Type 3.B erosion control blankets
ASTM International 5035	Minimum strength standard for straw wattles (180 psi)

2 Contact Information / Responsible Parties

2.1 Construction Operator(s) and Subcontractor(s)

Tables 1 through 3 summarize the contact information for the relevant parties responsible for administering project construction activities at the site.

Table 1 Site Operator Contact

Table 1 – Site Operator Contact	
Company or Organization Name	Sevenson Environmental Services, Inc.
Name	Steven Coye (Site Superintendent)
Address, City, State, Zip Code	2749 Lockport Road, Niagara Falls, NY 14305
Telephone Number	(716) 628-8387
Fax/Email	scoye@sevenson.com
Area of Control (if more than one Operator)	All work areas

Table 2 Site Subcontractor Contact

Company or Organization Name	Sevenson Environmental Services, Inc.
Name	Joseph Casper (PM/QCM)
Address, City, State, Zip Code	2749 Lockport Road, Niagara Falls, NY 14305
Telephone Number	(631) 707-4642
Fax/Email	JCasper@sevenson.com
Area of Control	All work areas

Note: If there are additional operators at the site, add additional tables (labeled #A, #B, etc.) and specify the Area of Control for each.

Table 3 Emergency 24-Hour Contact

Company or Organization Name	Sevenson Environmental Services, Inc.
Name	Joseph Casper
Telephone Number	(631) 707 -4642

2.2 Stormwater Team

Tables 4 and 5 summarize the contact information for the relevant parties responsible for administering the stormwater-related elements of project construction at the site, including SWPPP development and maintenance and inspection of erosion and stormwater controls implemented at the site.

Table 4 Stormwater Management Team

Name and/or Position, and Contact	Responsibilities	CGP Part 6.2 Training	CGP Read and Understood
J. Casper / Johnny Moot (PM/QCM) Sevenson Environmental Services	SWPPP development and modifications; authority to halt non-compliant work; approval of SWPPP submittals; review of inspection reports	☑ Yes ☐ No	☑ Yes [06/17/2026]
J. Casper / Johnny Moot (PM/QCM) Sevenson Environmental Services	Daily site walk-throughs; ensure ESC controls are in place prior to all intrusive activities; coordinate corrective actions	☑ Yes ☐ No	☑ Yes [06/17/2026]
S. Coye (General Superintendent) Sevenson Environmental Services	Schedule and coordinate ESC installation and maintenance crew; ensure controls are installed before each phase of land disturbance begins	☑ Yes ☐ No	☑ Yes [06/17/2026]
Michael Flynn – Anchor QEA / GE (Construction Manager)	Review and approve SWPPP; issue written authorization for removal of ESC controls; receive inspection submittals	☐ Yes ☐ No	☐ Yes [Date]

Sevenson will ensure and certify that Joe Casper, Johnny Moot, and Steve Coye understand the elements listed in Part 6.2 of the NPDES CGP, and the required training will be completed prior to the start of construction.

Table 5 Stormwater Team Members Who Conduct Inspections Pursuant to CGP Part 4

Name and/or Position and Contact	Training(s) Received	Date Training Completed	Training Satisfies CGP Part 6.3.b Minimum Elements
J. Casper / J. Moot PM/QCM Sevenson Environmental Services	NPDES Construction Inspection Training Course	[06/17/2026]	☑Principles and practices of erosion and sediment control ☑ Proper installation and maintenance of controls ☑ Performance of inspections per Part 4

Sevenson will ensure and certify that Joe Casper and Johnny Moot understand the elements listed in Part 6.3 of the NPDES CGP, and the required training will be completed prior to the start of construction.

3 Site Evaluation, Assessment, and Planning

3.1 Project/Site Information

Project/Site Name: GE-Pittsfield/Housatonic River Vernal Pool Pilot Study (Contract 40)

Location	Multiple locations, City of Pittsfield, Massachusetts 01238
County	Berkshire County
State	Massachusetts
Indian Country / Cultural Significance	☐ Yes ☑ No

Project Latitude and Longitude (decimal degrees):

Primary work will be conducted at ten separate vernal pools:

Pool ID	Latitude	Longitude	Work Area
5A-VP-9	42.430361	-73.246778	Pomeroy Avenue
5A-VP-12	42.429472	-73.246278	Pomeroy Avenue
5A-VP-15	42.42995	-73.243244	Pomeroy Avenue
5A-VP-22	42.425932	-73.238913	Holmes Road
5A-VP-27	42.424044	-73.238747	Holmes Road / Miss Hall's School
5A-VP-4	42.432722	-73.248139	Pomeroy Avenue
5A-VP-7	42.430306	-73.248917	Pomeroy Avenue
5A-VP-16	42.430007	-73.242597	Pomeroy Avenue
5A-VP-52	42.416037	-73.241331	Utility Drive
5A-VP-57	42.415004	-73.241236	Utility Drive

Horizontal Reference Datum: ☐ NAD 27 ☑ NAD 83 ☑ WGS 84 | Data Source: ☑ Map ☐ GPS

3.2 Discharge Information

Discharges to Municipal Separate Storm Sewer System (MS4)?	☐ Yes ☑ No
Waters of the U.S. within 50 feet of earth disturbances?	☑ Yes ☐ No

3.3 Nature of the Construction Activities

3.3.1 General Description of Project

The pilot study construction activities include site preparation and access improvements, removal and off-site disposal of impacted vernal pool soils with subsequent backfilling to restore pre-existing grades in removal-based pools, and placement of a PAC-based in situ amendment in amendment-based pools, with limited mechanical mixing in select areas. Additional activities include construction of temporary access roads and staging, erosion and sediment control, water and equipment decontamination management, and restoration of disturbed vernal

pools and adjacent areas following completion of the work. Sevenson Environmental Services, Inc. (Sevenson) is the prime contractor responsible for field execution.

3.3.2 Construction Site Conditions

Table 6 Size of Construction Site

Size of property	N/A – multiple locations
Total area expected to be disturbed	6.5 acres of vernal pools 4.2 acres associated with 9,150 linear feet of 20-foot-wide primary access route improvements 0.2 acre associated with 750 linear feet of 10-foot-wide secondary access route development 2.8 acres of staging area development
Maximum area disturbed at any one time	TBD by contractor prior to start of construction
Type of Construction Site	☑ Other: Undeveloped
Demolition of structure built before Jan 1, 1980?	☐ Yes ☑ No
Pre-development use for agriculture?	☐ Yes ☑ No

3.3.3 Pollutant-Generating Activities

Table 7 Potential Pollutant Sources

Pollutant-Generating Activity	Pollutants or Pollutant Constituents	Location on Site
Access road construction	Soil, sediment	Throughout site. See project drawings (Design Drawings included in the SIP).
Management of excavated soils and sediments	Soil, sediment	Throughout site. See project drawings (Design Drawings included in the SIP).
Placement of amendments (PAC)	Amendment	Throughout site. See project drawings (Design Drawings included in the SIP).
Construction vehicle operations	Soil, sediment, fuel	Throughout site. See project drawings (Design Drawings included in the SIP).
General construction waste	Litter and refuse	Throughout site, particularly at staging areas.

3.4 Sequence and Estimated Dates of Construction Activities

Tables 8A through 8D provide information on projected construction activities for the project and approximate timelines. Details will be provided by Sevenson prior to start of construction activities.

Table 8A Sequence and Estimated Dates of Construction Activities – Mobilization

Estimated start date	July 20th 2026
Estimated end date	August 8th 2026
Estimated date(s) of stabilization measures	August 8th 2026 – September 29th 2026

Estimated date(s) stormwater controls will be removed	September 29th 2026 – October 2nd 2026

Table 8B Sequence and Estimated Dates of Construction Activities – Access Road Construction

Estimated start date	August 5th 2026
Estimated end date	August 31st 2026
Estimated date(s) of stabilization measures	August 8th 2026 – September 29th 2026
Estimated date(s) stormwater controls will be removed	September 29th 2026 – October 2nd 2026

Table 8C Sequence and Estimated Dates of Construction Activities – Pilot Study Activities

Estimated start date	July 20th 2026
Estimated end date	October 9th 2026
Estimated date(s) of stabilization measures	August 8th 2026 – September 29th 2026
Estimated date(s) stormwater controls will be removed	September 29th 2026 – October 9th 2026

Table 8D Sequence and Estimated Dates of Construction Activities – Site Restoration

Estimated start date	September 22nd 2026
Estimated end date	October 7th 2026
Estimated date(s) of stabilization measures	August 8th 2026 – September 29th 2026
Estimated date(s) stormwater controls will be removed	September 29th 2026 – October 2nd 2026

3.5 Authorized Non-Stormwater Discharges

Table 9 List of Authorized Non-Stormwater Discharges Present at the Site

Type of Authorized Non-Stormwater Discharge	Present at Site?
Discharges from emergency fire-fighting activities	☐ Yes ☑ No
Fire hydrant flushings	☐ Yes ☑ No
Landscape irrigation	☑ Yes ☐ No
Water used to wash vehicles and equipment	☑ Yes ☐ No
Water used to control dust	☑ Yes ☐ No
Potable water including uncontaminated water line flushings	☐ Yes ☑ No
External building washdown	☐ Yes ☑ No
Pavement wash waters	☐ Yes ☑ No

Uncontaminated air conditioning or compressor condensate	☐ Yes ☑ No
Uncontaminated, non-turbid discharges of ground water or spring water	☐ Yes ☑ No
Foundation or footing drains	☐ Yes ☑ No
Uncontaminated construction dewatering water	☐ Yes ☑ No

3.6 Site Maps

The Housatonic River – Vernal Pool Pilot Study Construction Drawings (Design Drawings included in the SIP) associated with this SWPPP provide general information pertaining to existing and proposed site conditions, construction components, project notes, planned erosion and sediment control BMPs, and associated details. ESC control locations at all four work areas (Pomeroy Avenue, Holmes Road, Miss Hall's School, Utility Drive) are shown on the Design Drawings. The PM/QCM and General Superintendent reviewed the Contract Drawings to confirm all ESC locations prior to mobilization.

4 Documentation of Compliance with Other Federal Requirements

4.1 Endangered Species Protection

As specified in Table 7-6 of the Revised Housatonic River Reach 5A Baseline Restoration Assessment Report (AECOM 2024a), a total of 12 plant and animal species listed by the Massachusetts Natural Heritage and Endangered Species Program (MNHESP) as threatened, endangered, or of special concern have MNHESP-mapped Species Habitat that encompasses the vernal pools in Reach 5A. These include two bird species, seven plant species, one turtle, and two lepidopteran insects. In addition, consultation with the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) indicated that two federally listed or proposed bat species (which are also state listed) may use these habitats. Pre-construction protection and screening measures for rare species are detailed in the SIP.

4.2 Historic Property Screening Process

A Cultural Resource Survey was conducted in 2024 by AECOM to determine whether the archaeological sites or other potentially significant cultural resources could be impacted by remediation and support activities near the vernal pools in Reach 5A (AECOM 2025). Based on current information, cultural resources are not anticipated to be encountered during implementation of the vernal pool pilot test. However, if cultural resources are encountered, the procedures specified in the Cultural Resources Unanticipated Discoveries Plan included in the Final Revised Vernal Pool Pilot Study Work Plan will be implemented (Anchor QEA and AECOM 2025).

4.3 Safe Drinking Water Act Underground Injection Control Requirements

There will be no installation of infiltration trenches, commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow, nor any drywells, seepage pits, or improved sinkholes. As such, the underground injection control requirements of the Safe Drinking Water Act are not applicable to this project.

Pre-Construction Requirements

The following activities will be completed before any land disturbance begins at any work area:

- SWPPP Approval: Confirm written USEPA SIP approval has been received. No clearing, grubbing, excavation, or other land disturbance will commence without this approval.
- Design Drawing Review: The PM/QCM and General Superintendent will review the Contract Drawings to confirm all ESC locations prior to mobilization.
- Pre-Construction Site Walkthrough: PM/QCM, Site Safety Officer, and General Superintendent will conduct a joint walkthrough of all four work areas (Pomeroy Avenue, Holmes Road, Miss Hall's School, Utility Drive) to identify additional ESC needs, concentrated flow paths, steep slopes, and sensitive areas requiring extra protection.
- Existing Condition Documentation: Photograph existing drainage patterns, adjacent wetland and vernal pool edges, and any existing erosion features at each work area.
- Materials Staging: Verify all ESC materials (silt fencing, erosion blankets, straw wattles, stakes, fasteners) are on-site and staged at the GE East Street temporary field office or at the respective work area before disturbance begins.
- Equipment Readiness: Confirm trencher and labor resources are available for ESC installation.

5 Erosion and Sediment Controls and Dewatering Practices

This section provides a description of the erosion and sediment control (ESC) measures planned for implementation during the study. Refer to the project drawings for the location of proposed ESC BMPs and details (Design Drawings included in the SIP). Only materials listed below, or equivalents approved in writing by the Construction Manager, will be used. All materials will comply with Specification Section 31 25 00 and applicable regulatory requirements.

5.1 Natural Buffers or Equivalent Sediment Controls

While a 50-foot distance is maintained between work areas and downstream receiving waters (i.e., the Housatonic River) in most locations, some activities will occur within 50 feet. At vernal pool sites, the existing wooded and natural conditions provide a buffer, which will be supplemented with appropriate erosion controls to achieve a sediment load reduction equivalent to a 50-foot undisturbed natural buffer. The erosion controls to be implemented are described in other sections of this draft SWPPP.

5.2 Perimeter Controls

Perimeter sediment controls will be installed in areas around the vernal pools to limit the movement of disturbed soil outside of the remedial footprint. ESC controls will be installed prior to any land disturbance activity and maintained throughout the duration of the work. Sevenson will sequence construction activities to minimize the area of bare soil exposed at any one time and stabilize disturbed areas as quickly as possible. Vegetation will be preserved to the maximum extent practicable.

General installation requirements:

- Install all required ESC measures for a given area before commencing soil-disturbing activities in that area.
- Install erosion control blankets and/or straw wattles on all exposed slopes where surface runoff is likely.
- Minimize vegetation disturbance on steep slopes to maintain soil stability.
- Regulate drainage and control erosion in areas used for material/equipment storage and temporary facilities.

In ecologically sensitive areas adjacent to vernal pools, hand installation will be used in lieu of mechanized equipment to avoid soil compaction and damage to native vegetation or root zones.

Table 10A Straw Wattle

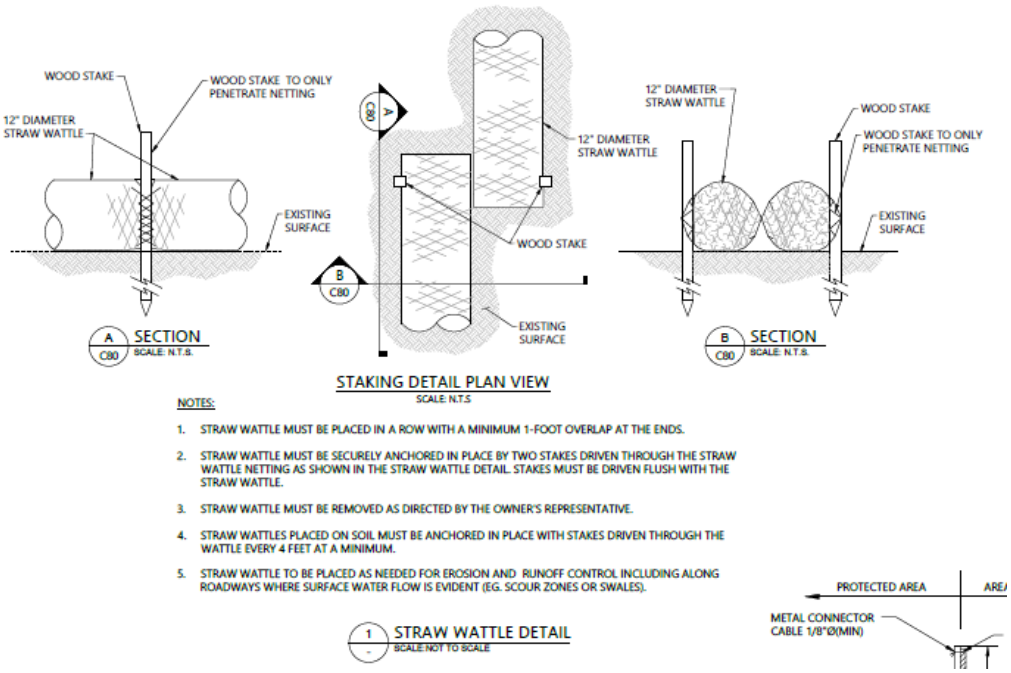
Straw Wattle
Description: A straw wattle is a cylindrical erosion control device made of straw or similar natural fibers encased in a mesh sleeve, used to reduce runoff velocity, trap sediment, and stabilize disturbed soils. Straw wattles will be used as needed, including along gravel access roads, in scour zones, and in swales where surface water flow is evident to prevent material migration.
Materials: 12-inch diameter, 100% biodegradable straw wattle, 100% weed-free. Up to 24-month life expectancy; 1/8-inch mesh opening. Minimum tensile strength of 180 psi per ASTM International 5035.
Installation: Remove vegetation, native leaf litter, and debris from the installation location so that wattles will be in firm contact with the soil surface. Place wattles perpendicular to the direction of flow. Stake wattles securely to prevent movement during storm events. Butt ends of adjacent wattles tightly together; do not allow gaps. Inspect after installation to confirm firm soil contact along the full length of the wattle.
Maintenance Requirements: Inspect immediately after rainfall. Remove sediment before it has accumulated to one-half of the above-ground height of the perimeter control. Replace straw wattles that have been crushed, scoured, or displaced beyond effective function.
Design Specifications:    (Design Drawings included in the SIP)

Table 10B Silt Fence

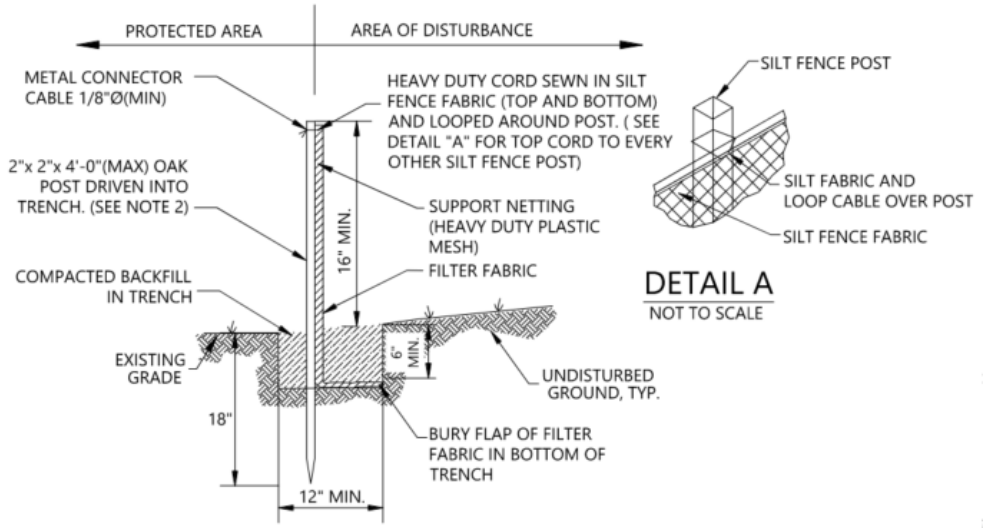
Silt Fence
Description: A silt fence is a temporary geotextile barrier installed along contours of disturbed areas to intercept and slow sediment-laden runoff, allowing soil particles to settle before leaving the site. See project drawings for locations (Design Drawings included in the SIP).
Materials: Filter Fabric: Geotextile compliant with MassDEP Soil Erosion and Sediment Control guidelines; minimum height 16 inches. Support Posts: Hardwood (minimum 1.25" × 1.25") or steel "T" or "U" profile at ≥1 lb/linear foot; minimum 4 feet in length. Wire Reinforcing: Minimum 14-gauge wire fencing with maximum 6-inch mesh opening. Fabric Fasteners: Heavy-duty staples, wire ties, or fasteners compatible with post material.
Placement Criteria: Silt fencing will be installed at locations shown on Design Drawings and at additional locations identified during the pre-construction walkthrough. Silt fence will NOT be installed in areas of concentrated stormwater flow (ditches, swales, channels), where rocky soils prevent full anchoring, or across the upstream or discharge ends of stormwater piping or culverts. On slopes, maximum spacing between fence runs

will comply with Table 1 of Specification Section 31 25 00 (e.g., 2–10% slope: 250 ft; 10–20% slope: 150 ft; 20–33% slope: 80 ft; 33–50% slope: 70 ft; >50% slope: 30 ft).

Installation: Step 1 – Layout: Mark fence alignment downslope of all disturbed areas. Step 2 – Trench: Excavate a minimum 6-inch deep trench along alignment. Step 3 – Post Driving: Drive posts at maximum 8-foot intervals, embedded minimum 16 inches, on the downslope side of the fabric. Step 4 – Fabric Depth: Fabric extends minimum 6 inches belowground and 16 inches aboveground. Step 5 – Trench Burial: Bury the bottom of the filter fabric in a "J" configuration to 6 inches below grade. Step 6 – Fabric Overlap: Where two sections abut, fold over edges and overlap minimum 6 inches, fastening securely to wire mesh. Step 7 – Final Inspection: Walk the completed fence to confirm no gaps, sagging sections, or unanchored edges. Photograph as-installed condition.

Maintenance Requirements: Inspect immediately after rainfall of at least 0.5". Remove sediment before it has accumulated to one-half of the above-ground height of the perimeter control. After frost events, inspect all silt fence post embedment and re-drive any heaved posts.

Design Specifications:



NOTES:

1. POST FOR SILT FENCE MUST BE LOCATED ON 8' CENTERS.
2. SILT FENCE MUST BE INSTALLED PRIOR TO CONSTRUCTION.
3. INSPECTION MUST BE DAILY AND REPAIR / REPLACEMENT MUST BE MADE PROMPTLY AS NEEDED. ACCUMULATED SEDIMENT MUST BE REMOVED AND APPROPRIATELY DISPOSED OF BY THE CONTRACTOR.
4. SILT FENCE MUST BE REMOVED ONLY AS DIRECTED BY OWNER'S REPRESENTATIVE.

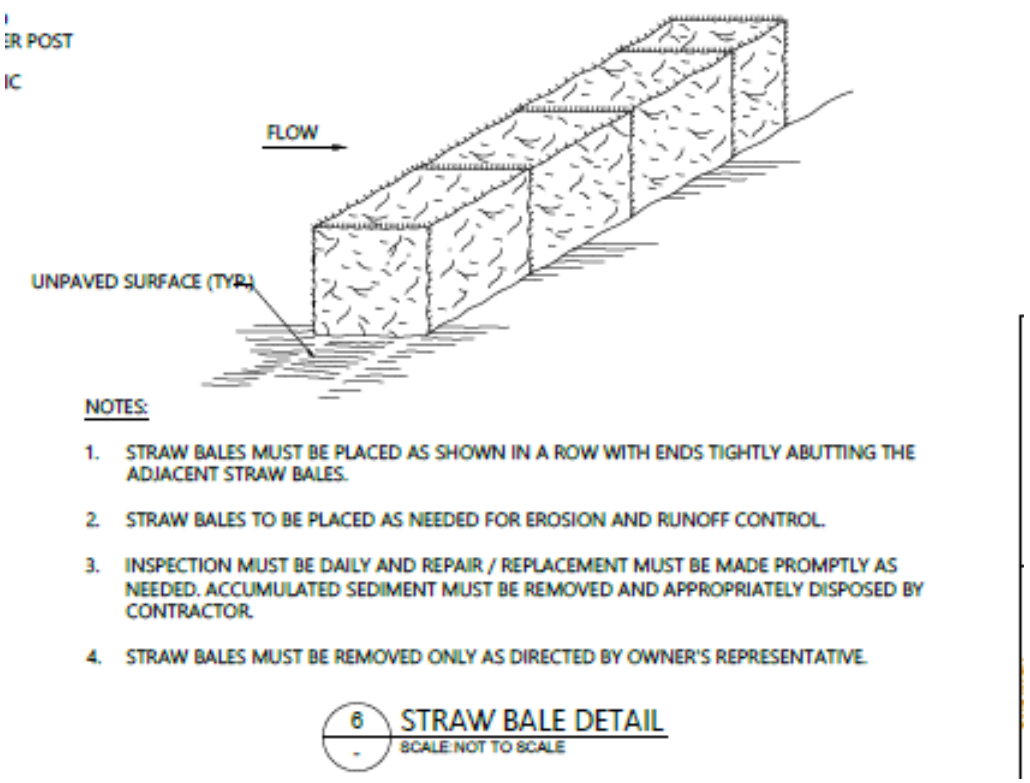
5 SILT FENCE DETAIL (UNPAVED AREAS)
SCALE:NOT TO SCALE

(Design Drawings included in the SIP)

Table 10C Straw Bale

Straw Bale
Description: A straw bale is a rectangular bundle of compressed straw used as necessary as a temporary sediment control barrier to filter runoff and reduce soil erosion on construction sites.
Installation: TBD
Maintenance Requirements: Inspect immediately after rainfall of at least 0.5". Remove sediment before it has accumulated to one-half of the above-ground height of the perimeter control.

Design Specifications:



(Design Drawings included in the SIP)

Table 10D Erosion Control Blanket / Protection Fabric

Temporary Erosion Control Blankets / Protection Fabric
Description: Blankets will be 100% natural and biodegradable with no plastic netting of any kind. Acceptable materials include jute, excelsior, straw, coconut fiber, and cotton. Staples and anchoring stakes will also be 100% biodegradable. Approved products: ECSC-2B by East Coast Erosion Blankets, LLC; Curlex II FibreNet by American Excelsior Company; or equal approved in writing by the Construction Manager. Erosion protection fabric shall be Coir Mat 700 or approved equivalent, applied if determined necessary to reduce erosion and promote vegetation establishment.
Installation: Clear and grade the slope surface; remove rocks, clods, and debris that would prevent blanket contact with soil. Install blankets parallel to the direction of water flow (downslope orientation). Overlap adjacent blanket rolls a minimum of 6 inches, with upstream roll on top. Anchor blankets using 100% biodegradable staples or stakes per manufacturer recommendation. Secure all edges and seams; do not leave open edges that could be undercut by runoff. Seed the slope per Section 32 30 00 before or immediately after blanket installation as directed by the Construction Manager.
Maintenance Requirements: Re-stake or re-anchor erosion control blankets following storm events or observed displacement. Repair or replace damaged panels if impeding the progress of site stabilization and restoration.
Design Specifications: Protection fabric shall be Coir Mat 700 or approved equivalent. Protection fabric will be installed following acceptance of seeding by the construction manager, if determined necessary. Prior to installation, the surface must be cleared of rocks, clods, sticks, and vegetation to ensure direct contact between the fabric and soil. The fabric will be laid loosely across the slope without stretching and secured using stakes or staples to maintain consistent soil contact. Installation will proceed in a vertical orientation, from the top to the bottom of the slope. Both the upper and lower edges of the fabric will be buried and anchored to prevent displacement (Design Drawings included in the SIP)

5.3 Sediment Track-Out

Access roads and staging areas will be newly constructed or improvements of existing site features. The contractor will decontaminate all vehicles leaving the work area associated with each vernal pool to prevent the tracking of soil material outside of the limits of work and onto temporary access roads and local roads. Vehicles and equipment that come into contact with impacted materials will be visually inspected and decontaminated to the satisfaction of the construction manager. Any visible soil or other debris will be promptly removed and appropriately disposed of.

Primary and secondary access roads will be constructed to support truck traffic and be designated and maintained as clean travel ways. Equipment that has contacted floodplain soils will not return onto the primary or secondary access road surface until tires or tracks have been decontaminated. Tire cleaning stations located at the egresses onto public roads will be used as a final measure to eliminate tracking of nuisance non-impacted soils onto public roads.

5.4 Stockpiles or Land Clearing Debris Piles Comprised of Sediment or Soil

Imported materials will be stockpiled on site until their use during site backfilling/restoration. Stockpiled materials will be surrounded by perimeter controls (straw bale berms) and covered to minimize dust generation; additional details are provided on the project drawings (Design Drawings included in the SIP). Silt fencing will be installed around the perimeter of all topsoil, general fill, and excavated material stockpiles, including the lined staging pads adjacent to Vernal Pool 15 (Pomeroy Avenue) and within the Holmes Road work area, before expected precipitation events.

Excavated sediment material will either be directly loaded onto trucks for transportation to an appropriate off-site disposal facility or placed in a temporarily staging area near the excavation before loading onto trucks for transport. Temporary staging areas will be constructed on bermed areas with an impermeable liner. Appropriate stormwater management controls will be installed prior to placement of excavated material into the temporary staging areas.

5.5 Minimize Dust

Dust control activities may include applying water spray to exposed soils from a water truck, an onsite water tank, or other approved water source, limiting vehicle speeds, sweeping paved roadways, and covering stockpiles. These activities will be implemented on an as-needed basis to reduce the potential for dust generation.

5.6 Minimize Steep Slope Disturbances

Steep slope disturbances are not anticipated on site.

5.7 Topsoil

Earthwork activities will remove existing topsoil as part of vernal pool excavation. The soil to be excavated is contaminated; therefore, excavated topsoil will be managed with other excavated materials for disposal off site. Restoration operations will include backfilling with topsoil with properties consistent with the excavated topsoil, placement of leaf litter, and planting and seeding to facilitate the re-establishment of vernal pool habitat.

5.8 Soil Compaction

Excavation and fill and other heavy construction equipment operated within and adjacent to the vernal pools will be low-ground-pressure equipment and operated from construction mats to distribute equipment loads and minimize disturbance or compaction of the underlying soils, to the extent practicable. If impacted by the required support areas, the envelopes surrounding the pools shall be restored to pre-remediation conditions (including reducing soil compaction if required) to the extent practicable. Construction mats will be used for temporary access roads not planned for retention to minimize soil compaction in those areas.

5.9 Storm Drain Inlets

There are no known storm drain inlets adjacent to the site. If any inlets are identified during construction that could be affected by construction activities, the contractor shall install appropriate erosion and sediment control measures to protect the inlet. There are multiple culverts under and adjacent to the temporary access roads. They will be maintained in their current condition to avoid impacting surface water flow to and from some of the vernal pools. Appropriate measures will be taken by the contractor to ensure their protection.

5.10 Constructed Site Drainage Feature

Site drainage features will not be constructed as part of the work.

5.11 Sediment Basins or Similar Impoundments

While the construction of sediment basins or impoundments is not included as part of the work, stormwater that accumulates in the staging area exclusion zone and water used for cleaning and decontamination that does not contain additives will be collected at the staging areas and transported to GE's Building 64G water treatment facility for treatment and discharge. Any water transported to GE's Building 64G water treatment facility will be filtered to remove suspended solids prior to transport.

5.12 Chemical Treatment

No on-site chemical treatment of stormwater is anticipated as part of the work.

5.13 Dewatering Practices

Project construction is planned for late summer or autumn when the vernal pools are not flooded and during relatively dry conditions; therefore, it is anticipated that there will be minimal or no standing water in the vernal pools at the time of construction. Where saturated soils are encountered, they will be allowed to drain within the excavation limits by being placed in small piles for gravity dewatering or by draining directly from the excavator bucket suspended over the excavation area prior to being stockpiled.

Water generated from soil and debris staging and processing, stormwater that accumulates in the staging area exclusion zone, and water used for cleaning and decontamination that does not contain additives (such as solidification/stabilization additives, detergents, decontamination additives, dewatering polymers or coagulants, or other additives) will be collected at the staging areas and transported to GE's Building 64G water treatment facility for treatment and discharge. Any water transported to GE's Building 64G water treatment facility will be filtered to remove suspended solids prior to transport.

In the unlikely event that there is significant standing water in the pilot study pools at the time of excavation, and it is not anticipated that the pools will dry out in a time frame that will allow for completion of the pilot test construction in the 2026 construction season, standing water will be pumped to the Housatonic River. If this contingency is required, a pumping and discharge plan will be prepared and submitted to EPA for approval prior to initiating pumping.

5.14 Other Stormwater Controls

There are no other stormwater controls planned for the project.

5.15 Site Stabilization

Site stabilization will be achieved using the engineered access road materials and previously described stormwater controls. Construction activities within vernal pools will occur in naturally occurring depressions that confine eroded soil and suspended sediment, limiting off-site migration. The disturbance area primarily comprises naturalized or forested land with a high percentage of pervious surfaces.

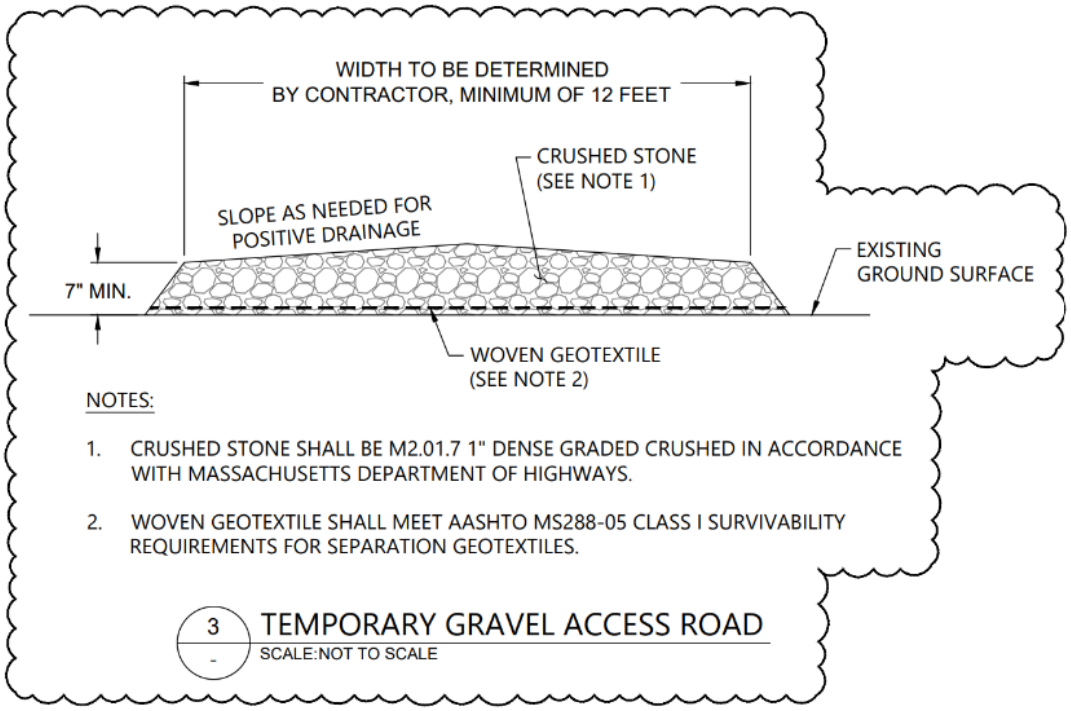
Total Amount of Land Disturbance Occurring at Any One Time: ☑ 5 acres or less ☐ More than 5 acres

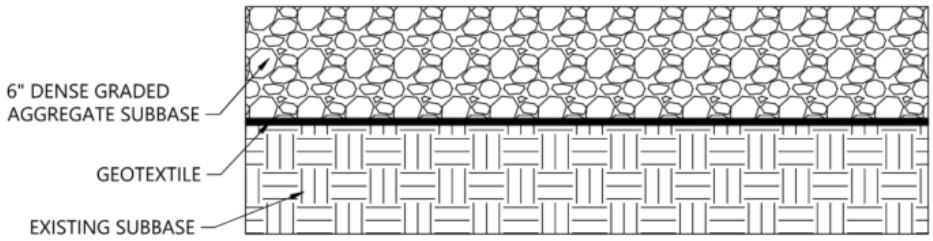
Table 11 Site Stabilization – Engineered Site Access Roads and Staging Areas

Engineered Site Access Roads and Staging Areas
Type: ☐ Vegetative ☑ Non-Vegetative ☑ Temporary ☐ Permanent
Description: Stabilized access road and staging areas include the installation of woven geotextile and dense graded aggregate over existing surfaces to provide stability and support during construction activities.
Installation: 08/05/2026
Completion: 08/19/2026

Maintenance Requirements: Maintenance of stabilized surfaces will include periodic regrading and recompacting of the existing placed substrate to preserve surface integrity and minimize erosion potential. Where surface degradation or material loss is observed, additional substrate will be introduced to restore design grades and coverage. In areas where substrate has been displaced, material will be recovered and redistributed within the designated stabilization zone to maintain intended function and control stormwater runoff.

Design Specifications:

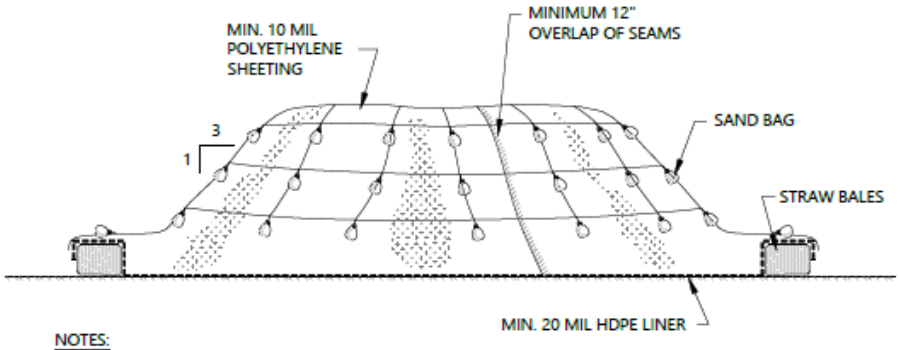




NOTE:

1. GEOTEXTILES MUST BE WOVEN AND COMPLY WITH MINIMUM REQUIREMENTS FOR AASHTO M 288 CLASS 2 - SEPARATION AND STABILIZATION.
2. ALTERNATIVE STAGING AREA DETAILS MAY BE PROPOSED BY THE CONTRACTOR, SUBJECT TO OWNER'S REPRESENTATIVE APPROVAL.

3 - STAGING AREA DETAIL
SCALE:NOT TO SCALE



NOTES:

1. STOCKPILES MUST BE COVERED WITH MINIMUM 10 MIL POLYETHYLENE SHEETING WHENEVER LOADING OR PLACEMENT IS NOT OCCURRING.
2. STOCKPILE AREAS MUST BE SUBJECT TO DUST CONTROLS WHENEVER LOADING OR PLACEMENT IS OCCURRING AND AS DIRECTED BY OWNER'S REPRESENTATIVE.
3. SHEETING COVERING STOCKPILE MUST BE MAINTAINED TIGHTLY IN PLACE BY USING SAND BAGS ON ROPES WITH A MAXIMUM 10'-0" GRID SPACING IN ALL DIMENSIONS.
4. CONTRACTOR MUST PLACE STRAW BALE BERMS AROUND STOCKPILES.

4 - TYPICAL STOCKPILE DETAIL
SCALE:NOT TO SCALE

(Design Drawings included in the SIP)

Table 12 Site Stabilization – Seeding

Seeding – Permanent Vegetative Stabilization
Type: ☑ Vegetative ☐ Non-Vegetative ☐ Temporary ☑ Permanent
Description: Where indicated on the project drawings (Design Drawings included in the SIP), grass vegetation will be established to reduce the long-term potential for erosion and sediment transport from disturbed or bare soil areas. Permanent seeding will be applied to provide a protective cover following completed site work activities.
Installation: 09/22/2026. Seed the slope per Section 32 30 00 before or immediately after erosion blanket installation as directed by the Construction Manager.
Completion: 10/05/2026

Maintenance Requirements: Disturbed areas will not be considered stabilized until a minimum percent uniform vegetative cover of erosion-resistant perennial species is achieved in accordance with the project construction documents unless otherwise stabilized (e.g., graveled or paved). Until that time, all downgradient erosion and sediment controls will remain in place.

6 Pollution Prevention Controls

6.1 Potential Sources of Pollution

Table 7 contains information on potential pollution-generating activities.

6.2 Spill Prevention and Response

A Spill Prevention Control and Countermeasures Plan will be developed for the project and provided separately by Sevenson; this document will be approved by EPA as part of the SIP. This document will include appropriate spill response procedures. Spills of reportable quantities, either under 40 CFR 110, 40 CFR 117, or 40 CFR 302, and other state-mandated levels such as those in the Massachusetts Contingency Plan (310 CMR 40.0000), will be immediately reported by the construction manager to federal, state, and local agencies as required. Names and phone numbers of these personnel are included in Section 2.

Anticipated procedures include: ceasing operation of the affected equipment; spill containment; containerizing or otherwise containing affected materials; disposal of affected materials; and performing any maintenance, soil removal, or other operations post-spill.

6.3 Fueling and Maintenance of Equipment or Vehicles

The contractor will perform routine maintenance of vehicles and equipment within designated areas and will store construction materials such as fuels and maintenance tools in a manner that prevents potential discharges to stormwater systems. All fuels and fluids will be kept covered, contained, or placed within temporary sheds or enclosures to limit exposure.

Anticipated BMPs to be implemented by the contractor include the following:

- Place drip pans or absorbent pads beneath vehicles showing visible signs of leakage and inspect and maintain drip pans or absorbent pads to prevent overflow or saturation; remove and properly dispose of collected fluids as needed.
- Monitor parked vehicles regularly for any evidence of fluid leaks.
- Do not use fuel nozzle trigger locks during dispensing activities.
- Maintain continuous observation during all fueling operations to prevent spills or overflows.

6.4 Washing of Equipment and Vehicles

An equipment cleaning area will be constructed by Sevenson at each work site to allow equipment decontamination. The equipment cleaning area will generally consist of an impermeable barrier sloped to a collection sump. Equipment that has contacted floodplain soils will not return onto the primary or secondary access road surface until tires or tracks have been decontaminated. All decontamination fluids will be collected and disposed of off-site. Details associated with the decontamination area will be developed by Sevenson based on site conditions and presented in the SIP.

6.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

6.5.1 Construction Products

Construction products will be stored in staging areas away from public access.

6.5.2 Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Chemicals

All fuels, oils, hydraulic fluids, petroleum-based products, and chemicals present on site will be stored within secondary containment systems and protected from exposure to precipitation.

6.5.3 Hazardous or Toxic Waste

Contaminated materials (i.e., excavated soils and sediments from the vernal pool footprints) will be managed and disposed of off site at a licensed facility authorized to accept the specific waste type in accordance with the project construction documents.

6.5.4 Construction and Domestic Waste

General construction debris will be collected in appropriate containers and transported off site for disposal at a licensed facility authorized to accept the specific waste type.

6.5.5 Sanitary Waste

Portable toilets will be securely placed in stable locations set back from receiving waters, drainage features, or other surface waters to prevent accidental discharge.

6.5.6 Application of Fertilizers

Fertilizers will not be utilized on the project. If fertilizers are added to the project scope for restoration operations, application of fertilizer shall follow all federal, state, and local requirements.

7 Inspection, Maintenance, and Corrective Action for Erosion and Sediment Controls

Inspections of erosion and sediment controls will be performed to confirm that this SWPPP is being implemented and remains functional relative to site conditions and actual project activities. Prior to land-disturbing activities (excluding installation of erosion and sediment control practices), the PM/QCM will perform a preconstruction site assessment to verify that erosion and sediment controls are properly installed and functional. During construction activities, all areas that have been disturbed without stabilization and all erosion and sediment control practices and pollution prevention measures implemented within the active work area will be inspected daily by the contractor. If deficiencies are identified, the contractor (or subcontractors) will begin implementing corrective actions per Section 7.2.

7.1 Inspection Personnel and Procedures

Inspections include all disturbed areas that have not achieved final stabilization, all points of discharge to natural surface waterbodies within or immediately adjacent to the site, and all points of stormwater discharge from the site. After each inspection, the qualified person will prepare a Site Inspection Report form (provided in Appendix B). Each inspection will include a systematic walk of all disturbed areas and active ESC control locations across all applicable work areas. The inspector will evaluate:

- Silt Fence: Confirm fabric is intact with no tears, undermining, or overtopping; posts are secure; accumulated sediment depth is less than half the effective fence height; trench burial is intact.
- Erosion Control Blankets: Confirm blankets are properly anchored with no lifted edges, undermined sections, or displacement.
- Straw Wattles: Confirm wattles remain in firm contact with the soil surface, are properly staked, and show no bypass or scour around ends.
- Stockpile Perimeters: Confirm silt fence is in place around all active stockpiles of topsoil, fill material, and excavated material.
- Slopes: Assess bare soil areas for signs of rill or sheet erosion; identify new areas requiring controls.
- Drainage Features: Confirm stormwater is not being concentrated or directed toward unprotected slopes or vernal pool edges.
- Vernal Pool and Wetland Buffers: Verify no sediment has entered vernal pools not subject to active remediation; confirm silt fence perimeters are intact.
- Access Roads: Check for sediment tracking onto paved surfaces and erosion along road shoulders; inspect straw wattles at road crossings.

Personnel Responsible for Inspections: Joe Casper / Johnny Moot (PM/QCM) or other qualified personnel designated by Sevenson. All inspection personnel have completed training required by CGP Part 6.3.

Table 13 Inspection Schedule

Standard Frequency:
☒ Every 7 calendar days ☐ Every 14 calendar days and within 24 hours of either: • A storm event that produces 0.5 inch or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.5 inch but together produce 0.5 inch or more in 24 hours); or • A storm event that produces 0.5 inch or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.5 inch or more of rain on subsequent days (you conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.5 inch or more of rain (i.e., only two inspections would be required for such a storm event); or • A discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

Increased Frequency (if applicable):
☐ Every 7 calendar days and within 24 hours of either: • A storm event that produces 0.5 inch or more of rain within a 24-hour period; or • A discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.
Reduced Frequency (if applicable)
For stabilized areas ☐ Twice during first month, no more than 14 calendar days apart, then once per month after first month. • [Specify locations where stabilization steps have been completed] • [Insert date that they were completed]
For stabilized areas on "linear construction sites" ☐ Twice during first month, no more than 14 calendar days apart, then once more within 24 hours of a storm event that produces 0.5 inch or more of rain within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. • [Specify locations where stabilization steps have been completed] • [Insert date that they were completed]
For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought ☐ Once per month and within 24 hours of either: • A storm event that produces 0.5 inch or more of rain within a 24-hour period; or • A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. Beginning and ending month identified as the seasonally dry period for your area or the valid period of drought: • Beginning month of the seasonally dry period: [Insert approximate date] • Ending month of the seasonally dry period: [Insert approximate date]
For frozen conditions where construction activities are being conducted ☐ Once per month Beginning and ending dates of frozen conditions on your site: • Beginning date of frozen conditions: [Insert approximate date] • Ending date of frozen conditions: [Insert approximate date]
For frozen conditions where construction activities are suspended ☐ Inspections are temporarily suspended Beginning and ending dates of frozen conditions on your site: • Beginning date of frozen conditions: [Insert approximate date] • Ending date of frozen conditions: [Insert approximate date]

Dewatering Inspection Schedule: Dewatering inspections are not included under the current scope of the project. If active dewatering is deemed necessary (see Section 5.13), this portion of the SWPPP will be revisited for compliance.

Rain Gauge Location: A rain gauge will be maintained on-site in accordance with CGP requirements. Location to be established during pre-construction activities.

Inspection Report Forms: A sample Site Inspection Report form can be found in Appendix B. Records will be submitted to the Construction Manager as required and maintained on-site for review by regulatory agencies throughout the project.

7.2 Corrective Action

The erosion and sediment control measures will be routinely reviewed to determine whether modifications are necessary. When deficiencies are identified during inspections, the following corrective action timeline applies:

- Damage to any ESC control (tears, undermining, displacement): Repair or replace within 1 calendar day of identification.
- Accumulated sediment at silt fence: Remove when depth reaches half the effective fence height. Disposed sediment will be managed per the project Waste Management Plan.
- Unauthorized concentrated stormwater flow: Immediately stabilize slope via earthmoving or additional controls to redirect flow away from silt fencing.
- Evidence of erosion or incipient rill development: Apply immediate stabilization (mulch, erosion blanket, or temporary seeding) and notify the Construction Manager.
- Sediment observed entering a vernal pool or wetland not under active remediation: Stop contributing work immediately, notify the Construction Manager, install emergency controls, and document incident.

Corrective actions triggering immediate response include: unauthorized discharges; visual evidence of stormwater pollution; control measures not stringent enough to meet water quality standards or non-numeric effluent limits; EPA or MS4 inspector determines modifications are necessary; or routine inspections indicate controls are not properly operated and maintained.

If corrective action is required, Sevenson will promptly implement appropriate measures to minimize or prevent pollutant discharges until a permanent solution is in place and functioning. Maintenance or repair will begin within one business day of identifying a deficiency and completed within a reasonable period. All corrective actions will be documented in the inspection record (see Section 7.4). All erosion and sediment control measures will be maintained throughout the project until permanent stabilization is fully established.

7.3 Inspection Documentation and Recordkeeping

The PM/QCM will maintain a complete SWPPP inspection log for the duration of the project. Each inspection record will include the following minimum information:

- Date and time of inspection
- Inspector’s name and title
- Weather conditions (current and previous 24 hours, including any storm events)
- Location(s) inspected (work area, pool designation)
- Condition of each ESC control type (silt fence, blankets, wattles, stockpile perimeters)
- Evidence of erosion, sedimentation, or turbid runoff observed
- Corrective actions required and date initiated / completed
- Photographs documenting conditions

Inspection records will be submitted to the Construction Manager as required by the SWPPP and maintained on-site for review by regulatory agencies throughout the project.

7.4 Maintenance Requirements

In addition to corrective actions triggered by inspections, the following routine maintenance activities will be performed throughout the project:

- Remove accumulated sediment from behind silt fences when depth reaches one-half of the effective fence height.
- Re-stake or re-anchor erosion control blankets following storm events or observed displacement.
- Replace straw wattles that have been crushed, scoured, or displaced beyond effective function.
- Check all stockpile silt fences before any predicted storm event and confirm integrity.
- After frost events, inspect all silt fence post embedment and re-drive any heaved posts.
- Maintain gravel access road surfaces and check straw wattle placement at road grade breaks following wet weather.

During and after significant wet weather events (rainfall ≥ 0.5 inch in a 24-hour period) or spring thaw periods: conduct an unscheduled ESC inspection within 24 hours of the event; suspend land-disturbing activities in areas where ESC controls are compromised until repairs are complete; provide additional temporary controls to protect newly exposed soils; and document wet weather response actions in the SWPPP inspection log.

7.5 Delegation of Authority

Appendix H contains the signed delegation forms; a summary of the individuals who have been delegated authority to sign inspection reports is listed below.

Duly Authorized Representative(s) or Position(s)	Joe Casper, Johnny Moot – To be completed prior to construction commencement

8 Turbidity Benchmark Monitoring for Dewatering Discharges

Turbidity benchmark monitoring for dewatering discharges is not included under the current scope of the project. If active dewatering is deemed necessary (see Section 5.13), this portion of the draft SWPPP will be revisited for compliance with NPDES CGP Part 3 requirements for turbidity benchmark monitoring.

9 Certification and Notification

I certify under penalty of law that this SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:	Joseph Casper
Name:	Joseph Casper
Title:	Project Manager
Company:	Sevenson Environmental Services, Inc.
Date:	06/17/2026

Supplemental Operational Procedures

ESC Control Removal

ESC controls will remain in place and be actively maintained until all the following conditions are met, as determined and documented by the Construction Manager:

- The drainage area contributing to each ESC control has been permanently stabilized.
- Permanent vegetation has been established in all disturbed areas per Section 32 30 00 (Site Restoration, Planting, and Seeding).
- The site has been fully restored, and the Construction Manager has issued written approval for ESC removal.

Special Requirement: Silt fencing within the boundaries of vernal pools and around portions of pool perimeters will be removed prior to the first post-restoration winter freeze, regardless of the status of upland stabilization, to prevent damage to and interference with the vernal pool habitat through the winter season.

Sevenson will not remove any temporary ESC control without written approval from the Construction Manager. Following removal, all disturbed areas associated with control removal will be immediately stabilized.

Work Area Coverage

This SWPPP applies to all four primary work areas of the Vernal Pool Pilot Study Construction project. ESC controls will be installed, maintained, and inspected at each location independently, with site-specific conditions considered:

Work Area	Location / Key Features	Priority ESC Measures
Pomeroy Avenue	Lined staging pad adjacent to Vernal Pool 15; soil stockpiles from Vernal Pools 4, 7, and 16; access road construction	Highest priority for staging-area silt fencing and straw wattle installation along access roads
Holmes Road	Access road construction and vehicle traffic management	Flagman required for public road interface; silt fence along disturbed shoulders
Miss Hall's School	Vernal pool treatment and/or removal activities; close proximity to school grounds	Careful containment required; hand installation of ESC controls near sensitive areas
Utility Drive (north of Pittsfield Water Division building)	Second lined staging pad; Lined staging pad adjacent to Vernal Pool 57; soil stockpiles from Vernal Pools 52 and 57	Coordination required to protect municipal water infrastructure drainage

The central temporary field office at GE's Tyler Street facility will also maintain erosion controls around any staged/stockpiled materials as needed.

SWPPP Submittal Requirements

The following SWPPP-related submittals are required in accordance with Specification Section 31 25 00 and the Contract Documents:

Submittal Item	Timing	Submitted By
Final SWPPP (developed from Draft SWPPP prepared by Anchor QEA)	Prior to USEPA SIP approval; before any land disturbance	Sevenson (PM/QCM)

Manufacturer's product data, specifications, and installation instructions for all ESC products	With SWPPP submission or upon product selection	Sevenson (PM/QCM)
SWPPP Inspection Records	Submitted to Construction Manager per SWPPP schedule; maintained on-site continuously	Sevenson (PM/QCM)
Written request for ESC control removal	Upon achievement of site stabilization criteria	Sevenson (PM/QCM)
Incident reports for any ESC failure involving wetland / vernal pool impacts	Within 24 hours of incident	PM/QCM / Site Safety Officer

All SWPPP-related submittals will be maintained on-site in a readily accessible location for review by the Construction Manager and regulatory agency personnel at all times.

10 References

AECOM, 2024. Revised Housatonic River Reach 5A Baseline Restoration Assessment Report. Prepared for General Electric Company, Pittsfield, Massachusetts. February 2024.

AECOM, 2025. Revised Phase IB Cultural Resources Survey Report for Reach 5A. Prepared for General Electric Company, Pittsfield, Massachusetts. June 2025.

Anchor QEA, 2025b. Addendum to Supplemental Data Collection Work Plan for Reach 5A. Prepared for General Electric Company, Pittsfield, Massachusetts. February 2025.

Anchor QEA and AECOM, 2025. Final Revised Vernal Pool Pilot Study Work Plan. Prepared for General Electric Company, Pittsfield, Massachusetts. June 2025.

GE, 2025. Letter to U.S. Environmental Protection Agency. Regarding: Supplement to Supplemental Data Collection Work Plan Addendum for Reach 5A. May 2, 2025.

Sevenson Environmental Services, Inc., 2026. Contract 40 – Vernal Pool Pilot Study Construction SWPPP. Submitted to Anchor QEA / GE. May 2026.

U.S. EPA, 2022. National Pollutant Discharge Elimination System (NPDES) 2022 Construction General Permit. Effective February 17, 2022.

Massachusetts DEP Stormwater Handbook and Stormwater Standards.

Appendix A

Copy of 2022 Construction General Permit

National Pollutant Discharge Elimination System (NPDES)
Construction General Permit (CGP) for Stormwater Discharges from Construction Activities

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on 12:00 am, April 8, 2025.

This permit and the authorization to discharge expire at 11:59pm, February 16, 2027.

The 2022 CGP was modified to expand the list of areas eligible for coverage to include Lands of Exclusive Federal Jurisdiction in the U.S., to clarify the requirements that apply to projects that discharge to receiving waters within these areas, and to make corresponding changes in Appendices A, B, and D. See *2022 CGP Modification - Fact Sheet* for additional information.

Signed and issued this 8th day of April 2025

JAVIER LAUREANO PEREZ
Digitally signed by JAVIER LAUREANO PEREZ
Date: 2025.04.08 09:24:10 -04'00'

Javier Laureano Perez,
Director, Water Division, EPA Region 2.

Signed and issued this 8th day of April 2025

JEFFERY ROBICHAUD
Digitally signed by JEFFERY ROBICHAUD
Date: 2025.04.08 14:31:40 -05'00'

Jeffery Robichaud,
Director, Water Division, EPA Region 7.

Signed and issued this 8th day of April 2025

CARMEN GUERRERO PEREZ
Digitally signed by CARMEN GUERRERO PEREZ
Date: 2025.04.08 12:41:41 -04'00'

Carmen Guerrero Perez,
Director, Caribbean Environmental Protection Division,
EPA Region 2.

Signed and issued this 8th day of April 2025

STEPHANIE DEJONG
Digitally signed by STEPHANIE DEJONG
Date: 2025.04.08 09:32:38 -06'00'

Stephanie DeJong,
Manager, Clean Water Branch, EPA Region 8.

Signed and issued this 8th day of April 2025

KATHLENE BUTLER
Digitally signed by KATHLENE BUTLER
Date: 2025.04.08 14:05:04 -04'00'

Kathlene Butler,
Director, Water Division, EPA Region 4.

Signed and issued this 8th day of April 2025

Digitally signed by TOMAS TORRES
Date: 2025.04.08 09:19:32 -07'00'

Tomas Torres,
Director, Water Division, EPA Region 9.

Signed and issued this 8th day of April 2025

TERA FONG
Digitally signed by TERA FONG
Date: 2025.04.08 15:01:22 -05'00'

Tera Fong,
Director, Water Division, EPA Region 5.

Signed and issued this 8th day of April 2025

MATHEW MARTINSON
MATHEW MARTINSON
2025.04.08 14:41:11 -07'00'

Mathew Martinson,
Director, Water Division, EPA Region 10.

Signed and issued this 8th day of April 2025

TROY HILL
Digitally signed by TROY HILL
Date: 2025.04.08 14:04:26 -05'00'

Troy Hill,
Director, Water Division, EPA Region 6.

For EPA Regions 1 and 3, this modified permit becomes effective at 2:00 pm, June 10, 2025. This permit and the authorization to discharge expire at 11:59pm, February 16, 2027.

The 2022 CGP was modified to expand the list of areas eligible for coverage to include Lands of Exclusive Federal Jurisdiction in the U.S., to clarify the requirements that apply to projects that discharge to receiving waters within these areas, and to make corresponding changes in Appendices A, B, and D. See *2022 CGP Modification - Fact Sheet* for additional information.

Signed and issued this 10th day of June 10, 2025

MARK SANBORN

Digitally signed by MARK SANBORN
Date: 2025.06.10 11:00:04 -04'00'

Mark Sanborn
Regional Administrator, EPA Region 1

Signed and issued this 10th day of June 10, 2025

MICHELLE PRICE-FAY

Digitally signed by MICHELLE PRICE-FAY
Date: 2025.06.10 09:35:25 -04'00'

Michelle Price-Fay
Director, Water Division, EPA Region 3

CONTENTS

1 How to Obtain Coverage Under the Construction General Permit (CGP) 3
1.1 Eligibility Conditions 3
1.2 Types of Discharges Authorized 5
1.3 Prohibited Discharges 6
1.4 Submitting your Notice of Intent (NOI) 7
1.5 Requirement to Post a Notice of Your Permit Coverage 9
2 Technology-Based Effluent Limitations 10
2.1 General Stormwater Control Design, Installation, and Maintenance Requirements 10
2.2 Erosion and Sediment Control Requirements 12
2.3 Pollution Prevention Requirements 20
2.4 Construction Dewatering Requirements 24
3 Water Quality-Based Effluent Limitations 25
3.1 General Effluent Limitation to Meet Applicable Water Quality Standards 25
3.2 Water Quality-Based Conditions for Sites Discharging to Certain Impaired and High Quality Receiving Waters 25
3.3 Turbidity Benchmark Monitoring for Sites Discharging Dewatering Water To Protect the Water Quality of Sensitive Waters 26
4 Inspection Requirements 30
4.1 Person(s) Responsible for Conducting Site and Dewatering Inspections 30
4.2 Frequency of Inspections. 30
4.3 Increase in Inspection Frequency for Certain Sites. 31
4.4 Reductions in Inspection Frequency 32
4.5 Areas that Must Be Inspected 33
4.6 Requirements for Inspections 34
4.7 Inspection Report 35
4.8 Inspections By EPA 36
5 Corrective Actions 36
5.1 Conditions Triggering Corrective Action. 36
5.2 Corrective Action Deadlines 37
5.3 Corrective Action Required by EPA 38
5.4 Corrective Action Log 38
6 Stormwater Team Formation/Staff Training Requirements 38
6.1 Stormwater Team 38
6.2 General Training Requirements For Stormwater Team Members 39
6.3 Training Requirements For Persons Conducting Inspections 39

6.4 Stormwater Team's Access To Permit Documents 40
7 Stormwater Pollution Prevention Plan (SWPPP) 40
7.1 General Requirements 40
7.2 SWPPP Contents 41
7.3 On-Site Availability of Your SWPPP 48
7.4 SWPPP Modifications 48
8 How to Terminate Coverage 49
8.1 Minimum Information Required in NOT 49
8.2 Conditions for Terminating CGP Coverage 49
8.3 How to Submit Your NOT 50
8.4 Deadline for Submitting the NOT 51
8.5 Effective Date of Termination of Coverage 51
9 Permit Conditions Applicable to Specific States, Indian Country Lands, or Territories 51
9.1 EPA REGION 1 51
9.2 EPA REGION 2 60
9.3 EPA REGION 3 62
9.4 EPA REGION 4 63
9.5 EPA REGION 5 64
9.6 EPA REGION 6 70
9.7 EPA REGION 7 81
9.8 EPA REGION 8 81
9.9 EPA REGION 9 86
9.10 EPA REGION 10 89
10 ADDITIONAL Permit Conditions Applicable to LANDS OF EXCLUSIVE FEDERAL JURISDICTION 101
Appendix A: Definitions A-1
Appendix B: Permit Areas Eligible for Coverage and EPA Regional Addresses B-1
Appendix C: Small Construction Waivers and Instructions C-1
Appendix D: Eligibility Procedures Relating to Threatened & Endangered Species Protection. D-1
Appendix E: Historic Property Screening Process E-1
Appendix F: Buffer Requirements F-1
Appendix G: Standard Permit Conditions G-1
Appendix H: Notice of Intent (NOI) Form and Instructions H-1
Appendix I: Notice of Termination (NOT) Form and Instructions I-1
Appendix J: Suggested Format for Request for Chemical Treatment J-1
Appendix K: Turbidity Benchmark Monitoring Report Form K-1

1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

1.1 ELIGIBILITY CONDITIONS

1.1.1 You are an "operator" of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an "operator" is any party associated with a construction project that meets either of the following two criteria:

- **a.** The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- **b.** The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.[1] Subcontractors generally are not considered operators for the purposes of this permit.

1.1.2 Your site's construction activities:

- **a.** Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale (as defined in Appendix A) that will ultimately disturb one or more acres of land; or
- **b.** Have been designated by EPA as needing permit coverage under 40 CFR § 122.26(a)(1)(v) or 40 CFR § 122.26(b)(15)(ii);

1.1.3 Your site is located in an area where EPA is the permitting authority and where coverage under this permit is available (see Appendix B).

1.1.4 Discharges from your site are not:

- **a.** Already covered by a different NPDES permit for the same discharge; or
- **b.** In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.[2, 3]

1.1.5 You can demonstrate you meet one of the criteria in the Endangered Species Protection section of the Notice of Intent (NOI) that you submit for coverage under this permit, per Part 1.4, with respect to the protection of Federally listed endangered or threatened species and Federally designated critical habitat under the Endangered Species Act (ESA). If the EPA Regional Office grants you a waiver from electronic reporting per Part

[1] If the operator of a "construction support activity" (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of permit-related functions between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

[2] Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2017 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

[3] Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

1.4.2, you must complete the ESA worksheet in Appendix D to demonstrate you meet one of the criteria and submit it with your paper NOI (Appendix I).

1.1.6 You have completed the screening process in Appendix E relating to the protection of historic properties; and

1.1.7 You have complied with all requirements in Part 9 imposed by the applicable State, Indian Tribe, or Territory in which your construction activities and/or discharge will occur.[4]

1.1.8 For "new sources" (as defined in Appendix A) only:

a. EPA has not, prior to authorization under this permit, determined that discharges from your site will not meet applicable water quality standards. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that meet applicable water quality standards.

b. Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water[5] will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.

1.1.9 If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your NOI until you notify your applicable EPA Regional Office (see Appendix J) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will result in discharges that meet applicable water quality standards.

[4] EPA notes that the requirements of Part 9 do not apply to projects within Lands of Exclusive Federal Jurisdiction.

[5] Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first receiving water to which you discharge is identified by a State, Tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first receiving water to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. The current list of Tier 2, Tier 2.5, and Tier 3 waters located in the areas eligible for coverage under this permit can be found at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates. You can also use EPA's Discharge Mapping Tool (https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools) to assist you in identifying whether any receiving waters to which you discharge are listed as impaired (and the pollutant for which it is impaired) and whether an approved total maximum daily load (TMDL) exists for that waterbody.

1.2 TYPES OF DISCHARGES AUTHORIZED[6]

1.2.1 The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):

- **a.** Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR § 122.26(b)(14) or § 122.26(b)(15)(i);
- **b.** Stormwater discharges designated by EPA as needing a permit under 40 CFR §122.26(a)(1)(v) or § 122.26(b)(15)(ii);
- **c.** Stormwater discharges from on or off-site construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that:
  - **i.** The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
  - **ii.** The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;
  - **iii.** The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and
  - **iv.** Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas; and
- **d.** Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.

1.2.2 The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:

- **a.** Discharges from emergency fire-fighting activities;
- **b.** Fire hydrant flushings;
- **c.** Landscape irrigation;
- **d.** Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
- **e.** Water used to control dust;
- **f.** Potable water including uncontaminated water line flushings;

[6] See "Discharge" as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA Section 402(k) by disclosure to EPA, State, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

g. External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));

h. Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any receiving water, storm drain inlet, or constructed or natural site drainage features, unless the feature is connected to a sediment basin, sediment trap, or similarly effective control;

i. Uncontaminated air conditioning or compressor condensate;

j. Uncontaminated, non-turbid discharges of ground water or spring water;

k. Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and

l. Uncontaminated construction dewatering water[7] discharged in accordance with Part 2.4.

1.2.3 Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.3 PROHIBITED DISCHARGES[8]

The discharges listed in this Part are prohibited outright or authorized only under the identified conditions. To prevent the discharges in Parts 1.3.1 through 1.3.5, operators must comply with the applicable pollution prevention requirements in Part 2.3 or ensure the discharge is authorized by another NPDES permit consistent with Part 1.2.3 for commingled discharges.

1.3.1 Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;

1.3.2 Wastewater from washout and/or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;

1.3.3 Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;

1.3.4 Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and

1.3.5 Toxic or hazardous substances from a spill or other release.

[7] EPA notes that operators may need to comply with additional procedures to verify that the dewatering discharge is uncontaminated. Operators should review Part 9 to determine if any of these requirements apply to their discharge and should ensure that they have complied with any State, Tribal, or local dewatering requirements that apply.

[8] EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.

1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All "operators" (as defined in Appendix A) associated with your construction site who meet the Part 1.1 eligibility conditions, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in Table 1 prior to commencement of construction activities (as defined in Appendix A).

Exception: If you are conducting construction activities in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency pursuant to Part 7.2.3i.

1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

1.4.2 How to Submit Your NOI

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2022 CGP unless you received a waiver from your applicable EPA Regional Office.

To access NeT, go to https://cdx.epa.gov/cdx.

Waivers from electronic reporting may be granted based on one of the following conditions:

a. If your operational headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or

b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix H.

1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.

Type of Operator	NOI Submittal Deadline[9]	Permit Authorization Date[10]
Operator of a new site (i.e., a site where construction activities commence on or after February 17, 2022)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an existing site (i.e., a site with 2017 CGP coverage where construction activities commenced prior to February 17, 2022)	No later than May 18, 2022.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied. Provided you submit your NOI no later than May 18, 2022, your authorization under the 2017 CGP is automatically continued until you have been granted coverage under this permit or an alternative NPDES permit, or coverage is otherwise terminated.
New operator of a permitted site (i.e., an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a "new site" or an "existing site")	At least 14 calendar days before the date the transfer to the new operator will take place.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an "emergency-related project" (i.e., a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.

[9] If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

[10] Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

1.4.4 Modifying your NOI

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix H.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

The following modifications to an NOI form will result in a 14-day review process:

- Changes to the name of the operator;
- Changes to the project or site name;
- Changes to the estimated area to be disturbed;
- Changes to the name of the receiving water[11], or additions to the applicable receiving waters;
- Changes to eligibility information related to endangered species protection or historic preservation;
- Changes to information provided related to the use of chemical treatment at your site; and
- Changes to answers provided regarding the demolition of structures over 10,000 square feet of floor space built or renovated before January 1, 1980.

During the 14-day review process, you may continue to operate based on the information provided in your original NOI, but you must wait until the review period has ended before you may commence or continue activities on any portion of your site that would be affected by any of the above modifications, unless EPA notifies you that the authorization is delayed or denied.

1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

a. You terminate permit coverage consistent with Part 8; or

b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2027; or

c. You fail to submit an NOI for coverage under a reissued or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so it is visible from the public road that is nearest to the active part of the construction

[11] As defined in Appendix A, a "receiving water" is "a "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

site, and it must use a font large enough to be readily viewed from a public right-of-way.[12] At a minimum, the notice must include:

a. The NPDES ID (i.e., permit tracking number assigned to your NOI and the EPA webpage where a copy of the NOI can be found (https://permitsearch.epa.gov/epermit-search/ui/search));

b. A contact name and phone number for obtaining additional construction site information;

c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [*include the appropriate CGP Regional Office contact information found at* https://www.epa.gov/npdes/contact-us-stormwater#regional];" and

d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving water, contact the EPA through the following website: https://www.epa.gov/enforcement/report-environmental-violations."

2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.[13]

2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2, 2.3, and 2.4 to minimize the discharge of pollutants in stormwater from construction activities.[14] To meet this requirement, you must:

2.1.1 Account for the following factors in designing your stormwater controls:

a. The expected amount, frequency, intensity, and duration of precipitation;[15]

b. The nature of stormwater runoff (i.e., flow) and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and

c. The soil type and range of soil particle sizes expected to be present on the site.

[12] If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

[13] For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for installation/implementation. See Part 7.2.6.

[14] The permit does not recommend or endorse specific products or vendors.

[15] Stormwater controls must be designed using the most recent data available to account for recent precipitation patterns and trends.

If your site is exposed to or has previously experienced major storms, such as hurricanes, storm surge, extreme/heavy precipitation, and flood events, you should also include consideration of and contingencies for whether implementing structural improvements, enhanced/resilient stormwater controls, and other mitigation measures may help minimize impacts from stormwater discharges from such major storm events.

2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.[16]

2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.

a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.[17]

b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

2.1.4 Ensure all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.

a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.[18]

b. If at any time you find that a stormwater control needs routine maintenance (i.e., minor repairs or other upkeep performed to ensure the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control), you must immediately initiate the needed work, and complete such work by the close of the next business day. If it is infeasible to complete the routine maintenance by the close of the next business day, you must document why this is the case and why the repair or other upkeep to be performed should still be considered routine maintenance in your inspection report under Part 4.7.1c and complete such work no later than seven (7) calendar days from the time of discovery of the condition requiring maintenance.

c. If you must repeatedly (i.e., three (3) or more times) make the same routine maintenance fixes to the same control at the same location, even if the fix can be completed by the close of the next business day, you must either:

i. Complete work to fix any subsequent repeat occurrences of this same problem under the corrective action procedures in Part 5, including keeping any records

[16] Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2, 2.3, and 2.4.

[17] Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

[18] Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

of the condition and how it was corrected under Part 5.4; or

ii. Document in your inspection report under Part 4.7.1c why the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under this Part.[19]

d. If at any time you find that a stormwater control needs a significant repair or that a new or replacement control is needed, you must comply with the corrective action deadlines for completing such work in in Part 5.2.1c.

2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls for discharges to any receiving waters that is located within 50 feet of the site's earth disturbances.

a. Compliance Alternatives. For any discharges to receiving waters located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:

i. Provide and maintain a 50-foot undisturbed natural buffer; or

ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or

iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

See Appendix F, Part F.2 for additional conditions applicable to each compliance alternative.

b. Exceptions. See Appendix F, Part F.2 for exceptions to the compliance alternatives.

2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infiltration would be inadvisable due to the underlying geology (e.g., karst topography) and ground water contamination concerns, or infeasible due to site conditions.[20]

[19] Such documentation could include, for example, that minor repairs completed within the required timeframe are all that is necessary to ensure that the stormwater control continues to operate as designed and installed and that the stormwater control remains appropriate for the flow reaching it.

[20] Operators should consider whether factors such as specific contaminant concerns from the construction site, the underlying soils or geology, hydrology, depth to the ground water table, or proximity to source water or wellhead protection area(s) make the site unsuitable for infiltrating construction stormwater. Site conditions that may be of particular concern include proximity to: a current or future drinking water aquifer; a drinking water well or spring (including private/household wells); highly conductive geology such as karst; known pollutant hot spots, such as hazardous waste sites, landfills, gas stations, brownfields; an on-site sewage system or underground storage tank; or soils that do not allow for infiltration. Operators may find it helpful to consult EPA's Drinking Water Mapping Application to Protect Source Waters (DWMAPS). DWMAPS is an online mapping tool that can be used to locate drinking water providers, potential sources of contamination, polluted waterways, and information on protection initiatives in the site area.

2.2.3 Install sediment controls along any perimeter areas of the site that are downslope from any exposed soil or other disturbed areas.[21]

a. The perimeter control must be installed upgradient of any natural buffers established under Part 2.2.1, unless the control is being implemented pursuant to Part 2.2.1a.ii-iii;

b. To prevent stormwater from circumventing the edge of the perimeter control, install the perimeter control on the contour of the slope and extend both ends of the control up slope (e.g., at 45 degrees) forming a crescent rather than a straight line;

c. After installation, to ensure that perimeter controls continue to work effectively:

i. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control; and

ii. After a storm event, if there is evidence of stormwater circumventing or undercutting the perimeter control, extend controls and/or repair undercut areas to fix the problem.

d. Exception. For areas at "linear construction sites" (as defined in Appendix A) where perimeter controls are infeasible (e.g., due to a limited or restricted right-of-way), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4 Minimize sediment track-out.

a. Restrict vehicle use to properly designated exit points;

b. Use appropriate stabilization techniques[22] at all points that exit onto paved roads;

i. Exception: Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls[23] are implemented to minimize sediment track-out;

c. Implement additional track-out controls[24] as necessary to ensure that sediment removal occurs prior to vehicle exit; and

d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out

[21] Examples of perimeter controls include filter berms; different types of silt fence such as wire-backed silt fence, super silt fence, or multi-layer geotextile silt fence; compost filter socks; gravel barriers; and temporary diversion dikes.

[22] Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

[23] Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., *karst areas; steep slopes)*.

[24] Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water.[25]

2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:[26]

a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any constructed or natural site drainage features, storm drain inlets, and areas where stormwater flow is concentrated;

b. Install a sediment barrier along all downgradient perimeter areas of stockpiled soil or land clearing debris piles;[27]

c. For piles that will be unused for 14 or more days, provide cover[28] or appropriate temporary stabilization (consistent with Part 2.2.14);

d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any constructed or natural site drainage feature, storm drain inlet, or receiving water.

2.2.6 Minimize dust. On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

2.2.7 Minimize steep slope disturbances. Minimize the disturbance of "steep slopes" (as defined in Appendix A).[29]

2.2.8 Preserve native topsoil, unless infeasible.[30]

2.2.9 Minimize soil compaction.[31] In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

---

[25] Fine grains that remain visible (e.g., staining) on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

[26] The requirements in Part 2.2.5 do not apply to the storage of rock, such as rip rap, landscape rock, pipe bedding gravel, and boulders. Refer to Part 2.3.3a for the requirements that apply to these types of materials.

[27] Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

[28] Examples of cover include tarps, blown straw and hydroseeding.

[29] Where disturbance to steep slopes cannot be avoided, operators should consider implementing controls suitable for steep slope disturbances that are effective at minimizing erosion and sediment discharge (e.g., preservation of existing vegetation, hydraulic mulch, geotextiles and mats, compost blankets, earth dikes or drainage swales, terraces, velocity dissipation devices). To identify slopes and soil types that are of comparatively higher risk for sediment discharge in areas of the country where the CGP is in effect, operators can use the tables in Appendix F (see Tables F-2 thru F-6).

[30] Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case it may not be feasible to preserve topsoil.

[31] Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and

b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10 Protect storm drain inlets.

a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater from your site to a receiving water, provided you have authority to access the storm drain inlet.[32] Inlet protection measures are not required for storm drain inlets that are conveyed to a sediment basin, sediment trap, or similarly effective control; and

b. Clean, or remove and replace, the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

2.2.11 Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.[33]

2.2.12 If you install a sediment basin or similar impoundment:

a. Situate the basin or impoundment outside of any receiving water. and any natural buffers established under Part 2.2.1;

b. Design the basin or impoundment to avoid collecting water from wetlands;

c. Design the basin or impoundment to provide storage for either:

i. The calculated volume of runoff from a 2-year, 24-hour storm;[34] or

ii. 3,600 cubic feet per acre drained.

d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;[35]

e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and

[32] Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

[33] Examples of stormwater controls that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps), within and along the length of a constructed site drainage feature and at the outfall to slow down stormwater.

[34] Operators may refer to https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates for guidance on determining the volume of precipitation associated with their site's local 2-year, 24-hour storm event.

[35] The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

2.2.13 If using treatment chemicals (e.g., *polymers, flocculants, coagulants*):

a. Use conventional erosion and sediment controls before and after the application of treatment chemicals. Chemicals may only be applied where treated stormwater is directed to a sediment control *(*e.g., *sediment basin, perimeter control)* before discharge.

b. Select appropriate treatment chemicals*.* Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated *(*i.e., *the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area)*.

c. Minimize discharge risk from stored chemicals. Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures *(*e.g., *spill berms, dikes, spill containment pallets),* or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means *(*e.g., *storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill)*.

d. Comply with State/local requirements. Comply with applicable State and local requirements regarding the use of treatment chemicals.

e. Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier. Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.

f. Ensure proper training. Ensure all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training prior to beginning application of treatment chemicals. Among other things, the training must cover proper dosing requirements.

g. Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals. If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as conditioned by your authorization to ensure the use of such chemicals will not result in discharges that do not meet water quality standards.

2.2.14 Stabilize exposed portions of the site. Implement and maintain stabilization measures (*e.g., seeding protected by erosion controls until vegetation is established,*[36] *sodding, mulching, erosion control blankets, hydromulch, gravel*) that minimize erosion from any areas of exposed soil on the site in accordance with Part.

[36] If you will be evaluating the use of some type of erosion control netting to the site as part of your site stabilization, EPA encourages you to consider employing products that have been shown to minimize

a. Stabilization Deadlines:[37]

Table 2 Deadlines for Initiating and Completing Site Stabilization.

Total Amount of Land Disturbance Occurring At Any One Time[38]	**Deadline**
i. Five acres or less (≤5.0) **Note: this includes sites disturbing more than five acres (>5.0) total over the course of a project, but that limit disturbance at any one time (i.e., *phase the disturbance*) to five acres or less (≤5.0)**	• Initiate the installation of stabilization measures immediately[39] in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;[40] and • Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days

impacts on wildlife. For instance, the U.S. Fish & Wildlife Service provides recommendations on the type of netting practices that are considered "wildlife friendly," including those that use natural fiber or 100 percent biodegradable materials and that use a loose weave with a non-welded, movable jointed netting, as well as those products that are not wildlife friendly including square plastic netting that are degradable (e.g., photodegradable, UV-degradable, oxo-degradable), netting made from polypropylene, nylon, polyethylene, or polyester. Other recommendations include removing the netting product when it is no longer needed. See https://www.fws.gov/midwest/eastlansing/library/pdf/WildlifeFriendlyErosionControlProducts_revised.pdf for further information. There also may be State, Tribal, or local requirements about using wildlife friendly erosion control products.

[37] EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

[38] Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

1. The total area of disturbance for a project is five (5) acres or less.
2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to "free up" land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

[39] The following are examples of activities that would constitute the immediate initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the activities in # 1 – 3 on a portion of the entire area that will be stabilized; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

[40] The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, "immediately" means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

Total Amount of Land Disturbance Occurring At Any One Time[38]	Deadline
	after stabilization has been initiated.[41]
ii. More than five acres (>5.0)	• Initiate the installation of stabilization measures immediately[42] in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;[43] and • Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.[44]

b. Exceptions:

i. Arid, semi-arid, and drought-stricken areas (as defined in Appendix A)**.** If it is the seasonally dry period (as defined in Appendix A)[45] or a period in which drought is occurring, and vegetative stabilization measures are being used:

(a) Immediately initiate and, within 14 calendar days of temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;

(b) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and

(c) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

ii. Unforeseen circumstances. Operators that are affected by unforeseen circumstances[46] that delay the initiation and/or completion of vegetative stabilization:

[41] If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed, including the application of any non-vegetative protective cover (e.g., mulch, erosion control blanket), if applicable. If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied.

[42] See footnote 39.

[43] See footnote 40.

[44] See footnote 41.

[45] The term "seasonally dry period" as defined in Appendix A refers to a month in which the long-term average total precipitation is less than or equal to 0.5 inches. Refer to EPA's Seasonally Dry Period Locator Tool at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates and supporting maps for assistance in determining whether a site is operating during a seasonally dry period for the area.

[46] Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

(a) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;

(b) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and

(c) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.

iii. Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes. Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.

iv. Discharges to a receiving water located within Lands of Exclusive Federal Jurisdiction. Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated. This deadline applies regardless of whether another exception in this section applies to your site.

c. Final Stabilization Criteria (for any areas not covered by permanent structures)**:**

i. Establish uniform, perennial vegetation *(*i.e.*, evenly distributed, without large bare areas)* to provide 70 percent or more of the vegetative cover native to local undisturbed areas; and/or

ii. Implement permanent non-vegetative stabilization measures[47] to provide effective cover of any areas of exposed soil.

iii. Exceptions:

(a) **Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the vegetative cover native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied to provide cover for at least three years without active maintenance.

(b) **Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.** The Part 2.2.14c final stabilization criteria do not apply.

(c) **Areas that need to remain disturbed.** In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed *(*e.g.*, dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials)*.

[47] Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

2.3 POLLUTION PREVENTION REQUIREMENTS[48]

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

2.3.1 For equipment and vehicle fueling and maintenance:

a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;[49]

b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;

c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;

d. Use drip pans and absorbents under or around leaky vehicles;

e. Dispose of or recycle oil and oily wastes in accordance with other Federal, State, Tribal, or local requirements; and

f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2 For equipment and vehicle washing:

a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;[50]

b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and

c. For storage of soaps, detergents, or solvents, provide either (1) cover *(*e.g., *plastic sheeting, temporary roofs)* to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

---

[48] Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

[49] Examples of effective means include:

- Locating activities away from receiving waters, storm drain inlets, and constructed or natural site drainage feature so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (e.g., *spill berms, dikes, spill containment pallets*) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

[50] Examples of effective means include locating activities away from receiving waters and storm drain inlets or constructed or natural site drainage features and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

2.3.3 For storage, handling, and disposal of building products, materials, and wastes:[51]

a. *For building materials and building products*,[52] provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these products to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

Exception: Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

b. *For pesticides, herbicides, insecticides, fertilizers, and landscape materials:*

i. In storage areas, provide either (1) cover (e.g., *plastic sheeting, temporary roofs*) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and

ii. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).

c. *For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:* The following requirements apply to the storage and handling of chemicals on your site. If you are already implementing controls as part of an SPCC or other spill prevention plan that meet or exceed the requirements of this Part, you may continue to do so and be considered in compliance with these provisions provided you reference the applicable parts of the SPCC or other plans in your SWPPP as required in Part 7.2.6b.viii.

i. If any chemical container has a storage capacity of less than 55 gallons:

(a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;

(b) If stored outside, use a spill containment pallet or similar device to capture small leaks or spills; and

(c) Have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill.

ii. If any chemical container has a storage capacity of 55 gallons or more:

(a) The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;

(b) Store containers a minimum of 50 feet from receiving waters, constructed or natural site drainage features, and storm drain inlets. If infeasible due to site constraints, store containers as far away from these features as the site

[51] Compliance with the requirements of this permit does not relieve compliance requirements with respect to Federal, State, or local laws and regulations governing the storage, handling, and disposal of solid, hazardous, or toxic wastes and materials.

[52] Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

permits. If site constraints prevent you from storing containers 50 feet away from receiving waters or the other features identified, you must document in your SWPPP the specific reasons why the 50-foot setback is infeasible, and how you will store containers as far away as the site permits;

(c) Provide either (1) cover (e.g., temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater, or (2) secondary containment (e.g., curbing, spill berms, dikes, spill containment pallets, double-wall, above-ground storage tank); and

(d) Have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill. Additional secondary containment measures are listed at 40 CFR § 112.7(c)(1).

iii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

d. *For hazardous or toxic wastes:*[53]

i. Separate hazardous or toxic waste from construction and domestic waste;

ii. Store waste in sealed containers, constructed of suitable materials to prevent leakage and corrosion, and labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable Federal, State, Tribal, or local requirements;

iii. Store all outside containers within appropriately-sized secondary containment (e.g., *spill berms, dikes, spill containment pallets*) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas *(*e.g., *storing chemicals in a covered area, having a spill kit available on site);*

iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with Federal, State, Tribal, and local requirements;

v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and

vi. Follow all other Federal, State, Tribal, and local requirements regarding hazardous or toxic waste.

e. *For construction and domestic wastes:*[54]

[53] Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

[54] Examples of construction and domestic wastes include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or discarded materials.

i. Provide waste containers *(*e.g., *dumpster, trash receptacle)* of sufficient size and number to contain construction and domestic wastes;

(a) For waste containers with lids, keep waste container lids closed when not in use, and close lids at the end of the business day and during storm events. For waste containers without lids, provide either (1) cover *(*e.g., *a tarp, plastic sheeting, temporary roof)* to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants *(*e.g., *secondary containment);*

(b) On business days, clean up and dispose of waste in designated waste containers; and

(c) Clean up immediately if containers overflow, and if there is litter elsewhere on the site from escaped trash.

ii. Waste containers are not required for the waste remnant or unused portions of construction materials or final products that are covered by the exception in Part 2.2.3a provided that:

(a) These wastes are stored separately from other construction or domestic wastes addressed by Part 2.3.3e.i (i.e., wastes not covered by the exception in Part 2.3.3a). If the wastes are mixed, they must be stored in waste containers as required in Part 2.3.3e.i; and

(b) These wastes are stored in designated areas of the site, the wastes are described in the SWPPP (see Part 7.2.6b.ix), and identified in the site plan (see Part 7.2.4i).

f. *For sanitary waste*, position portable toilets so they are secure and will not be tipped or knocked over, and are located away from receiving waters, storm drain inlets, and constructed or natural site drainage features.

2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so no overflows can occur due to inadequate sizing or precipitation;

b. Handle washout or cleanout wastes as follows:

i. For liquid wastes:

(a) Do not dump liquid wastes or allow them to enter into constructed or natural site drainage features, storm inlets, or receiving waters;

(b) Do not allow liquid wastes to be disposed of through infiltration or to otherwise be disposed of on the ground;

(c) Comply with applicable State, Tribal, or local requirements for disposal

ii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3e; and

c. Locate any washout or cleanout activities as far away as possible from receiving waters, constructed or natural site drainage features, and storm drain inlets, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

2.3.5 For the application of fertilizers:

a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6b.x;

b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;

d. Never apply to frozen ground;

e. Never apply to constructed or natural site drainage features; and

f. Follow all other Federal, State, Tribal, and local requirements regarding fertilizer application.

2.3.6 Emergency Spill Notification Requirements

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR part 110, 40 CFR part 117, and 40 CFR part 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, Tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.4 CONSTRUCTION DEWATERING REQUIREMENTS

Comply with the following requirements to minimize the discharge of pollutants from dewatering[55] operations.

2.4.1 Route dewatering water through a sediment control (e.g., sediment trap or basin, pumped water filter bag) designed to prevent discharges with visual turbidity; [56]

2.4.2 Do not discharge visible floating solids or foam;

2.4.3 The discharge must not cause the formation of a visible sheen on the water surface, or visible oily deposits on the bottom or shoreline of the receiving water. Use an oil-water separator or suitable filtration device (such as a cartridge filter) designed to remove oil, grease, or other products if dewatering water is found to or expected to contain these materials;

[55] "Dewatering" is defined in Appendix A as "the act of draining accumulated stormwater and/or ground water from building foundations, vaults, and trenches, or other similar points of accumulation."

[56] For the purposes of this permit, visual turbidity is present where there is a sediment plume in the discharge or the discharge appears cloudy, or opaque, or has a visible contrast that can be identified by an observer.

2.4.4 To the extent feasible, use well-vegetated (e.g., grassy or wooded), upland areas of the site to infiltrate dewatering water before discharge.[57] You are prohibited from using receiving waters as part of the treatment area;

2.4.5 To prevent dewatering-related erosion and related sediment discharges:

a. Use stable, erosion-resistant surfaces (e.g., well-vegetated grassy areas, clean filter stone, geotextile underlayment) to discharge from dewatering controls;

b. Do not place dewatering controls, such as pumped water filter bags, on steep slopes (as defined in Appendix A); and

c. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11.

2.4.6 For backwash water, either haul it away for disposal or return it to the beginning of the treatment process;

2.4.7 Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications; and

2.4.8 Comply with dewatering-specific inspection requirements in Part 4.

3 WATER QUALITY-BASED EFFLUENT LIMITATIONS

3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional State or Tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

EPA may insist that you install additional controls (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

3.2 WATER QUALITY-BASED CONDITIONS FOR SITES DISCHARGING TO CERTAIN IMPAIRED AND HIGH QUALITY RECEIVING WATERS

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for

[57] See footnote 20.

antidegradation purposes,[58] you must comply with the inspection frequency specified in Part 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14b.iii.[59]

If you discharge to a water that is impaired for a parameter other than a sediment-related parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards. These controls might include those necessary for your discharge to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL. In addition, EPA may require you to apply for and obtain coverage under an individual NPDES permit.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, and/or other measures are necessary to comply with the applicable antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

a. Implement controls[60] to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and

b. Ensure that disposal of such materials is performed in compliance with applicable State, Federal, and local laws.

3.3 TURBIDITY BENCHMARK MONITORING FOR SITES DISCHARGING DEWATERING WATER TO PROTECT THE WATER QUALITY OF SENSITIVE WATERS

For sites discharging dewatering water to "sensitive waters" (i.e., receiving waters listed as impaired for sediment or a sediment-related parameter (as defined in Appendix A), receiving waters designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes, or receiving waters located within Lands of Exclusive Federal Jurisdiction) you are required to comply with the benchmark monitoring requirements in this Part and document the procedures you will use at your site in your SWPPP pursuant to Part 7.2.8. A summary of these requirements is included in Table 1.

EPA notes that the benchmark threshold is not an effluent limitation, rather it is an indicator that the dewatering controls may not be working to protect water quality, which the operator must investigate and correct as appropriate. A benchmark exceedance is not a permit violation. However, if a benchmark exceedance triggers

[58] Refer to Appendix A for definitions of "impaired water" and "Tier 2," "Tier 2.5," and "Tier 3" waters. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available at https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools. For assistance in determining whether your site discharges to a Tier 2, 2.5, or 3 water, refer to the list of such waters at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates.

[59] If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

[60] Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, and using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

corrective action in Part 5.1.5a, failure to conduct any required action is a permit violation.

Where there are multiple operators associated with the same site, the operators may coordinate with one another to carry out the monitoring requirements of this Part in order to avoid duplicating efforts. Such coordinating arrangements must be described in the SWPPP consistent with Part 7.2.8. Regardless of how the operators divide the responsibilities for monitoring and reporting, each operator remains responsible for compliance with these requirements.[61]

3.3.1 Turbidity monitoring requirements[62]

a. Sampling frequency. You must collect at least one turbidity sample from your dewatering discharge each day a discharge occurs.

b. Sampling location. Samples must be taken at all points where dewatering water is discharged. Samples must be taken after the dewatering water has been treated by installed treatment devices pursuant to Parts 2.4.1 and 2.4.3 and prior to its discharge off site into a receiving water, constructed or natural site drainage feature, or storm drain inlet.

c. Representative samples. Samples taken must be representative of the dewatering discharge for any given day as required in Appendix G (standard permit conditions), Part G.10.2.

d. Test methods. Samples must be measured using a turbidity meter that reports results in nephelometric turbidity units (NTUs) and conforms with a Part 136-approved method (e.g., methods 180.1 and 2130). You are required to use the meter, and conduct a calibration verification prior to each day's use, consistent with the manufacturer's instructions.

3.3.2 Turbidity benchmark

a. The benchmark threshold for turbidity for this permit is 50 NTUs (referred to elsewhere in this permit as the "standard 50 NTU benchmark") unless EPA has authorized the use of an alternate benchmark in accordance with Part 3.3.2b.

b. Request for alternate benchmark threshold.

i. At any time prior to or during your coverage under this permit, you may request that EPA approve a benchmark for your site that is higher than 50 NTUs if you

[61] For instance, if Operator A relies on Operator B to meet the Part 3.3.1 turbidity monitoring requirements, the Part 3.3.4 reporting and recordkeeping requirements, and the Part 5.2.2 corrective action provisions when applicable, Operator A does not have to duplicate these same functions if Operator B is implementing them for both operators to be in compliance with the permit. However, Operator A remains responsible for complying with these permit requirements if Operator B fails to take actions that were necessary for Operator A to comply with the permit. See also footnote 84. EPA notes that both Operator A and B are required to submit turbidity monitoring reports as required under Part 3.3.4, however, Operator A's report does not need to include the data collected by Operator B as long as Operator B submits the required data and Operator A's report indicates that it is relying on Operator B to report the data. See Part 3.3.4a.

[62] Operators may find it useful to consult EPA's *Monitoring and Inspection Guide for Construction Dewatering*, available at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates, which provides guidelines on how to correctly monitor for turbidity, determine if the weekly average exceeds the benchmark, and, if so, how to proceed with corrective action.

have information demonstrating the higher number is the same as your receiving water's water quality standard for turbidity. Unless EPA approves an alternate benchmark, you will be required to use the standard 50 NTU benchmark. To request approval of an alternate benchmark, you must submit the following information to your applicable EPA Regional Office (see Appendix K):

(a) The current turbidity water quality standard that applies to your receiving water and the source/citation.[63]

(b) If the applicable turbidity water quality standard requires information on natural or background turbidity levels (e.g., "no more than 10 NTU above natural turbidity levels") to determine the specific standard for the receiving water, include available data that can be used to establish the natural turbidity levels of your receiving water (including literature studies or Federal, State, Tribal, or local government data). Data must be representative of the natural turbidity levels of your specific receiving water. Identify the source(s) of all data provided, including if the data are from samples you collected of the receiving water.

ii. EPA will inform you of its decision on whether to approve the requested alternate benchmark within 30 days. EPA may approve your request, request additional time (e.g., if additional information is needed to substantiate the data you provided), or deny your request. Unless and until EPA approves your request to use an alternate benchmark, you are required to use the standard benchmark of 50 NTUs and take any required corrective actions if an exceedance occurs.

3.3.3 Comparison of turbidity samples to benchmark. Compare the weekly average[64] of your turbidity monitoring results to the standard 50 NTU benchmark, or alternate benchmark if approved by EPA.

a. If the weekly average of your turbidity monitoring results exceeds the standard benchmark (or your approved alternate benchmark), you are required to conduct follow-up corrective action in accordance with Part 5.2.2 and document any corrective action taken in your corrective action log in accordance with Part 5.4.

b. For averaging purposes, a "monitoring week" starts with a Monday and ends on Sunday. Once a new monitoring week starts, you will need to calculate a new average for that week of turbidity monitoring results.[65] A weekly average may consist

[63] For instance, if your site is located in Washington, DC, and you are discharging to a Class B water, for which the water quality standard is that turbidity may not increase above ambient levels by more than 20 percent, you would reference "Water Quality Standards for the District of Columbia, Chapter 11, Section 1104.8."

[64] A "weekly average" is defined as the sum of all of the turbidity samples taken during a "monitoring week" divided by the number of samples measured during that week. Average values should be calculated to the nearest whole number.

[65] For example, if turbidity samples from your dewatering discharge in week 1 result in values of 30 NTU on Tuesday, 40 NTU on Wednesday, and 45 NTU on Thursday, your weekly average turbidity value would be 38.33 NTU ((30+40+45) ÷ 3 = 38 NTU). If in week 2, your turbidity samples resulted in values of 45 NTU on Monday, 30 NTU on Tuesday, 25 NTU on Wednesday, and 15 NTU on Thursday, you would calculate a new average for that week, which would yield an average turbidity value of 28.75 NTU ((45+30+25+15) ÷ 4 = 29 NTU). By comparison, if your samples on consecutive days from Friday to Monday were 60 NTU, 45 NTU, 40

of one or more turbidity monitoring results.

c. Although you are not required to collect and analyze more than one turbidity sample per day from your dewatering discharge, if you do collect and analyze more than one sample on any given day, you must include any additional results in the calculation of your weekly average (i.e., add all individual results for that monitoring week and divide by the total number of samples).[66]

d. If you are conducting turbidity monitoring for more than one dewatering discharge point, you must calculate a weekly average turbidity value for each discharge point and compare each to the turbidity benchmark.

3.3.4 Reporting and recordkeeping.

a. You must submit reports of your weekly average turbidity data to EPA no later than 30 days following the end of each monitoring quarter. If there are monitoring weeks in which there was no dewatering discharge, or if there is a monitoring quarter with no dewatering discharge, indicate this in your turbidity monitoring report. If another operator associated with your same site is conducting turbidity monitoring on your behalf pursuant to Part 3.3, indicate this in your turbidity monitoring report.

b. For the purposes of this permit, the following monitoring quarters and reporting deadlines apply:

Table 3. Monitoring Quarters and Deadlines for Reporting Turbidity Benchmark Monitoring Data.

Monitoring Quarter #	**Months**	**Reporting Deadline** (no later than 30 days after end of the monitoring quarter)
1	January 1 – March 31	April 30
2	April 1 – June 30	July 30
3	July 1 – September 30	October 30
4	October 1 – December 31	January 30

c. You must use EPA's NPDES eReporting Tool (NeT) to electronically submit your quarterly turbidity data, unless, consistent with Part 1.4.2, you received a waiver from your applicable EPA Regional Office. If the EPA Regional Office grants you approval to use a paper turbidity monitoring report form, and you elect to use it, you must complete the form in Appendix K. If EPA approves of your request to use an alternate turbidity benchmark pursuant to Part 3.3.2b, EPA will substitute the alternate benchmark in your NeT account.

d. For each day in which you are required to monitor, you must record the monitoring information required by Appendix G, Parts G.10.2 and G.10.3 and retain all such information for a period of at least three years from the date this permit expires or

NTU, and 43 NTU, respectively, and there are no other dewatering discharges for the remainder of the week, you would calculate one weekly average for the Friday to Sunday to be 48 NTU ((60+45+40) ÷ 3 = 48 NTU), and a separate weekly average for the one Monday to be 43 NTU (43 ÷ 1 = 43 NTU).

[66] For example, if during a monitoring week you take two turbidity samples on Tuesday with a value of 30 NTU and 35 NTU, three samples on Wednesday with a value of 40 NTU, 45 NTU, and 48 NTU, and one sample on Thursday with a value of 45 NTU, your weekly average turbidity value for this week would be 41 NTU ((30+35+40+45+48+45) ÷ 6 = 41 NTU).

from the date your authorization is terminated.

Table 4. Summary of Turbidity Benchmark Monitoring Requirements.

Applicability	Sampling Requirement	Turbidity Benchmark	Corrective Action	Reporting
Sites discharging dewatering water to a sediment-impaired water, to a water designated as a Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes, or to receiving waters located within Lands of Exclusive Federal Jurisdiction.	Collect at least one turbidity sample per day, from each discharge point, on any day there is a dewatering discharge. Use turbidity sampling procedures specified in Part 3.3.1.	Compare the weekly average of your turbidity monitoring results to the 50 NTU benchmark (or alternate benchmark if approved by EPA).	If the weekly average of turbidity monitoring results exceeds the 50 NTU turbidity benchmark (or alternate benchmark if approved by EPA), you are required to take follow-up corrective action in accordance with Part 5.2.2.	Report all weekly average turbidity monitoring results on a quarterly basis via NeT-CGP (unless use of the paper monitoring form in Appendix K is approved by EPA) no later than 30 days following the end of each monitoring quarter.

4 INSPECTION REQUIREMENTS

4.1 PERSON(S) RESPONSIBLE FOR CONDUCTING SITE AND DEWATERING INSPECTIONS

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that any person conducting inspections pursuant to this Part is a "qualified person." A qualified person is someone who has completed the training required by Part 6.3.

4.2 FREQUENCY OF INSPECTIONS.[67]

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sediment or nutrient-impaired or high quality waters, or qualify for a Part 4.4 reduction in the inspection frequency:

4.2.1 At least once every seven (7) calendar days; *or*

4.2.2 Once every 14 calendar days *and* within 24 hours[68] of the occurrence of:

- **a.** A storm event that produces 0.25 inches or more of rain within a 24-hour period.
  - **i.** If a storm event produces 0.25 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than

[67] Inspections are only required during the site's normal working hours.

[68] For the purposes of the inspection requirements in this Part, conducting an inspection "within 24 hours" means that once either of the two conditions in Parts 4.2.2a or 4.2.2b are met you have 24 hours from that time to conduct an inspection. For clarification, the 24 hours is counted as a continuous passage of time, and not counted by business hours (e.g., 3 business days of 8 hours each). When the 24-hour inspection time frame occurs entirely outside of normal working hours, you must conduct an inspection by no later than the end of the next business day.

0.25 inches but together produce 0.25 inches or more in 24 hours), you are required to conduct one inspection within 24 hours of when 0.25 inches of rain or more has fallen.

ii. If a storm event produces 0.25 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.25 inches or more of rain on subsequent days, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain (i.e., only two inspections would be required for such a storm event).[69]

b. A discharge caused by snowmelt from a storm event that produces 3.25 inches[70] or more of snow within a 24-hour period. You are required to conduct one inspection once the discharge of snowmelt from a 3.25-inch or more snow accumulation occurs. Additional snowmelt inspections are only required if following the discharge from the first snowmelt, there is a discharge from a separate storm event that produces 3.25 inches or more of snow.

4.2.3 To determine whether a storm event meets either of the thresholds in Parts 4.2.2a or 4.2.2b:

a. For rain, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any 24-hour period during which there is 0.25 inches or more of rainfall, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

b. For snow, you must either take measurements of snowfall at your site,[71] or rely on similar information from a local weather forecasting provider that is representative of your location.

4.3 INCREASE IN INSPECTION FREQUENCY FOR CERTAIN SITES.

The increased inspection frequencies established in this Part take the place of the Part 4.2 inspection frequencies for the portion of the site affected.

4.3.1 For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your State, Tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2), or that discharges to receiving waters located within Lands of Exclusive Federal Jurisdiction, you must conduct an inspection once every seven (7) calendar days *and* within 24 hours of the occurrence of a storm event

[69] For example, if 0.30 inches of rain falls on Day 1, 0.25 inches of rain falls on Day 2, and 0.10 inches of rain fall on Day 3, you would be required to conduct a first inspection within 24 hours of the Day 1 rainfall and a second inspection within 24 hours of the Day 2 rainfall, but a third inspection would not be required within 24 hours of the Day 3 rainfall.

[70] This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See https://www.nssl.noaa.gov/education/svrwx101/winter/faq/.

[71] For snowfall measurements, EPA suggests use of NOAA's National Weather Service guidelines at https://www.weather.gov/jkl/snow_measurement. These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

that produces 0.25 inches or more of rain within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

Refer to Parts 4.2.3a and 4.2.3b for the requirements to determine if a storm event produces enough rain or snow to trigger the inspection requirement.

4.3.2 For sites discharging dewatering water, you must conduct an inspection in accordance with Part 4.6.3 during the discharge once per day on which the discharge occurs. The Part 4.2 inspection frequency still applies to all other portions of the site, unless the site is affected by either the increased frequency in Part 4.3.1 or the reduced frequency in Part 4.4.

4.4 REDUCTIONS IN INSPECTION FREQUENCY

4.4.1 Stabilized areas.

a. You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month until permit coverage is terminated consistent with Part 8 in any area of your site where the stabilization steps in Part 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.

b. Exception. For "linear construction sites" (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in Part 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If "wash-out" of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a. Inspections must continue until final stabilization is visually confirmed following a storm event that produces 0.25 inches of rain or more within a 24-hour period.

4.4.2 Arid, semi-arid, or drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period[72] or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event that produces 0.25 inches of rain or more within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. Follow the procedures in Part 4.2.3a and 4.2.3b, accordingly, to determine if a storm event occurs that produces 0.25 inches or more of rain or 3.25 inches or more of snow within a 24-hour period. For any 24-hour period during which there is 0.25 inches or more of rainfall, or 3.25

[72] See footnote 45.

inches or more of snow, you must record the total rainfall or snow measured for that day in accordance with Part 4.7.1d.

4.4.3 Frozen conditions:

a. If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:

i. Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages.[73] If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;

ii. Land disturbances have been suspended; and

iii. All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

b. If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:

i. Discharges are unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and

ii. Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5 AREAS THAT MUST BE INSPECTED

During your site inspection, you must at a minimum inspect the following areas of your site:

4.5.1 All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;

4.5.2 All stormwater controls, including pollution prevention controls, installed at the site to comply with this permit;[74]

4.5.3 Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;

4.5.4 All areas where stormwater typically flows within the site, including constructed or natural site drainage features designed to divert, convey, and/or treat stormwater;

[73] Use data sets that include the most recent data available to account for recent precipitation patterns and trends.

[74] This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

4.5.5 All areas where construction dewatering is taking place, including controls to treat the dewatering discharge and any channelized flow of water to and from those controls;

4.5.6 All points of discharge from the site; and

4.5.7 All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

4.6 REQUIREMENTS FOR INSPECTIONS

4.6.1 During each site inspection, you must at a minimum:

a. Check whether all stormwater controls *(*i.e.*, erosion and sediment controls and pollution prevention controls)* are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges.

b. Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.

c. Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3.

d. Check for signs of visible erosion and sedimentation *(*i.e.*, sediment deposits)* that have occurred and are attributable to your discharge at points of discharge and, if applicable, on the banks of any receiving waters flowing within or immediately adjacent to the site;

e. Check for signs of sediment deposition that are visible from your site and attributable to your discharge (e.g., sand bars with no vegetation growing on top in receiving waters or in other constructed or natural site drainage features, or the buildup of sediment deposits on nearby streets, curbs, or open conveyance channels).

f. Identify any incidents of noncompliance observed.

4.6.2 If a discharge is occurring during your inspection:

a. Identify all discharge points at the site; and

b. Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants. Check also for signs of these same pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

4.6.3 For dewatering inspections conducted pursuant to Parts 4.3.2, record the following in a report within 24 hours of completing the inspection:

a. The inspection date;

b. Names and titles of personnel making the inspection;

c. Approximate times that the dewatering discharge began and ended on the day of inspection;[75]

[75] If the dewatering discharge is a continuous discharge that continues after normal business hours,

d. Estimates of the rate (in gallons per day) of discharge on the day of inspection;

e. Whether or not any of the following indications of pollutant discharge were observed at the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features or storm drain inlets:[76]

i. a sediment plume, suspended solids, unusual color, presence of odor, decreased clarity, or presence of foam; and/or

ii. a visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water; and

f. Photographs of (1) the dewatering water prior to treatment by a dewatering control(s) and the final discharge after treatment; (2) the dewatering control(s); and (3) the point of discharge to any receiving waters flowing through or immediately adjacent to the site and/or to constructed or natural site drainage features, storm drain inlets, and other conveyances to receiving waters.

You must also comply with the Part 4.7.2, 4.7.3, and 4.7.4 requirements for signing the reports, keeping them available on site, and retaining copies.

4.6.4 Based on the results of your inspection:

a. Complete any necessary maintenance repairs or replacements under Part 2.1.4 or under Part 5, whichever applies; and

b. Modify your SWPPP site map in accordance with Part 7.4.1 to reflect changes to your stormwater controls that are no longer accurately reflected on the current site map.

4.7 INSPECTION REPORT

4.7.1 You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report (except for dewatering inspection reports, which are covered in Part 4.6.3) must include the following:

a. The inspection date;

b. Names and titles of personnel making the inspection;

c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any problems found during your inspection that make it necessary to perform routine maintenance pursuant to Part 2.1.4b or corrective action pursuant to Part 5. Include also any documentation as to why the corrective action procedures under Part 5 are unnecessary to fix a problem that repeatedly occurs as described in Part 2.1.4c;

d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of a storm event that produced rainfall measuring 0.25 inches or more within a 24-hour period, you must include the applicable rain gauge or weather station readings that triggered the inspection. Similarly, if you conducted an inspection because of a snowmelt discharge from a

indicate that the discharge is continuous.

[76] If the operator observes any of these indicators of pollutant discharge, corrective action is required consistent with Parts 5.1.5b and 5.2.2.

storm event that produced 3.25 inches or more of snow within a 24-hour period, you must include any measurements taken of snowfall at your site, or weather station information you relied on; and

e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.

4.7.2 Each inspection report must be signed by the operator's signatory in accordance with Appendix G, Part G.11 of this permit.

4.7.3 You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.[77]

4.7.4 You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8 INSPECTIONS BY EPA

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls, that are not on site, to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

4.8.1 Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;

4.8.2 Access and copy any records that must be kept under the conditions of this permit;

4.8.3 Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and

4.8.4 Sample or monitor for the purpose of ensuring compliance.

5 CORRECTIVE ACTIONS

5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.

You must take corrective action to address any of the following conditions identified at your site:

5.1.1 A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1c that the specific reoccurrence of this same problem should still be addressed as a routine

[77] Inspection reports may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of inspection report records, refer to the Fact Sheet discussion related to Part 4.7.3.

maintenance fix under Part 2.1.4); or

5.1.2 A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or

5.1.3 Your discharges are not meeting applicable water quality standards;

5.1.4 A prohibited discharge has occurred (see Part 1.3); or

5.1.5 During discharge from site dewatering activities:

a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2b); or

b. You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3e.

5.2 CORRECTIVE ACTION DEADLINES

5.2.1 If responding to any of the Part 5.1.1, 5.1.2, 5.1.3, or 5.1.4 triggering conditions, you must:

a. Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events; and

b. When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day; or

c. When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.

5.2.2 If responding to either of the Part 5.1.5 triggering conditions related to site dewatering activities, you must:

a. Immediately take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a solution, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition[78] taking safety considerations into account;

b. Determine whether the dewatering controls are operating effectively and whether they are causing the conditions; and

[78] For instance, if the weekly average of your turbidity monitoring results or a single sample is extremely high (e.g., a single turbidity sample results in 355 NTUs or higher), you should take action to safely shut off the discharge so that you can evaluate the cause of the high turbidity. Note: A single turbidity sample of 355 NTUs or higher means that the weekly average turbidity value will exceed 50 NTU regardless of the turbidity values the other days during the week.

c. Make any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

When you have completed these steps and made any changes deemed necessary, you may resume discharging from your dewatering activities.

5.3 CORRECTIVE ACTION REQUIRED BY EPA

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

5.4 CORRECTIVE ACTION LOG

5.4.1 For each corrective action taken in accordance with this Part, you must record the following in a corrective action log:

a. Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.

b. Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.

5.4.2 Each entry into the corrective action log, consisting of the information required by both Parts 5.4.1a and 5.4.1b, must be signed by the operator's signatory in accordance with Appendix G, Part G.11.2 of this permit.

5.4.3 You must keep a copy of the corrective action log at the site or at an easily accessible location, so that it can be made immediately available at the time of an on-site inspection or upon request by EPA.[79]

5.4.4 You must retain the corrective action log for at least three (3) years from the date that your permit coverage expires or is terminated.

6 STORMWATER TEAM FORMATION/STAFF TRAINING REQUIREMENTS

6.1 STORMWATER TEAM

Each operator, or group of multiple operators, must assemble a "stormwater team" that will be responsible for carrying out activities necessary to comply with this permit. The stormwater team must include the following people:

a. Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);

b. Personnel responsible for the application and storage of treatment chemicals (if applicable);

c. Personnel who are responsible for conducting inspections as required in Part 4.1; and

[79] The corrective action log may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of corrective action log records, refer to the Fact Sheet discussion related to Part 4.7.3.

d. Personnel who are responsible for taking corrective actions as required in Part 5.

Members of the stormwater team must be identified in the SWPPP pursuant to Part 7.2.2.

6.2 GENERAL TRAINING REQUIREMENTS FOR STORMWATER TEAM MEMBERS

Prior to the commencement of construction activities, you must ensure that all persons[80] assigned to the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements, including the following related to the scope of their job duties:

a. The permit requirements and deadlines associated with installation, maintenance, and removal of stormwater controls, as well as site stabilization**;**

b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;

c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and

d. When and how to conduct inspections, record applicable findings, and take corrective actions. Specific training requirements for persons conducting site inspections are included in Part 6.3.

You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers (unless the subcontractors or outside service providers are responsible for conducting the inspections required in Part 4, in which case you must provide such documentation consistent with Part 7.2.2), but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

6.3 TRAINING REQUIREMENTS FOR PERSONS CONDUCTING INSPECTIONS

For projects that receive coverage under this permit on or after February 17, 2023, to be considered a qualified person under Part 4.1 for conducting inspections under Part 4, you must, at a minimum, either:

a. Have completed the EPA construction inspection course developed for this permit and have passed the exam; or

b. Hold a current valid construction inspection certification or license from a program that, at a minimum, covers the following:[81]

i. Principles and practices of erosion and sediment control and pollution prevention practices at construction sites;

ii. Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites; and

[80] If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit. For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

[81] If one of the following topics (e.g., installation and maintenance of pollution prevention practices) is not covered by the non-EPA training program, you may consider supplementing the training with the analogous module of the EPA course (e.g., Module 4) that covers the missing topic.

iii. Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4.

For projects that receive coverage under this permit prior to February 17, 2023, any personnel conducting site inspections pursuant to Part 4 on your site must, at a minimum, be a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.[82]

6.4 STORMWATER TEAM'S ACCESS TO PERMIT DOCUMENTS

Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

7.1 GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.[83, 84, 85] The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

[82] If you receive coverage for a project prior to February 17, 2023, and construction activities for the same project will continue after February 17, 2023, the personnel conducting inspections do not need to take the additional training specified in Parts 6.3a and 6.3b for inspections conducted on the project site. If the same operator obtains coverage for a different project on or after February 17, 2023, personnel conducting inspections would be required to meet the requirements for a qualified person by completing the training in either Part 6.3a or Part 6.3b.

[83] The SWPPP does not establish the effluent limits and/or other permit terms and conditions that apply to your site's discharges; these limits, terms, and conditions are established in this permit.

[84] Where there are multiple operators associated with the same site, they may develop a group SWPPP instead of multiple individual SWPPPs. Regardless of whether there is a group SWPPP or multiple individual SWPPPs, each operator is responsible for compliance with the permit's terms and conditions. In other words, if Operator A relies on Operator B to satisfy its permit obligations, Operator A does not have to duplicate those permit-related functions if Operator B is implementing them such that both operators are in compliance with the permit. However, Operator A remains responsible for permit compliance if Operator B fails to take actions necessary for Operator A to comply with the permit. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not cause a violation or compromise any other operators' controls and/or any shared controls. See also footnote 61.

[85] There are a number of commercially available products to assist operators in developing the SWPPP, as well as companies that can be hired to help develop a site-specific SWPPP. The permit does not state which are recommended, nor does EPA endorse any specific products or vendors. Where operators choose to rely on these products or services, the choice of which ones to use to comply with the requirements of this Part is a decision for the operator alone.

7.2 SWPPP CONTENTS

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

7.2.1 All Site Operators. Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.

7.2.2 Stormwater Team. Identify the personnel (by name and position) that you have made part of the stormwater team pursuant to Part 6.1, as well as their individual responsibilities, including which members are responsible for conducting inspections.

Include verification that each member of the stormwater team has received the training required by Part 6.2. Include documentation that members of the stormwater team responsible for conducting inspections pursuant to Part 4 have received the training required by Part 6.3. If personnel on your team elect to complete the EPA inspector training program pursuant to Part 6.3a, you must include copies of the certificate showing that the relevant personnel have completed the training and passed the exam. If personnel on your team elect to complete a non-EPA inspector training program pursuant to Part 6.3b, you must include documentation showing that these persons have successfully completed the program and their certification or license is still current. You must also confirm that the non-EPA inspector training program satisfies the minimum elements for such programs in Part 6.3b.

7.2.3 Nature of Construction Activities. Include the following:

- **a.** A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- **b.** The size of the property (in acres or length in miles if a linear construction site);
- **c.** The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- **d.** A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c);
- **e.** The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
- **f.** A description and projected schedule for the following:[86]
  - **i.** Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
  - **ii.** Temporary or permanent cessation of construction activities in each portion of the site;
  - **iii.** Temporary or final stabilization of exposed areas for each portion of the site; and
  - **iv.** Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.

[86] If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

g. A list and description of all pollutant-generating activities[87] on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (e.g., *sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels*) associated with that activity, which could be discharged in stormwater from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;

h. Business days and hours for the project;

i. If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency *(*e.g., *mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services)*, information substantiating its occurrence *(*e.g., *State disaster declaration or similar State or local declaration)*, and a description of the construction necessary to reestablish affected public services.

7.2.4 Site Map. Include a legible map, or series of maps, showing the following features of the site:

a. Boundaries of the property;

b. Locations where construction activities will occur, including:

i. Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;

ii. Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));

iii. Locations where sediment, soil, or other construction materials will be stockpiled;

iv. Any receiving water crossings;

v. Designated points where vehicles will exit onto paved roads;

vi. Locations of structures and other impervious surfaces upon completion of construction; and

vii. Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).

c. Locations of any receiving waters within the site and all receiving waters within one mile downstream of the site's discharge point(s). Also identify if any of these receiving waters are listed as impaired or are identified as a Tier 2, Tier 2.5, or Tier 3 water;

d. Any areas of Federally listed critical habitat within the action area of the site as defined in Appendix A;

e. Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);

f. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;

[87] Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering activities.

g. Stormwater and authorized non-stormwater discharge locations, including:

i. Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets, including a notation of whether the inlet conveys stormwater to a sediment basin, sediment trap, or similarly effective control;[88]

ii. Locations where stormwater or authorized non-stormwater will be discharged directly to receiving waters (i.e., not via a storm drain inlet); and

iii. Locations where turbidity benchmark monitoring will take place to comply with Part 3.3, if applicable to your site.

h. Locations of all potential pollutant-generating activities identified in Part 7.2.3g;

i. Designated areas where construction wastes that are covered by the exception in Part 2.3.3e.ii because they are not pollutant-generating will be stored;

j. Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and

k. Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

7.2.5 Non-Stormwater Discharges. Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

7.2.6 Description of Stormwater Controls.

a. For each of the Part 2.2 erosion and sediment control requirements, Part 2.3 pollution prevention requirements, and Part 2.4 construction dewatering requirements, as applicable to your site, you must include the following:

i. A description of the specific control(s) to be implemented to meet these requirements;

ii. The design specifications for controls described in Part 7.2.6a.i (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);[89]

iii. Routine stormwater control maintenance specifications; and

iv. The projected schedule for stormwater control installation/implementation.

b. You must also include any of the following additional information as applicable.

i. Natural buffers and/or equivalent sediment controls (see Part 2.2.1 and Appendix F). You must include the following:

(a) The compliance alternative to be implemented;

(b) If complying with alternative 2, the width of natural buffer retained;

[88] The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

[89] Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

(c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;

(d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;

(e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and

(f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a receiving water.

ii. Perimeter controls for a "linear construction site" (see Part 2.2.3d). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.

Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3c.i requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.

iii. Sediment track-out controls (see Parts 2.2.4b and 2.2.4c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.

iv. Inlet protection measures (see Part 2.2.10a). Where inlet protection measures are not required because the storm drain inlets to which your site discharges are conveyed to a sediment basin, sediment trap, or similarly effective control, include a short description of the control that receives the stormwater flow from the site.

v. Sediment basins (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.

vi. Treatment chemicals (see Part 2.2.13), you must include the following:

(a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;

(b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;

(c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic

treatment chemicals will not lead to a discharge that does not meet water quality standards;

(d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;

(e) Information from any applicable Safety Data Sheet (SDS);

(f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;

(g) A description of how chemicals will be stored consistent with Part 2.2.13c;

(h) References to applicable State or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and

(i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.

vii. Stabilization measures (see Part 2.2.14). You must include the following:

(a) The specific vegetative and/or non-vegetative practices that will be used;

(b) The stabilization deadline that will be met in accordance with Part 2.2.14;

(c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period (as defined in Appendix A)[90] and the schedule you will follow for initiating and completing vegetative stabilization; and

(d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.

viii. Spill prevention and response procedures (see Parts 1.3.5, 2.3.3c, 2.3.3d, and 2.3.6). You must include the following:

(a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and

(b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR part 110, 40 CFR part 117, or 40 CFR part 302, occurs

[90] See footnote 45.

during a 24-hour period. Contact information must be in locations that are readily accessible and available to all employees.

You may also reference the existence of SPCC plans developed for the construction activity under Section 311 of the CWA, or spill control programs otherwise required by an NPDES permit for the construction activity, provided that you keep a copy of that other plan on site.[91]

ix. Waste management procedures (see Part 2.3.3). Describe the procedures you will follow for handling, storing, and disposing of all wastes generated at your site consistent with all applicable Federal, State, Tribal, and local requirements, including clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste. You must also include the following additional information:

(a) If site constraints prevent you from storing chemical containers 50 feet away from receiving waters or the other site drainage features as required in Part 2.3.3c.ii(b), document in your SWPPP the specific reasons why the 50-foot setback is not feasible, and how you will store containers as far away as the site permits; and

(b) If there are construction wastes that are subject to the exception in Part 2.3.3e.ii, describe the specific wastes that will be stored on your site.

x. Application of fertilizers (see Part 2.3.5). Document any departures from the manufacturer specifications where appropriate.

7.2.7 Procedures for Inspection, Maintenance, and Corrective Action. Describe the procedures you will follow for maintaining your stormwater controls, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.4, Part 4, and Part 5 of this permit, accordingly. Also include:

a. The inspection schedule you will follow, which is based on whether your site is subject to Part 4.2 or Part 4.3, or whether your site qualifies for any of the reduced inspection frequencies in Part 4.4;

b. If you will be conducting inspections in accordance with the inspection schedule in Part 4.2.2, Part 4.3, or Part 4.4.1b, the location of the rain gauge or the address of the weather station you will be using to obtain rainfall data;

c. If you will be reducing your inspection frequency in accordance with Part 4.4.1b, the beginning and ending dates of the seasonally defined arid period for your area or the valid period of drought;

d. If you will be reducing your inspection frequency in accordance with Part 4.4.3, the beginning and ending dates of frozen conditions on your site; and

e. Any maintenance or inspection checklists or other forms that will be used.

7.2.8 Procedures for Turbidity Benchmark Monitoring from Dewatering Discharges (if applicable). If you are required to comply with the Part 3.3 turbidity benchmark

[91] Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP.

monitoring requirements, describe the procedures you will follow to collect and evaluate samples, report results to EPA and keep records of monitoring information, and take corrective action when necessary. Include the specific type of turbidity meter you will use for monitoring, as well as any manuals or manufacturer instructions on how to operate and calibrate the meter. Describe any coordinating arrangement you may have with any other permitted operators on the same site with respect to compliance with the turbidity monitoring requirements, including which parties are tasked with specific responsibilities. If EPA has approved of an alternate turbidity benchmark pursuant to Part 3.3.2b, include any data and other documentation you relied on to request use of the specific alternative benchmark.

7.2.9 Compliance with Other Requirements.

a. Threatened and Endangered Species Protection. Include documentation required in the Endangered Species Protection section of the NOI in NeT, or the ESA worksheet in Appendix D, supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.

b. Historic Properties. Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.

c. Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls. If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable State agency[92] or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing regulations at 40 CFR § 144 -147. Such controls would generally be considered Class V UIC wells:

i. Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);

ii. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and

iii. Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

7.2.10 SWPPP Certification. Your signatory must sign and date your SWPPP in accordance with Appendix G, Part G.11.

7.2.11 Post-Authorization Additions to the SWPPP. Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

a. A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;

b. A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (i.e.*, permit tracking number*);

[92] For State UIC program contacts, refer to the following EPA website: https://www.epa.gov/uic.

c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a State, Tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).[93]

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.[94]

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4 SWPPP MODIFICATIONS

7.4.1 You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:

a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;

b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;

c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;

d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:

i. A copy of any correspondence describing such measures and requirements; and

[93] The SWPPP may be prepared, signed, and kept electronically, rather than in paper form, if the records are: (a) in a format that can be read in a similar manner as a paper record; (b) legally dependable with no less evidentiary value than their paper equivalent; and (c) immediately accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form. For additional guidance on the proper practices to follow for the electronic retention of the SWPPP, refer to the Fact Sheet discussion related to Part 4.7.3.

[94] Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.

ii. A description of the controls that will be used to meet such requirements.

e. To reflect any revisions to applicable Federal, State, Tribal, or local requirements that affect the stormwater controls implemented at the site; and

f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

7.4.2 You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.9 above) and a brief summary of all changes.

7.4.3 All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix G, Part G.11.b.

7.4.4 Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

8 HOW TO TERMINATE COVERAGE

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

8.1 MINIMUM INFORMATION REQUIRED IN NOT

8.1.1 NPDES ID (i.e*., permit tracking number)* provided by EPA when you received coverage under this permit;

8.1.2 Basis for submission of the NOT (see Part 8.2);

8.1.3 Operator contact information;

8.1.4 Name of site and address (or a description of location if no street address is available); and

8.1.5 NOT certification.

8.2 CONDITIONS FOR TERMINATING CGP COVERAGE

You may terminate CGP coverage only if one or more of the conditions in Parts 8.2.1, 8.2.2, or 8.2.3 has occurred. Until your termination is effective consistent with Part 8.5, you must continue to comply with the conditions of this permit.

8.2.1 You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met all of the following requirements:

a. For any areas that (1) were disturbed during construction, (2) are not covered by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14c.

To document that you have met these stabilization requirements, you must take either ground or aerial photographs that show your site's compliance with the Part 2.2.14 stabilization requirements and submit them with your NOT. If any portion of your

site is covered by one of the exceptions in Part 2.2.14c.iii, indicate which exception applies and include a supplementary explanation with your photographs that provides the necessary context for why this portion of the site is in compliance with the final stabilization criteria even though it appears to be unstabilized. You are not required to take photographs of every distinct part of your site that is being stabilized, however, the conditions of the site portrayed in any photographs that are submitted must be substantially similar[95] to those of the areas that are not photographed. You must also comply with the following related to these photographs:

i. Take photographs both before and after the site has met the final stabilization criteria in Part 2.2.14c;

ii. All photographs must be clear and in focus, and in the original format and resolution; and

iii. Include the date each photograph was taken, and a brief description of the area of the site captured by the photograph (e.g., photo shows application of seed and erosion control mats to remaining exposed surfaces on northeast corner of site).

b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;

c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable (as defined in Appendix A); and

d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or

8.2.2 You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or

8.2.3 Coverage under an individual or alternative general NPDES permit has been obtained.

8.3 HOW TO SUBMIT YOUR NOT

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit an NOT for the 2022 CGP.

To access NeT, go to https://cdx.epa.gov/cdx.

Waivers from electronic reporting may be granted as specified in Part 1.4.2. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix I.

[95] Stabilization conditions that are substantially similar would include areas that are using the same type of stabilization measures and that have similar slopes, soils, and topography, and have achieved the same level of stabilization.

8.4 DEADLINE FOR SUBMITTING THE NOT

You must submit an NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES

The provisions in this Part provide additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the State or Tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific States, Indian country, and areas in certain States with Federal Facilities or areas subject to construction projects by Federal Operators. States, Indian country, and other areas not included in this Part do not have any additions to the applicable conditions of this permit.

9.1 EPA REGION 1

9.1.1 NHR100000 State of New Hampshire

a. Should the permit coverage for an individual applicant be insufficient to achieve water quality standards, the New Hampshire Department of Environmental Services (NHDES) may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required NHDES public participation requirements.

b. If you disturb 100,000 square feet or more of contiguous area, you must also comply with RSA 485-A:17 and Env-Wq 1500, and, unless exempt, apply for an Alteration of Terrain (AoT) permit from NHDES. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule (Env-Wq 1503.03).

c. You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2 of the Construction General Permit or CGP). In the absence of information demonstrating otherwise, the water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site http:// des.nh.gov/ by using the One Stop Data Mapper. For a toxic substance included in the New Hampshire surface water quality standards, see Env-Wq 1703.21 (see https://www.des.nh.gov/sites/g/fi1es/ehbemt 341/files/documents/2020-01/Env-Wg

1700.pdf). If it is determined that the groundwater to be dewatered is near a remediation or other waste site, you must apply for the Remediation General Permit (see https://www3.epa.gov/region1/npdes/rgp.html)

d. As a minimum, you must treat any uncontaminated excavation "dewatering" discharges and "stormwater" discharges, as those terms are defined in Appendix A of the CGP, as necessary, to remove suspended solids and turbidity so that the surface waters receiving the construction discharges[96] meet New Hampshire surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (i.e., plumes or visual turbidity)[97] (Env-Wq 1703.03(c)(1)b).

i. For all Construction Activities covered under this CGP, the following shall apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances:

Unless otherwise specified, site inspection requirements shall comply with Part 4 of the CGP. As a minimum site inspection frequency shall be in accordance with Part 4.2.2 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency). Monitoring of the receiving water for visible turbidity and benthic sediment deposits shall be conducted each site inspection and results reported in the Inspection Report required in Part 4.7 of the CGP. Should visible turbidity or benthic sediment deposits attributable or partly attributable to your construction activities be present in the receiving water, the "Corrective Actions" specified in Part 5 shall be immediately implemented to correct the water quality standard violations. In addition, daily monitoring (including photographs) of the receiving water shall be conducted until there is no visible turbidity or benthic deposits. Inspection Reports required in Part 4.7 of the CGP shall include, but not be limited to, the distance downstream and the percent of the river width[98] where visible turbidity was observed, and the period of time that the visible turbidity persisted. A copy of the Inspection Report(s) shall be made available to NHDES within 24 hours of receiving a written request from NHDES.

ii. For Construction Activities, disturbing 5 acres or more of land at any one time (excluding areas that have been completely stabilized in accordance with the final stabilization criteria specified in Part 2.2.14.c of the CGP), the following shall

[96] Construction Discharges include uncontaminated "dewatering" and "stormwater" discharges as those terms are defined in Appendix A of the CGP. Controlled construction discharges are construction discharges where the rate of flow can be regulated such as from a construction settling basin or NHDES approved flocculation system.

[97] For the definition of visual turbidity, see the definition for "Non-Turbid" in Appendix A of the CGP, which states the following:" "Non-Turbid" - a discharge that is free from visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer." *[EPA interprets the text of this footnote as intending to reference the Appendix A definitions of "visual turbidity" and "non-turbid" in the final permit.]*

[98] The distance downstream and the percent of river width where visible turbidity (i.e., plume) is observed is required to determine the extent of the river affected and to determine if there was a "zone of passage" (i.e., a portion of the receiving water where there was no visible turbidity where mobile organisms could pass without being adversely impacted). The percent of river width affected is equal 100 multiplied by the width of the plume (in feet) divided by the width of the receiving water (in feet).

apply to ensure compliance with the aforementioned regulations for turbidity, benthic deposits and visible substances.

Item 9.1.1.d.i) above shall apply to all construction discharges and the minimum site inspection frequency shall comply with Part 4.3.1 of the CGP (and Part 4.3.2 of the CGP for sites discharging dewatering water). Site inspection frequency may be reduced in accordance with Part 4.4 of the CGP (Reductions in Inspection Frequency).

With regards to controlled construction discharges, if there is no visible turbidity (i.e., plumes) or benthic deposits, and, in the absence of information demonstrating otherwise, turbidity measurements of less than or equal to 50 nephelometric turbidity units (NTU) in the controlled construction discharges at the outlet prior to mixing with the receiving surface waters, shall be presumed to meet New Hampshire surface water quality standards for the parameters listed above. As a minimum, the controlled construction discharges must be sampled at each site inspection.

If any controlled construction discharge exceeds 50 NTU, or if visible turbidity or benthic sediment deposits attributable or partly attributable to any construction discharge are observed in the receiving water, then the "Corrective Actions" specified in Part 5 of the CGP shall be immediately implemented.

In addition, should such violation occur, and, in order to determine compliance with surface water quality standards for turbidity (Env-Wq 1703.11 and Env-Wq 1703.03(c)(1)c), benthic deposits (Env-Wq 1703.03(c)(1)a), and Env-Wq 1703.08) and foam, debris, scum or other visible substances (Env-Wq 1703.03(c)(1)b)), turbidity monitoring shall be immediately implemented as specified below:

Turbidity samples of the receiving water shall be immediately taken in the receiving water upstream and beyond the influence of the construction activity, and, unless a mixing zone[99] is approved by NHDES, no more than 75 feet downstream of each controlled construction discharge that exceeded 50 NTU and no more than 75 feet downstream of each construction discharge that caused visible turbidity.

Downstream samples shall be taken at locations in the receiving water that are most likely influenced by the discharge (e.g., if visible turbidity (i.e., a plume) is present, the sample shall be taken in the plume). Samples shall be collected a minimum of 2 times per day during the daylight hours at times when construction activities are most likely to cause turbidity in the receiving water and shall continue until the turbidity water quality standards are met in the receiving water (i.e., the difference between the upstream and downstream turbidity level is no greater than 10 NTU).

[99] Permittees may request a distance greater than 75 feet downstream of a construction discharge for determining compliance with turbidity standards in Class B surface waters, by submitting a mixing zone request to NHDES that complies with Env-Wq 1707.02. If a mixing zone is approved, NHDES is required to include conditions to ensure that the criteria on which the approval is based are met (Env-Wq 1707.03).

If water quality standards are not met during daylight hours on any day, sampling shall resume the next day and continue no fewer than 2 times per day until water quality standards are met. The date, time, location and results of turbidity measurements, as well as a summary identifying the cause of the violations, corrective actions that were implemented, the period of time that the receiving water exceeded turbidity standards and the distance downstream and the percent of the river width where visible turbidity was observed, and the period of time that the visible turbidity persisted, shall be recorded and included in the Inspection Report required in Part 4.7 of the CGP. Turbidity measurements shall be conducted via a field meter in accordance with the requirements for turbidity specified in Table 1B in 40 CFR 136.3 (see 40 CFR §136.3 Identification of test procedures - Code of Federal Regulations ecfr.io). Field meters shall be calibrated every day sampling is conducted and prior to the first sample.

e. Construction site owners and operators are encouraged to consider opportunities for post- construction groundwater recharge using infiltration best management practices (BMPs) during site design and preparation of the SWPPP in order to assure compliance with Env-Wq 1703.03 and Env-Wq 1703.11. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GA1 or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04, including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.30). For design considerations for infiltration measures see Env-Wq 1508.06. Note that there may be additional local requirements that fall under the NH MS4 permittee's Authorization to Discharge Permit for those regulated areas.

f. Appendix F of the CGP contains information regarding Tier 2, or high quality waters in the various states. ***[EPA notes that this information has now been moved to https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates]*** Although there is no official list of tier 2 waters for New Hampshire, it can be assumed that all New Hampshire surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU (Env-Wq 1703.11). A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.

g. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown below in 9.1.1.h.

i. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2 of the CGP).

ii. Records of sampling and analysis required for construction dewatering and stormwater discharges (see 9.1.1.d above).

h. All required or requested documents must be sent to: NH Department of Environmental Services, Watershed Management Bureau, P.O. Box 95 Concord, NH 03302-0095.

9.1.2 MAR100000 Commonwealth of Massachusetts (except Indian country)

a. All discharges covered by the Construction General Permit shall comply with the provisions pursuant to 314 CMR 3.00, 314 CMR 4.00, 314 CMR 9.00, including applicable construction stormwater standards and 310 CMR 10.00.

b. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees are prohibited from discharging dewatering water under the CGP from sites that are designated as Superfund/CERCLA or RCRA, and must make accommodations to dispose of the dewatering discharges appropriately, such as coverage under the Remediation General Permit (RGP).

c. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants seeking coverage under the 2022 CGP that propose to carry out construction activities near Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit to MassDEP for review:

i. a copy of the Stormwater Pollution Prevention Plan (SWPPP),

ii. a copy of the EPA NOI, and

iii. MassDEP's Stormwater BMP Checklist.

For purposes of this review, the permittee shall submit these documents to MassDEP at the same time they are submitted to EPA. Instructions on how to submit these documents to MassDEP and where to find the MassDEP Stormwater BMP Checklist and obtain authorization to discharge can be found here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of- intent.

d. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, applicants that propose to dewater under the 2022 CGP and plan to discharge to certain waters as described below, shall determine that any dewatering discharges are not contaminated by testing the proposed discharge as described below as part of the application for WM15 authorization. Unless otherwise specified, testing described in this section should be conducted using the methods in 40 CFR 136.

i. Applicants for sites that plan to discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall test one sample of the proposed dewatering discharge water for pH, E. Coli (for discharges to freshwater), fecal coliform (for

discharges to salt water), Enterococci (for discharges to salt water), total suspended solids, oil and grease, total nitrogen, total phosphorus, and all parameters with numeric criteria listed in the Massachusetts Surface Water Quality Standards at 314 CMR 4.05(e). Results shall be reported to MassDEP as part of the WM15 application. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

ii. Applicants for sites that propose to discharge to Public Water Supplies (314 CMR 4.06(1)(d)1) shall also test one sample of the proposed dewatering discharge water for per- and polyfluoroalkyl substances (PFAS), as outlined in the table below. Results shall be reported to MassDEP as part of the WM15 application. If any PFAS compounds are detected, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required.

PFAS Testing Parameters for Discharges to Public Drinking Water Supplies[100]	
Perfluorohexanesulfonic acid (PFHxS), grab	Report ng/L
Perfluoroheptanoic acid (PFHpA), grab	Report ng/L
Perfluorononanoic acid (PFNA), grab	Report ng/L
Perfluorooctanesulfonic acid (PFOS), grab	Report ng/L
Perfluorooctanoic acid (PFOA), grab	Report ng/L
Perfluorodecanoic acid (PFDA), grab	Report ng/L

iii. Applicants for sites that propose to discharge to an impaired water as identified in the most recent final Massachusetts Integrated List of Waters,shall test one sample of the proposed dewatering discharge water for the parameter(s) for which the waterbody is impaired. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation GeneralPermit and shall apply for RGP coverage if required.

iv. For dewatering discharges to all other waters, if any pollutants are knownor believed present in the proposed dewatering discharge water, the applicant shall apply for coverage under the NPDES Remediation General Permit for Massachusetts if required. For the purposes of this condition, a pollutant is "known present" if measured above the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed present" if a pollutant has not been measured in an environmental sample but will be added or generated prior to discharge, such as through a treatment process. Consequently, a pollutant is "known absent" if measured as non-detect relative to the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and "believed absent" if a pollutant has not been measured in an environmentalsample but will not be added or generated prior to discharge and is not a parameter that applies to the applicable activity category for a site. If any pollutants are known or believed present in the

[100] PFAS testing shall follow established EPA methods 537 or 537.1 for drinking water until EPA Method 3512 for non-potable water becomes available.

proposed dewatering discharge water, the applicant shall test one sample of the proposed dewatering discharge water for the pollutants known or believed to be present. To determine if the dewatering discharge could be covered under the 2022 CGP, the effluent at zero dilution must meet numeric water quality criteria. If the effluent does not meet numeric water quality criteria, the applicant shall contact EPA Region 1 to discuss coverage under the Remediation General Permit.

e. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to protect Outstanding Resource Waters under 314 CMR 4.04(3), applicants that propose to dewater under the 2022 CGP and discharge to Outstanding Resource Waters as identified in 314 CMR 4.06, shall submit the SWPPP and associated documents to MassDEP to review. MassDEP shall complete review within 30 daysof receipt.

f. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees that have been authorized to dewater under the 2022 CGP and that discharge to Outstanding Resource Waters as identified in 314 CMR 4.06 shall carry out daily benchmark monitoring for turbidity[101] for the duration of dewatering. Permittees shall compare the weekly average of the turbidity monitoring results with the established benchmark turbidity value of 25 Nephelometric Turbidity Units (NTU). If a permittee's weekly average turbidity results exceed the benchmark, the operator shall conduct follow-up corrective action to determine the source of the problem and to make any necessary repairs or upgrades to the dewatering controls to lower the turbidity levels. The permittee shall document any corrective action taken in its corrective action log. Furthermore, permittees at these sites shall carry out inspections at higher frequency, specifically, daily inspections of the dewatering discharge treatment for the duration of the discharge. The permittee shall inspect the site for sediment plume or whether a hydrocarbon sheen is visible at the point of discharge, estimate the flow rate at the point of discharge, and inspect the site downstream to assess whether sedimentation is attributable to the dewatering discharges.

g. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05 to maintain surface waters free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the waterbody, permittees shall store materials outside the Base Flood Elevation[102] when feasible to prevent displacing runoff and erosion.

h. Pursuant to 314 CMR 3.11 (2)(a), and in accordance with MassDEP's obligation to maintain surface waters free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses under 314 CMR 4.05(5)(c), all applicants who apply for coverage under the 2022 CGP shall follow guidelines on fertilizer application, including use of fertilizer containing no phosphorus, in accordance with 330 CMR 31.00 Plant Nutrient Application Requirements for

[101] Applicants shall follow EPA Method 180.1 to monitor for turbidity

[102] Base Flood Elevation (BFE) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1–A30, AR, AR/A, AR/AE, AR/A1– A30, AR/AH, AR/AO, V1–V30 and VE. (Source: https://www.fema.gov/node/404233).

Agricultural Land and Non-Agricultural Turf and Lawns. Further, fertilizer shall never be applied to a site when a rain event greater than 0.5 inches is forecast in the next 48 hours.

i. Pursuant to 314 CMR 3.11 (2)(a), all applicants who apply for coverage under the 2022 CGP and elect to carry out site inspections every 14 days shall also inspect sites within 24 hours of 0.25 inches of precipitation events or greater over 24 hours,or within 24 hours of a discharge that occurred due to snowmelt from 3.25 inches or greater of snow accumulation.[103] During the high flow periods in spring (i.e., months of April to June), inspection frequency shall be increased to once per week for all sites.

i. To determine whether 3.25 inches or greater of snow accumulation has occurred at a site, snowfall measurements can be taken at the site,[104] or theoperator can rely on similar information from a local weather forecast.

j. Implementing structural improvements, enhanced/resilient pollution prevention measures, and other mitigation measures can help to minimize impacts from stormwater discharges from major storm events such as hurricanes, storm surge, extreme/heavy precipitation,[105] and flood events. Pursuant to 314 CMR 3.11 (2)(a), if such stormwater control measures are already in place due to existing requirements mandated by other state, local or federal agencies, the SWPPP shall include a brief description of the controls and a reference to the existing requirement(s). If the site may be exposed to or has previously experienced suchmajor storm events[106], additional stormwater control measures that may be considered, and implemented as necessary, include, but are not limited to:

i. Reinforce materials storage structures to withstand flooding and additional exertion of force;

ii. Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE) level or securing with non-corrosive device;

iii. When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery until after the storm or storematerials as appropriate (refer to emergency procedures);

[103] This is the amount of snow that is equivalent to 0.25 inches of rain, based on information from the National Oceanic and Atmospheric Administration (NOAA) indicating that 13 inches of snow is, on average, equivalent to 1 inch of rain. See https://www.nssl.noaa.gov/education/svrwx101/winter/faq/.

[104] NOAA's National Weather Service has guidelines on snowfall measurements at https://www.weather.gov/jkl/snow_measurement. These guidelines recommend use of a "snowboard" (a piece of wood about 16 inches by 16 inches) that is placed in an unobstructed part of the site on a hard surface.

[105] Heavy precipitation refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Heavy precipitation does not necessarily mean the total amount of precipitation at a location has increased— just that precipitation is occurring in more intense or more frequent events.

[106] To determine if your facility is susceptible to an increased frequency of major storm events that could impact the discharge of pollutants in stormwater, you may reference FEMA, NOAA, or USGS flood map products at https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news_science_products=0#qtnews_science_products.

iv. Temporarily store materials and waste above the Base Flood Elevation ***[EPA notes that it has deleted a footnote reference to the term "Base Flood Elevation" since the same footnote is already included in Part 9.1.2.g, above.]*** level;

v. Temporarily reduce or eliminate outdoor storage;

vi. Temporarily relocate any mobile vehicles and equipment to higher ground;

vii. Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning andidentify emergency contacts for staff and contractors; and

viii. Conduct staff training for implementing your emergency procedures atregular intervals.

k. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, permittees who seek coverage under the 2022 CGP and anticipate to carry out dust control shall limit their dust control methodology to using water only and specifically avoid using other techniques, such as solutions containing calcium chloride.

l. If MassDEP requests a copy of the Stormwater Pollution Prevention Plan (SWPPP) for any construction site at any time, the permittee shall submit the SWPPP to MassDEP within 14 days of such a request. MassDEP may conduct an inspection of any site covered by this permit to ensure compliance with state lawrequirements, including state water quality standards.

9.1.3 MTR10F000 Areas in the State of Vermont located at a federal facility

a. Earth disturbance at any one time is limited to five acres.

b. All areas of earth disturbance must have temporary or final stabilization within 14 days of the initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site. Temporary stabilization is not required if precipitation is not forecast and work is to continue in the next 24-hours or if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of two feet or greater (e.g. house foundation excavation, utility trenches). Areas of a construction site that drain to sediment basins are not considered eligible for this exemption, and the exemption applies only to the excavated area itself.

c. Site inspections on active construction sites shall be conducted daily during the period from October 15 through April 15.

d. The use of chemical treatments (e.g. polymers, flocculants, and coagulants) for the settling and/or removal of sediment from stormwater runoff associated with construction and construction-related activities requires prior written approval and an approved site and project-specific plan, from the Vermont Agency of Natural Resources. In addition, the use of cationic polymers is prohibited unless approved by the Vermont Agency of Natural Resources under a site and project-specific plan.

e. Any applicant under EPA's CGP shall allow authorized Vermont Agency of Natural Resources representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the project and determining

compliance with this Certification.

f. The Vermont Agency of Natural Resources may reopen and alter or amend the conditions of this Certification over the life of the EPA 2022 Construction General Permit when such action is necessary to assure compliance with the VWQS.

9.2 EPA REGION 2

9.2.1 NYR10I000 Indian country within the State of New York

a. Saint Regis Mohawk Tribe

i. Any Responsible-Person/Decision-Maker required under the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must concurrently submit an electronic copy of the NOI to the SRMT Environmental Division, Water Resource Program Manager. Additionally, an electronic copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be electronically provided to the following addresses:

Mr. Tieman W. Smith
Water Resources Program Manager Saint Regis Mohawk Tribe
449 Frogtown Road
Akwesasne, NY 13655 Tiernan.Smith@srmt-nsn.gov 518.358.2272 ext. 5073

ii. Any Responsible-Person/Decision-Maker that is required as part of the CGP to prepare a Discharge Management Plan (OMP) or Storm Water Management Plan (SWMP) and/or Storm Water Pollution Prevention Plan (SWPPP) must submit an electronic copy of the DMP, SWMP and/or SWPPP to the SRMT Environment Division, Water Resources Program Manager IO business days prior to the start of construction of any work to be conducted under the CGP. The applicable documents must be provided to the electronic address listed above.

iii. Any Responsible-Person/Decision-Maker that is required under the CGP to submit an annual report to EPA must submit an electronic copy of the annual report concurrently to the SRMT Water Resource Program. Additionally, any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident must likewise be routed to the SRMT Water Resources Program at the above electronic address.

iv. An "Authorization to Proceed Letter" with site-specific mitigation requirements may be sent out to the permittee when a review of the NOI and OMP, SWMP and /or SWPPP on a case-by-case basis, is completed by the SRMT Environment Division, Water Resource Program. This approval will allow the application to proceed if all mitigation requirements are met.

b. Seneca Nation

i. Under Part 1.1.5 of the CGP, the Seneca Nation requests that an applicant must demonstrate that they meet the eligibility criteria listed in Appendix D (certify in your Notice of Intent (NOI) that you meet one of the eligibility criteria [Criterion A-F]) as well as species and critical habitats that are listed under the Seneca Nation's "Fishing and Conservation Laws" and the "Seneca Nation of Indians Comprehensive Conservation Law".

ii. The Tribal Historic Preservation Office (THPO) was established in 2000 after the Seneca Nation received a recognition letter from the National Park Service (NPS); therefore under Part 1.1.6 of the CGP (Appendix E) and prior to submitting a Notice of Intent (NOI) operators must complete the Nation's TPHO, Project Review Form (https://sni.org/media/246603/sni-thpo-project-review-form.pdf) and submit the completed form with associated information to the Tribal Historic Preservation Officer at 90 Ohi:yo' Way, Salamanca, NY 14779. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.

iii. Under Part 1.2 of the CGP, discharges must also follow the Section 13 of the Guide for Construction (Seneca Nation of Indians Source Water Code) and respectively, Council Resolution, dated April 13, 2013 (CN: R-04-13-13-11) to ensure that the health, safety and welfare of the citizens of the Seneca Nation, and all other within the Lands and Territories of the Seneca Nation of Indians, and to facilitate the adequate provisions of water through the elimination or prevention of ground water contamination in the vicinity of wells that supply drinking water for the Nation. The area is known as the Source Water Protection Area (SWPA) and specified activities are regulated within this SWPA, as cited in Section 13 of the Guide for Construction and Section VI, of CN: R-04-13-13-11.

iv. Under Part 1.4, any operator who seeks coverage of the CGP, and is required to submit a notice of intent NOI and Notice of Termination (NOT) (as necessary) to the EPA for coverage, under Part 1.4.2 must also submit a copy of the NOI to the Seneca Nation's Environmental Protection Department (EPD) within three business days of submittal to the EPA, (address shown below). Respectively, a copy of the NOT (as described under Part 8.3 of the CGP), which certifies that you have met the requirements of Part 8, must be provided within three business days after electronic confirmation is received from the EPA that the NOT has been accepted. In addition to a NOI and NOT, the Seneca Nation (Environmental Protection Department [EPD]) would require an Environmental Impact Assessment (EA) (Long Form), as shown in Section 2 of the Seneca Nation of Indians Laws, Ordinances & Policies (Guide for Construction), to be completed and submitted to the EPD prior to any project to determine whether the impacts from a project would create significant and detrimental effects to the Nation's lands, water (violate WQS), and environment. The NOI, NOT, and EA must be submitted electronically to epd@sni.org and provided to the following address:

Seneca Nation
Environmental Protection Department (EPD) Attn: Director of EPD
12837 Route 438
Irving, NY 14081

v. Under Part 3.0 of the CGP, discharges must be controlled as necessary to meet applicable WQS. The Seneca Nation is working actively towards finalizing and implementing the; therefore, the EPD would require an applicant to submit or grant access to the permit to obtain information on the impact of effluents on receiving waters, including the capability of receiving waters to support future designated uses and achieve the WQS of the Nation; and to advise prospective dischargers of discharge requirements, and coordinate with the appropriate

permitting agencies. As stated in the Decision Document, under Section 303(c) of the CWA, 33 U.S.C. § 1313(c), states develop, review, and revise (as appropriate) water quality standards for surface waters of the United States. At a minimum, such standards are to include designated water uses, water quality criteria to protect such uses, and an antidegradation policy. 40 C.F.R. § 131.6. In addition, under Section 401 of the CWA states may grant, condition, or deny "certification" for federally permitted or licensed activities that may result in a discharge to the waters of the United States 33 U.S.C. § 1341.

vi. Under Part 7.2.8(a)(b)(c) and for Part 9 of the CGP, the following Sections of the Seneca Nation's Guide for Construction shall be considered, in conjunction with the CGP:

(a) Section 1. Executive Order - To Establish a Policy for Governing Access to Nation Territories and Facilities by Officials of Foreign Government, dated March 31, 2011

(b) Section 3. Natural Resources Committee, Sand and Gravel Law (CN: R-06-24-05-08)

(c) Section 4. Fishing and Conservation Laws - Part 1.1.5 of the CGP

(d) Section 5. Seneca Nation of Indians Comprehensive Conservation Law, adopted January 14, 2012

(e) Section 9. Food is Our Medicine (FIOM) Program/Native Planting Policy (CN: R-03- 08-14-14)

(f) Section 10. Forestry Management Plan (CN: R-08-14-10-23)

(g) Section 11. Timber Ordinance #411-092, dated May 8, 1982

(h) Section 14. Flood Damage Prevention Local Law, dated September 27, 1988

(i) Section 16. Utilities Ordinance No. 87-100

(j) Authorizing Emergency Action and Contingency Plan to Restrain Pollution of Nations Waters, (Council Resolution: R-03-01-18-10), dated March 10, 2018 Seneca Nation of Indians Permit Application for Construction within Waterways Permit, Form NR98-01.00

9.3 EPA REGION 3

9.3.1 DCR100000 District of Columbia

a. Discharges authorized by this permit shall comply with the District of Columbia Water Pollution Control Act of 1984, as amended (DC Official Code § 8-103.01 and § 8-103.06, et seq.) to ensure that District of Columbia waters, waters in adjacent and downstream states, and the beneficial uses of these waters will not be harmed or degraded by the discharges.

b. Discharges authorized by this permit must comply with §§ 1104.1 and 1104.8 of Chapter 11 and the provisions of Chapter 19 of Title 21of District of Columbia Municipal Regulations in order to attain and maintain designated uses of the District of Columbia waters.

c. The permittee shall comply with the District of Columbia Stormwater Management and Soil Erosion and Sediment Control regulations in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.

d. The permittee shall comply with the District of Columbia Flood Management Control regulations in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.

e. The permittee shall submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002, during the review and approval of the permittee's DOEE Erosion and Sediment Control Plan in accordance with the provisions of Chapter 542 of Title 21 of the District of Columbia Municipal Regulations.

f. Upon request, the permittee shall submit all inspection and monitoring reports as required by this permit and 40 CFR § 122.41 to the Associate Director, Inspection and Enforcement Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2226, or by email at Joshua.Rodriguez@dc.gov.

g. In the event the permittee intends to discharge dewatering water, groundwater, or groundwater comingled with stormwater from a known contaminated site, the permittee shall contact the Regulatory Review Division, Department of Energy & Environment, Government of the District of Columbia, 1200 First Street, NE, 5th Floor, Washington, DC 20002; telephone (202) 535-2600, or by email at MS4DischargeAuthorization@dc.gov to request authorization to discharge dewatering water, groundwater, or groundwater comingled with stormwater to the District's Municipal Separate Storm Sewer System (MS4) or to a surface water body pursuant to §§ 8-103.02, 8-103.06, and 8-103.07 of the District of Columbia Water Pollution Control Act of 1984, as amended.

9.3.2 DER10F000 Areas in the State of Delaware located at a federal facility (as defined in Appendix A)

a. Federal agencies must submit a sediment and stormwater management plan (SSMP) and receive Department approval prior to undertaking any land clearing, soil movement or construction activity unless conducting an exempt activity.

b. Federal construction activities are required to have a third-party Certified Construction Reviewer (CCR) perform weekly reviews to ensure the adequacy of construction activities pursuant to the approved SSMP and regulations.

Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.

c. Implementation of approved SSMPs requires the daily oversight of construction activity by certified responsible personnel.

d. A current copy of the SSMP must be maintained at the construction site.

e. Unless authorized by the Department, not more than 20 acres may be disturbed at any one time.

9.4 EPA REGION 4

No additional conditions

9.5 EPA REGION 5

9.5.1 MIR10I000 Indian country within the State of Minnesota

a. Fond du Lac Reservation

i. New dischargers wishing to discharge to an Outstanding Reservation Resource Water (ORRW)[107] must obtain an individual permit from EPA for storm water discharges from large and small construction activities.

ii. A copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:

Fond du Lac Reservation
Office of Water Protection
1720 Big Lake Road
Cloquet, MN 55720

iii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA. [The condition helps the Office of Water Protection keep track of when a project is about to start and when it has ended. FDL Water Quality Certification Ordinance, Section 204 (a) (2)).

iv. If the project will entail a discharge to any watercourse or open water body, the turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff. For such discharges, turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling. [This condition helps both the Office of Water Protection and the project proponent in knowing whether or not their erosion control efforts are effective. FDL Water Quality Certification, Section 204 (b) (1)).

v. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters which no ambient turbidity data exists. [This condition allows the Office of Water Protection to obtain a baseline turbidity sample in which to compare to other samples. FDL Water Quality Certification Ordinance, Section 204 (b) (2)].

vi. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance #12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac

[107] Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs.

Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, commercial and wetlands. It also includes the designated uses of wetlands including, but not limited to, baseflow discharge, cultural opportunities, flood flow attenuation, groundwater recharge, indigenous floral and fauna) diversity and abundance, nutrient cycling, organic carbon export/cycling, protection of downstream water quality, recreation, resilience against climactic effects, sediment/shoreline stabilization, surface water storage, wild rice, and water dependent wildlife. [In addition to listing the designated uses of waters of the Fond du Lac Reservation, this condition also limits the project proponent to discharges that will not violate our Water Quality Standards. FDL Water Quality Certification Ordinance, Section 204 (a) (7)).

vii. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management Agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size. [This condition helps protect water quality and also reminds project proponents of their responsibility in reporting spill events. FDL Water Quality Certification Ordinance, Section 204 (b) (3)).

viii. All seed mixes, whether used for temporary stabilization or permanent seeding, shall NOT contain any annual ryegrass (Lolium species). Wild rye (Elymus species) or Oats (Avena species) may be used as a replacement in seed mixes. [This condition prevents the use of annual ryegrass on the Reservation. Annual ryegrass is allelopathic, which means it produces biochemical in its roots that inhibit the growth of native plants. If used in seed mixes, annual ryegrass could contribute to erosion, especially on slopes. However, the condition also specifies substitute grasses that germinate almost as fast as annual ryegrass for use as a cover crop to help prevent erosion. FDL Water Quality Certification Ordinance, Section 204 (t) (1)).

ix. To prevent the introduction of invasive species, ALL contractors and subcontractors MUST disclose information stating prior equipment location(s) and ALL known invasive species potentially being transported from said location(s). All equipment MUST undergo a high pressure wash (including any equipment mats) BEFORE ENTERING the Fond du Lac Reservation. Personal equipment such as work boots, gloves, vest, etc. MUST be clean of debris, dirt and plant and animal material BEFORE ENTERING the Fond du Lac Reservation. Equipment being transported from known infested areas MUST undergo a high pressure wash as soon as possible after leaving the infested site and again BEFORE ENTERING the Fond du Lac Reservation, to avoid transport of invasive species into areas surrounding the Reservation. Written certification of equipment cleaning MUST be provided to the Fond du Lac Office of Water Protection. Upon arrival, ALL contractor and subcontractor equipment will be inspected by appointed Fond du Lac staff. If equipment is deemed unsatisfactory, the equipment MUST

undergo a high pressure washing until the equipment is cleared by the inspector, until such time, minimal travel will be allowed through the Reservation. The contractor shall be held responsible for the control of any invasive species introduced as a result of their project. [This condition requires the project proponent to prevent the inadvertent introduction of invasive species by taking an active role in cleaning all vehicles, equipment, and equipment mats before entering the Reservation. This condition has been placed in certifications since 2012, due to the introduction of Wild Parsnip in 2011 from a pipeline contractor. It is much easier to prevent the introduction of an invasive species than it is to eradicate it once it has been introduced. Many invasive plant species form monocultures, preventing native plants from growing. This situation often leads to cases of erosion, which in turn effects water quality. FOL Water Quality Certification Ordinance, Section 204 (g) (1)].

x. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors. [This condition ensures that the information contained in the certification, especially the conditions, is readily available onsite for reference. FOL Water Quality Certification Ordinance, Section 204 (a) (9)].

b. The Grand Portage Band of Lake Superior Chippewa

i. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification").

ii. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance).

iii. All appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation. All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.

iv. The 2022 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2022 CGP. The monitoring plan must be prepared and incorporated into the Storm Water Pollution Prevention Plan (the "SWPP"). A copy of the SWPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPP should be sent to:

Grand Portage Environmental Resources Board

P.O. Box 428

Grand Portage, MN 55605

Copies of the Notice of Intent and Notice of Termination required under the General Permit must be submitted to the Board at the address above at the same time they are submitted to the EPA.

v. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards. The burden is on the applicant to demonstrate compliance with the Water Quality Standards, the Water Resources Ordinance, and Applicable Federal Standards whether or not the application is ultimately eligible for the CGP.

vi. CGP discharges must not cause nuisance conditions as defined in Grand Portage Water Quality Standards.

vii. The Board retains full authority to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions. Nothing herein affects the scope or applicability of other controlling tribal or federal requirements, including but not limited to impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing on the National Register of Historic Places under the National Historic Preservation Act, 54 U.S.C. §§ 300101 et seq.

viii. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.

c. Leech Lake Band of Ojibwe

i. The water quality standards that apply to the construction site are the standards at the time the operator submits its Notice of Intent (NOI) to EPA and the LLBO WRP (see conditions # 2 and # 3).

ii. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the LLBO WRP at least 30 days in advance of sending the NOI for the project to EPA. See attached LLBO 401 Water Quality Certification Ordinance. Section 304(a)(1). The SWPPP should be submitted electronically to Jeff.Harper@llojibwe.net and by hardcopy sent to:

Leech Lake Band of Ojibwe
ATTN: Water Resources Program - 401 Cert
Division of Resource Management
190 Sailstar Drive NW
Cass Lake, Minnesota 56633

iii. Copies of the NOI and the Notice of Termination (NOT) must be submitted to the LLBO WRP at the same time they are submitted to EPA. See attached LLBO 401 Water Quality Certification Ordinance, Section 304(a)(2). The NOI and NOT should be submitted electronically to Jeff.Harper@llojibwe.net and sent by hardcopy to the address cited in condition # 2.

iv. Any and all other conditions listed in Section 304 of the attached LLBO 401 Water Quality Certification Ordinance shall be observed unless the LLBO WRP deems that certain conditions therein are not applicable to the project in need of a permit under this certification.

v. A copy of this certification MUST be kept by the contractor on-site at all times and be available for viewing by all personnel, including inspectors.

vi. Upon consideration of the NOI, if the LLBO WRP finds that the discharge will not be controlled as necessary to meet applicable water quality standards, the LLBO

WRP may insist, consistent with Part 3.1 of the CGP, that additional controls are installed to meet applicable water quality standards, or recommend to EPA that the operator obtain coverage under an individual permit.

9.5.2 WIR10I000 Indian country within the State of Wisconsin

a. Bad River Band of Lake Superior Tribe of Chippewa Indians

i. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, orhistorical sites, or properties that may be eligible for listing as such.

ii. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS). The Tribe's WQS can be viewed at: http://www.badriver-nsn.gov/wp-content/uploads/2020/01/NRD_WaterQualityStandards_2011.pdf

iii. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (OTRW or Tier 3 water). OTRWs, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River. OTRWs can be viewed at: https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c 7c7c5

iv. An operator proposing to discharge to an Outstanding Resource Water (ORW or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ORWs, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweiler River, Tyler Forks, Bell Creek, and Vaughn Creek. ORWs can be viewed at: https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c 7c7c5. The antidegradation demonstration materials described in provision E.4.iii., and included on the antidegradation demonstration template found at: https://www.badriver-nsn.gov/natural-resources/projectreviews/, must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

v. An operator proposing to discharge to an Exceptional Resource Water (ERW or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. ERWs, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water). ERWs can be viewed at: https://www.arcgis.com/apps/View/index.html?appid=6f44c371217e4ee8b5f1c2c705c 7c7c5. The antidegradation demonstration materials described in provision

E.4.ii., and included on the antidegradation demonstration template found at: https://www.badriver-nsn.gov/natural-resources/projectreviews/, must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

vi. Projects utilizing cationic treatment chemicals within the Bad River Reservation boundaries are not eligible for coverage under the CGP.

vii. A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.

viii. All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or wetlands@badriver-nsn.gov.

ix. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities. The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

Bad River Tribe's Natural Resources Department
Attn: Water Regulatory Specialist
P.O. Box 39 Odanah, WI 54861
WaterReg@badriver-nsn.gov

Bad River Tribe's Natural Resources Department
Attn: Tribal Historic Preservation Officer (THPO)
P.O. Box 39 Odanah, WI 54861
THPO@badriver-nsn.gov

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA. Photographs showing the current site conditions must be included as part of the NOT to document the stabilization requirements have been met.

x. The THPO must be provided 30 days to comment on the project.

xi. The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic

properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.

xii. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI:

Bad River Tribe's Natural Resources Department

Attn: Water Regulatory Specialist

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

xiii. Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion:

Bad River Tribe's Natural Resources Department

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

xiv. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copies of the inspection reports (including photographs) to the following address within 24 hours of completing any site inspection required:

Bad River Tribe's Natural Resources Department Attn: Water Regulatory Specialist

P.O. Box 39 Odanah, WI 54861

WaterReg@badriver-nsn.gov

xv. An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.

9.6 EPA REGION 6

9.6.1 NMR100000 State of New Mexico, except Indian country

a. In Outstanding National Resource Waters (ONRWs) in New Mexico, no degradation is permitted except in limited, specifically defined instances. Therefore, Operators are not eligible to obtain authorization under this general permit for stormwater discharges to waters classified as ONRWs listed in Paragraph D of 20.6.4.9 New Mexico Administrative Code (NMAC), also referred to as "Tier 3 waters" as defined in Appendix A of this permit. Exception: When construction activities are in response to a public emergency (e.g., wildfire, extreme flooding, etc.) and the related work requires immediate authorization to avoid a threat to public health or safety.

i. Operators who conduct construction activities in response to a public emergency to mitigate an immediate threat to public health or safety shall adhere to the requirements in 20.6.4.8(A)(3)(c) NMAC, including notifying the New Mexico Environment Department (NMED) within seven days of initiation of

the emergency action and providing NMED with a summary of the action taken within 30 days of initiation of the emergency action.

ii. For all other scenarios, Operators with proposed discharges to ONRWs in New Mexico shall obtain coverage from EPA under an NPDES Individual Permit and will comply with the additional standards and regulations related to discharges to ONRWs in 20.6.4.8(A) NMAC. Additional information is available from:

New Mexico Environment Department Surface Water Quality Bureau
P.O. Box 5469
Santa Fe, NM 87502-5469 Telephone: 505-827-0187
https://www.env.nm.gov/surface-water-quality/wqs/
https://gis.web.env.nm.gov/oem/?map=swqb

b. If construction dewatering activities are anticipated at a construction site and non-stormwater discharges of groundwater, subsurface water, spring water, and/or other dewatering water are anticipated, the Operators/Permittees must complete the following steps:

1. Review the state's Ground Water Quality Bureau Mapper (https://gis.web.env.nm.gov/GWQB/) and Petroleum Storage Tank Bureau Mapper (https://gis.web.env.nm.gov/GWQB/).

   Check if the following sources are located within the noted distance from the anticipated construction dewatering activity. At a minimum, a list of the following potential sources of contaminants and pollutants at the noted distance is to be kept in the SWPPP.

Source of Potential Contamination or Pollutants*	Constituents likely to be required for testing*
Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions**
Within 0.5 mile of an open Voluntary Remediation site	All applicable parameters or pollutants listed in 20.6.4.13, 20.6.4.52, 20.6.4.54, 20.6.4.97 thru 20.6.4.99, 20.6.4.101 through 20.6.4.899, and 20.6.4.900 NMAC (or an alternate list approved by the NMED-SWQB)*
Within 0.5 mile of an open RCRA Corrective Action Site	
Within 0.5 mile of an open Abatement Site	
Within 0.5 mile of an open Brownfield Site	
Within 1.0 mile or more of a Superfund site or National Priorities List (NPL) site with associated groundwater contamination.	
Construction activity contaminants and/or natural water pollutants	Additional parameters depending on site activities and conditions (Contact NMED- SWQB for an alternate list)*

*For further assistance determining whether dewatering may encounter contaminated sources, please contact the NMED Ground Water Quality Bureau at 505-827-2965 or NMED Surface Water Quality Bureau (SWQB) at 505-827-0187.

** EPA approved sufficiently sensitive methods must be used. For known PCB sources and analysis, EPA Method 1668C must be used (see https://www.epa.gov/cwa-methods).

2. If dewatering activities are anticipated, information on the flow rate and potential to encounter contaminated groundwater, subsurface water, spring water, or dewatering water must be provideddirectly to NMED at the following address:

   NMED Surface Water Quality Bureau

   Program Manager, Point Source Regulation
   SectionPO Box 5469, Santa Fe, NM 87502

   Please call the SWQB to obtain the appropriate email address (505-827-0187).

3. In addition, the Operator/Permittee must characterize the quality of the groundwater and subsurface water, spring water, or dewatering water being considered for discharge according to the table above and including dissolved hardness and pH. Considering the contaminant sources listed in the table above, water quality data may already be available. For further assistance, contactthe

NMED Surface Water Quality Bureau (505-827-0187), Ground Water Quality Bureau (505-827- 2965), Petroleum Storage Tank Bureau (505-476-4397), or Hazardous Waste Bureau (505-476- 6000).

i. The Operator/Permittee must submit recent analytical test results (i.e., within the past 5 years) according to the table above, and including dissolved hardness and pH, to the EPA Region 6 Stormwater Permit Contact and the NMED Surface Water Quality Bureau (see contact information in #2 above). If the test data exceed applicable water quality standards, then the groundwater, subsurface water, spring water, or dewatering water cannot be discharged into surface waters under this general permit. Operators/Permittees may submit an NPDES Individual Permit application to treat and discharge to waters of the U.S. or find alternative disposal measures. No discharges to surface waters are allowed until authorized.

ii. If the discharge has the potential to affect groundwater (e.g., land application), the Operator/Permittee must submit an NOI to the NMED Ground Water Quality Bureau (see 20.6.2.1201 NMAC – Notice of Intent to Discharge).

4. The Operator/Permittee must document any findings and all correspondence with NMED and EPA in the SWPPP.

c. Operators who intend to obtain authorization under this permit for new and existing storm water dischargesfrom construction sites must satisfy the following condition:

i. The SWPPP must include site-specific interim and permanent stabilization, managerial, and structural solids, erosion and sediment control best management practices (BMPs) and/or other controls that are designed to prevent to the maximum extent practicable an increase in the sediment yield and flow velocity from pre-construction, pre-development conditions to assure thatapplicable standards in 20.6.4 NMAC, including the antidegradation policy, and TMDL waste load allocations (WLAs) are met. This requirement applies to discharges both during construction and after construction operations have been completed. The SWPPP must identify and document the rationale for selecting these BMPs and/or other controls. The SWPPP must also describe design specifications, construction specifications, maintenance schedules (including a long-term maintenance plan), criteria for inspections, and expected performance and longevity of these BMPs.For sites greater than 5 acres in size, BMP selection must be made based on the use of appropriatesoil loss prediction models (i.e. SEDCAD, RUSLE, SEDIMOT, MULTISED, etc.) OR equivalent generallyaccepted (by professional erosion control specialists) soil loss prediction tools.

ii. For all sites, the Operator(s) must demonstrate, and include documentation in the SWPPP, that implementation of the site-specific practices will ensure that the applicable standards and TMDL WLAs are met, and will result in sediment yields and flow velocities that, to the maximum extent practicable, will not be greater than the sediment yield levels and flow velocities from preconstruction, pre-development conditions.

iii. All SWPPPs must be prepared in accordance with good engineering practices by qualified (e.g., CPESC certified, engineers with appropriate training) erosion control specialists familiar with the use of soil loss prediction models and design of

erosion and sediment control systems based on these models (or equivalent soil loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP.The Operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.

NMED supports the use of EPA's small residential lot template if a site qualifies to use it as explained inthe permit, as long as it is consistent with the above requirements. NMED's requirement does not preclude small residential sites from using the template, but it may require an additional short paragraphto justify the selection of specific BMPs for the site.

d. Operators must notify NMED when discharges of toxic or hazardous substances or oil from a spill or other release occurs - see Emergency Spill Notification Requirements, Part 2.3.6 of the permit. For emergencies, Operators can call 505-827-9329 at any time. For non-emergencies, Operators can call 866-428-6535 (voice mail 24-hours per day) or 505-476-6000 during business hours from 8am-5pm, Monday through Friday. Operators can also call the NMED Surface Water Quality Bureau directly at 505-827-0187.

e. Operators of small construction activities (i.e., 1-5 acres) are not eligible to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on Item C.3 of Appendix C (Equivalent Analysis Waiver) in the State of New Mexico.

9.6.2 NMR10I000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I.

a. Nambe Pueblo

i. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Nambe Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency. The NOI and NOT should be provided to the following address:

Office of the Governor Nambe Pueblo

!SA NPI02 WEST

Nambe Pueblo, New Mexico 87506

ii. The operator must provide a copy of the Storm Water Pollution Prevention Plan (SWPPP) to Nambe Pueblo at the same time it is submitted to the EPA, either by email to governor@nambepueblo.org or mailed to the above address.

iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Nambe Pueblo Department of Environmental and Natural Resources or Nam be Governor.

b. Ohkay Owingeh Tribe

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Ohkay Owingeh Office of Environmental Affairs, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be

provided to the following address:

Naomi L. Archuleta - Environmental Programs Manager Ohkay Owingeh Office of Environmental Affairs
P.O. Box 717
Ohkay Owingeh, NM 87566
naomi.archuleta@ohkay.org

Noah Kaniatobe - Environmental Specialist Ohkay Owingeh, Office of Environmental Affairs
P.O. Box 717
Ohkay Owingeh, NM 87566
noah.kaniatohe@ohkay.org

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) to Ohkay Owingeh Office of Environmental Affairsat the same time that the NOI is submitted to the tribe (see contact information listed above).

iii. Following each incident where the operator takes a corrective action the operator must provide thecorrective action log to the Ohkay Owingeh Office of Environmental Affairs.

iv. The operator must notify Ohkay Owingeh Office of Environmental Affairs within 24 hours, in the event of an emergency spill in addition to the notification requirements at Part 2.3.6 of the CGP. Please contact: Ohkay Owingeh Tribal Police Department at 505.852.2757.

Please contact:
Ohkay Owingeh
Tribal Police Department
505.852.2757

c. Pueblo of Isleta

i. All operators obtaining permit coverage under the EPA CGP must submit a copy of the certified Notice ofIntent (NOI) to the Pueblo of Isleta at the same time it is submitted to EPA for projects occurring within the exterior boundaries of the Pueblo of Isleta. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The Notices must be provided to the following address:

Water Quality Control OfficerPueblo of Isleta
Environment DepartmentPO Box 1270
Isleta NM 87022
505-869-7565
WQCO@isletapueblo.com

ii. The operator must notify the Pueblo of Isleta's Dispatch at 505-869-3030 as soon as possible and thePueblo of Isleta Water Quality Control Officer within 10 hours, in the event of a spill of hazardous ortoxic substances or if health or the

environment become endangered in addition to the notification requirements at Part 2.3.6 and at I.12.6.1 of the CGP.

iii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Isleta Water Quality Control Officer atthe above address, 30 days prior to submitting the certified NOI to EPA. If the electronic file is too largeto send through e-mail, a zip file or flash drive may be submitted.

iv. All operators obtaining permit coverage under the EPA CGP must give 2 days advance notice to the Pueblo of Isleta Water Quality Control Officer of any planned changes in the permitted activity whichmay result in noncompliance with permit requirements.

v. All operators obtaining permit coverage under the EPA CGP must post a sign or other notice of permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice mustbe located so that it is visible from the public road or tribal road that is nearest to the active part of the construction site. The sign must be maintained on-site from the time construction activities begin until final stabilization is met.

vi. Erosion and sediment controls shall be designed to retain sediment on-site and project-generatedwaste materials that have the potential to discharge pollutants shall not be placed on open soil oron a surface that is not stabilized. Volumes of sediment over five (5) cubic yards must be removed from the active construction site; additionally, if sediment is placed for disposal withinthe exterior boundaries of the Pueblo of Isleta, disposal must be within a tribally approved sediment disposal site.

d. Pueblo of Laguna

i. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Laguna's Environmental & Natural Resources Department (ENRD) within three business days of submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided within three business days after the EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be electronically submitted to info.environmental@pol-nsn.gov.

ii. All operators obtaining permit coverage under the EPA CGP must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Laguna's ENRD 14 days prior to the submittal of the NOI (see contact information listed above).

iii. The operator must provide copies of corrective actions logs and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Laguna ENRD (see contact information above).

iv. In addition to the notification requirements of Part 2.3.6 of the CPG ***[EPA interprets this intending to refer to the CGP]***, the operator must notify the Pueblo of Laguna ENRD at 505-552-7512 in the event of an emergency spill as soon as possible.

e. Pueblo of Sandia. The following conditions apply only to discharges on the Pueblo of Sandia Reservation:

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Sandia Environment Department concurrently with submittal to the EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be provided concurrently with submittal to the EPA. The NOI and NOT must be provided electronically to the following addresses:

Electronic Addresses:

Amy Rosebrough (Water Quality Manager): rosebrough@sanidapueblo.nsn.us
Greg Kaufman (Environment Director):gkaufman@sandiapueblo.nsn.us

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo of Sandia Environment. Department at least 14 days prior to submittal of the NOI to the Pueblo (see contact information listed above).

iii. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary on a case-by-case basis to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards.

iv. An "Authorization to Proceed Letter" with site specific mitigation requirements may be sent out to the permittee when a review of the NOI and SWPPP, on a case-by-case basis, is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.

v. The Pueblo of Sandia will not allow Small Construction Waivers (Appendix C) to be granted for any small construction activities.

vi. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings to the Pueblo of Sandia Environment Department upon request. An inspection report and corrective action log must be submitted to the Pueblo within 3 days of any inspection that results in corrective action (see contact information listed above).

vii. The operator must notify the Pueblo of Sandia within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the COP (see contact information listed above).

viii. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating that the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to the EPA.

f. Pueblo of Santa Ana. The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo's Department of Natural Resources within three business days of submittal to EPA. Additionally, a copy of NOI modifications and the Notice of Termination (NOT), must be

provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Regular U.S. Delivery Mail:
Pueblo of Santa Ana
Department of Natural Resources Water Resources Division
Attn: Andrew Sweetman 02 Dove Rd
Santa Ana Pueblo, NM 87004

Electronically:
Andrew Sweetman
Water Resources Division Manager Andrew.Sweetman@santaana-nsn.gov
Tammy Montoya Hydrologist
Tammy.Montoya@santaana-nsn.gov

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copyof the Stormwater Pollution Prevention Plan (SWPPP) to the to the Pueblo's Department of Natural Resources at the same time that the NOI is submitted to the tribe (see contact information listed above).

iii. The operator must provide copies of inspection reports, a copy of the corrective action log, and modifications made to the SWPPP as a result of inspection findings, upon request by the Pueblo's Department of Natural Resources.

iv. The operator must notify the Pueblo's Department of Natural Resources within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP.

g. Pueblo of Taos

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOi) to the Taos Pueblo Environmental Office and Taos Pueblo Governor's Office within three business days of submittal to EPA. Additionally, a copy of NOi modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOi and NOTmust be provided to the following addresses:

Honorable Governor of Taos Pueblo PO Box 1846
Taos, New Mexico 87571

Taos Pueblo Environmental Office PO Box 1846
Taos, New Mexico 87571

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of theStormwater Pollution Prevention Plan (SWPPP) to the Taos Pueblo Environmental Office when the NOI is submitted to the tribe. Electronic copy of SWPPP downloaded on flash drive may be sent to the above address for the Taos Pueblo Environmental Office.

iii. The operator must provide a copy of the corrective action log following each corrective action undertaken and modifications made to the SWPPP as a result of

a corrective action to the Taos Pueblo Environmental Office at address listed above.

h. Pueblo of Tesuque.

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Pueblo of Tesuque Department of Environment and Natural Resources (DENR) and the Pueblo's Governor within three business days of submittal to EPA. Additionally, a copy of any NOi modifications and the Notice of Termination (NOT), must be provided within three business days after EPA provides electronic confirmation that the submission has been received. The NOI and NOT must be provided to the following address:

Governor Mark Mitchell Pueblo of Tesuque
20 TP 828
Santa Fe, NM 87506 governor@pueblooftesuque.org

Sage Mountain.flower Pueblo of Tesuque
Department of Environment and Natural Resources Director
20 TP 828

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copyof the Stormwater Pollution Prevention Plan (SWPPP) to Pueblo of Tesuque DENR and the Pueblo's Governor at the same time that the NO! is submitted to the EPA (see contact information listed above).

iii. The operator must provide a copy of the corrective action log, and any modifications made tothe SWPPP as a result of inspection findings, or upon request by the Pueblo of Tesuque DENR.

iv. The operator must notify the Pueblo of Tesuque DENR within 24 hours in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP (seecontact information listed above).

i. Santa Clara Indian Pueblo.

i. All operators obtaining permit coverage under the EPA CGP, must submit a copy of the certified (signed) Notice of Intent (NOI) to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA. Additionally, a copy of the NOI modifications and the Notice of Termination (NOT), must be provided at the same time after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT shall be provided to the following address in electronic format:

Dino Chavarria,
Santa Clara Pueblo
Office of Environmental Affairs
dinoc@santaclarapueblo.org

ii. All operators obtaining permit coverage under the EPA CGP, must submit an electronic copy of the Stormwater Pollution Prevention Plan to the Santa Clara Pueblo Office of Environmental Affairs at the same time the NOI is submitted to the U.S. EPA (see contact information listed above).

iii. The operator must notify the Santa Clara Pueblo Office of Environmental Affairs at the address above within 24 hours, in the event of an emergency spill, in addition to the notification requirements at Part 2.3.6 of the CGP

9.6.3 OKR10I000 Indian country within the State of Oklahoma, except areas of Indian country covered by an extension of state program authority pursuant to Section 10211 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA).

a. Pawnee Nation. The following conditions apply only to discharges within Pawnee Indian country:

i. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:

Pawnee Nation Department of Environmental Conservation and Safety
P.O. Box 470
Pawnee, OK 74058
Or email to dnrs@pawneenation.org

ii. An electronic copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Pawnee Nation Department of Environmental Conservation and Safety at the same time the NOI is submitted.

iii. The operator must provide access to the site for inspections and for copies of inspection reports, copy of the corrective action log and modifications, made to the SWPPP because of inspection findings, upon request by the Pawnee Nation DECS.

iv. The Pawnee Nation Department of Environmental Conservation and Safety must be notified at 918.762.3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

9.6.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, or the Oklahoma Department of Agriculture and Forestry including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).

a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.

b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, certification is denied for any discharges originating from support activities, including, but not limited to, concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.

c. Dewatering discharges into sediment or nutrient-impaired waters, and waters identified as Tier 2, Tier 2.5, or Tier 3 (OAC 785:46-13) shall be controlled to meet water quality standards for turbidity in those waters as follows:

i. Cool Water Aquatic Community/Trout Fisheries: 10 NTUs (OAC 785: 45-5-12(f)(7)(A)(i)

ii. Lakes: 25 NTUs (OAC 785: 45-5-12(f)(7)(A)(ii)

iii. In waters where background turbidity exceeds these values, turbidity from dewatering discharges should be restricted to not exceed ambient levels (OAC 785: 45-5-12(f)(7)(B)

9.7 EPA REGION 7

No additional conditions.

9.8 EPA REGION 8

9.8.1 MTR10I000 Indian country within the State of Montana

a. Blackfeet Nation.

i. The Applicant and applicants for projects authorized under the NWPs should obtain all other permits, licenses, and certifications that may be required by federal, state, or tribal authority. Primary relevant tribal permit will be ALPO (Ordinance 117). Others may apply. It is the applicant's responsibility to know the tribal and local ordinances and complete all necessary permissions before they can commence work.

ii. If a project is unable to meet the enclosed conditions, or if certification is denied for an applicable NWP, the Applicant may request an individual certification from Blackfeet. An individual certification request must follow the requirements outlined in 40 CFR 121.5 of EPA's CWA § 401 Certification Rule, effective September 11, 2020.

iii. Copies of this certification should be kept on the job site and readily available for reference.

iv. If the project is constructed and/or operated in a manner not consistent with the applicable NWP, general conditions, or regional conditions, the permittee may be in violation of this certification.

v. Blackfeet and EPA representatives may inspect the authorized activity and any mitigation areas to determine compliance with the terms and conditions of the NWP.

vi. This NWP Reissuance does not reduce Tribal authority under any other rule.

vii. The project, including any stream relocations and restoration, must be built as shown and as otherwise described in the application, the construction plans, cross sections, mitigation plans and other supporting documents submitted to this office. Impacts to aquatic systems and restoration efforts will be monitored by an appropriate aquatic resource professional to ensure that disturbed areas are restored to at least their original condition.

viii. All existing water uses will be fully maintained during and after the completion of the project. (If applicable)

ix. Where practicable, perform all in-channel and wetland work during periods of low flow or drawn—down or when dry

x. Equipment staging areas must be located out of all delineated wetlands

xi. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during and immediately after construction, and all exposed soil and other fills, as well as any work below the ordinary high-water mark or in a wetland, must be permanently stabilized as soon as possible

xii. Materials such as piling, culverts, sandbags, fabric, mats, timbers used for temporary facilities in wetlands or below the high- water mark of Waters of the US must be free from oil, gas, excess dirt, loose paint and other pollutants.

xiii. Equipment staging areas in wetlands or in stream or river channels must be placed on mats, or other measures must be taken to minimize soil disturbance and compaction.

xiv. Clearing of riparian or wetland vegetation for the sole purpose of constructing work bridges, detours, staging areas or other temporary facilities must be limited to the absolute minimum necessary. When temporary impacts to native riparian or wetland vegetation are unavoidable, it must be mowed or cut above ground with the topsoil and root mass left intact.

xv. Remove all temporary fills and structures in the entirety when they are no longer needed. Restore affected areas to the appropriate original and planned contours where possible. Re-vegetate disturbed areas with appropriate native species when native species are impacted.

xvi. Construction methods and best management practices (BMPs) must minimize aquatic resource impacts to the maximum extent possible. Any BMPs described in the Joint Application must be followed. BMPs should include installation and maintenance of sediment control measures; separation, storage and reuse of any topsoil; and recovery of all disturbed areas where possible. All best management practices must in place prior to the onset of construction or as soon as practicable during the construction process.

xvii. Best available technology and/or best management practices must be utilized to protect existing water uses and maintain turbidity and sedimentation at the lowest practical level.

xviii. Applicant/contractor should manage disturbed streambank topsoil in a manner that optimizes plant establishment for the site.

xix. When operating equipment or otherwise undertaking construction in wetlands and water bodies the following conditions apply:

(k) Work should be done in dry conditions if possible.

(l) All equipment is to be inspected for oil, gas, diesel, anti-freeze, hydraulic fluid or other petroleum leaks. All such leaks will be properly repaired and equipment cleaned prior to being allowed on the project site. Leaks that occur after the equipment is moved to the project site will be fixed the same day or the next day or removed from the project area. The equipment is not allowed to continue operation once a leak is discovered.

(m) All equipment is to be inspected and cleaned before and after use to minimize the spread or introduction of invasive or undesirable species.

(n) Construction equipment shall not operate below the existing water surface except as follows:

- Impacts from construction should be minimized through the use of best management practices submitted in the permit application.
- Essential work below the waterline shall be done in a manner to minimize impacts to aquatic system and water quality.

(o) Containment booms and/or absorbent material must be available onsite. Any spills of petroleum products must be reported to the Army Corps, Blackfeet Nation BEO Office and the US EPA within 24 hours.

xx. Upland, riparian and in-stream vegetation should be protected except where its removal is necessary for completion of work. Revegetation should be completed as soon as possible. Applicant/contractor should revegetate disturbed soil in a manner that optimizes plant establishment for the site. Revegetation must include topsoil replacement, planting, seeding, fertilization, liming and weed-free mulching as necessary. Applicant must use native plant material and soils where appropriate and feasible. This certification does not allow for the introduction of non-native flora and fauna. All disturbed surface areas must be restored to pre-construction contours and elevation.

xxi. Spoils piles should not be placed or stored within the delineated wetlands or streams unless protected by a temporary structure designed to divert and handle high flows that can be anticipated during permit activity. Spoils piles should be placed on landscaping fabric or some other material to separate spoils material and allow retrieval of spoils material with minimal impact.

xxii. Impacts to wetlands shall not exceed 4.92 acres.

xxiii. Any unexpected and additional impacts to waters of the US should be reported to the

xxiv. Army Corps, Blackfeet Environmental Office Water Quality Coordinator and the US EPA.

xxv. All instream and stream channel reconstruction work must be completed before the stream is diverted into the new channel.

xxvi. Any temporary crossings, bridge supports, cofferdams, or other structures that are necessary during permit activity should be designed to handle high flows that can be anticipated during permit activity. All temporary structures should be completely removed from the water body at the conclusion of the permitted activity and the area restored to a natural function and appearance.

xxvii. The certification does not authorize any unconfined discharge of liquid cement into the waters of the United States. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the water body.

xxviii. BMPs shall include application of certified weed-free straw or hay across all disturbed wetland areas that are temporarily impacted; installation and maintenance of sediment control measures during construction and if necessary, after construction is completed; use of heavy mud mats if necessary; separation,

storage and reuse of all streambank topsoil and wetland topsoil, as appropriate; and recovery of all disturbed wetland and streambank areas where possible. All conditions set by the Blackfeet Tribe and US Army Corps must be followed.

xxix. All applicants, including federal agencies, must notify EPA and the Blackfeet Environmental Office of the use of all NWPs for which certification has been granted prior to commencing work on the project. Notifications must include:

(p) project location (lat. Long., exact point on map);

(q) NWP that will be used and the specific activity that will be authorized under the NWP;

(r) amount of permanent and temporary fills;

(s) a short summary of the proposed activity, and all other federal, state, tribal or local permits or licenses required for the project;

(t) complete contact information of both the applicant and contractor (name, name of the company or property if applicable, telephone, mobile, and email); and,

(u) Summary of best management practices that will be used.

(v) A summary of communications with the affected Tribe's water quality staff regarding the project, including any concerns or issues.

(w) Notify Blackfeet and EPA at least 7 days before the completion of construction and operations begin.

xxx. Point source discharges may not occur: (1) in fens, bogs or other peatlands; (2) within 100 feet of the point of discharge of a known natural spring source; or (3) hanging gardens.

xxxi. Except as specified in the application, no debris, silt, sand, cement, concrete, oil or petroleum, organic material, or other construction related materials or wastes shall be allowed to enter into or be stored where it may enter into waters of the U.S.

xxxii. Silt fences, straw wattles, and other techniques shall be employed as appropriate to protect waters of the U.S. from sedimentation and other pollutants.

xxxiii. Water used in dust suppression shall not contain contaminants that could violate water quality standards.

xxxiv. Erosion control matting that is either biodegradable blankets or loose-weave mesh must be used to the maximum extent practicable.

xxxv. All equipment used in waters of the U.S. must be inspected for fluid leaks and invasive species prior to use on a project. All fluid leaks shall be repaired and cleaned prior to use or when discovered, or if the fluid leak can't be repaired, the equipment shall not be used on site. Equipment used in waters with the possibility of aquatic nuisance species infestation must be thoroughly cleaned and effectively decontaminated before they are used on the project.

xxxvi. Vegetation should be protected except where its removal is necessary for completion of the work. Locations disturbed by construction activities should be revegetated with appropriate native vegetation in a manner that optimizes plant establishment for the specific site.

xxxvii. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. Where practical, stockpile weed- seed-free topsoil and replace it on disturbed areas. All revegetation materials, including plants and plant seed shall be on site or scheduled for delivery prior to or upon completion of the earth moving activities.

xxxviii. Activities may not result in any unconfined discharge of liquid cement into waters of the U.S. Grouting riprap must occur under dry conditions with no exposure of wet concrete to the waterbody.

xxxix. Activities that may result in a point source discharge shall occur during seasonal low flow or no flow periods to the extent practicable.

xl. The placement of material (discharge) for the construction of new dams is not certified, except for stream restoration projects.

xli. Any decision-maker that is required under 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Blackfeet Environmental Office at least 30 days before construction starts for review and approval. Any modifications to the SWPPP should be submitted to the Blackfeet Environmental Office.

xlii. Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Blackfeet Environmental Office within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address Gerald Wagner, Blackfeet Environmental Office Director.

62 Hospital Drive, Browning, MT 59417

beo.director@gmail.com

b. Fort Peck Tribes.

i. Any Decision-maker required under Part 1.4 of the CGP to submit a Notice of Intent (NOI) to EPA for coverage under the CGP, must submit a copy of the NOI to the Fort Peck Tribes Office of Environmental Protection within three business days of submittal to EPA. Additionally, a copy of the Notice of Termination (NOT) must be provided within three business days after electronic confirmation is received from EPA that the NOT has been accepted. The NOI and NOT must be provided to the following address:

Martina Wilson, Office of Environmental Protection Director

501 Medicine Bear Rd Poplar, MT 59255

martinawilson@fortpecktribes.net

ii. Any Decision-maker that is required under Part 7.0 of the CGP to prepare a Stormwater Pollution Prevention Plan (SWPPP), must submit an electronic copy of the SWPPP to the Fort Peck Tribes Office of Environmental Protection at least 30 days before construction starts for review and approval. Any modifications to the

SWPPP should be submitted to the Fort Peck Tribes Office of Environmental Protection.

iii. Any Decision-maker that is required under Part 8.0 of the CGP to submit a weekly, bi-weekly, and/or annual report to EPA, must submit an electronic copy of the annual report to the Fort Peck Tribes Office of Environmental Protection within three business days after submittal to EPA.

9.9 EPA REGION 9

9.9.1 CAR10I000 Indian country within the State of California

a. Morongo Band of Mission Indians

i. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted (either mailed or electronically) to the MEPD no less than thirty (30) days before commencing construction activities:

Morongo Band of Mission Indians
Environmental Protection Department
12700 Pumarra Road
Banning, CA 92220
Email: epd@morongo-nsn.gov

ii. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the MEPD at the same time they are submitted to EPA.

iii. Operators of an "emergency-related project" must submit notice to the MEPD within twenty- four (24) hours after commencing construction activities.

iv. Spills, leaks, or unpermitted discharges must be reported to the MEPD within twenty-four (24) hours of the incident, in addition to the reporting requirements of the CGP.

v. Projects utilizing cationic treatment chemicals (as defined in Appendix A of the CGP) within the Morongo Reservation are not eligible for coverage under this certification of the CGP.

vi. Facilities covered under the CGP will be subject to compliance inspections by MEPD staff, including compliance with final site stabilization criteria prior to submitting an NOI ***[EPA assumes this intended to refer to an NOT]***.

9.9.2 GUR100000 Island of Guam

a. For purposes of this Order, the term "Project Proponent" shall mean U.S. Environmental Protection Agency, and its agents, assignees, and contractors.

b. For purposes of this Order, the permit "Operator" shall mean any party associated with a construction project that meets either of the following two criteria:

i. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g. in most cases this is the owner of the site); or

ii. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor of the project).

Subcontractors generally are not considered operators for the purposes of this permit.

c. The Project Proponent shall enforce the proposed 2022 CGP and ensure that the Operator complies with the conditions of the permit at all times.[108] (40 CFR §121.11(c))

d. All submittals required by this Order shall be sent to the Guam Environmental Protection Agency Attn: 401 Federal Permit Manager, Non-Point Source Program, EMAS Division, 3304 Mariner Avenue, Bldg. 17-3304, Barrigada, Guam 96913, AND via email to jesse.cruz@epa.guam.gov. The submittals shall be identified with WQC Order #2021- 04 and include the COP Permit Number, certifying representative's name, title, mailing address and phone number. (§51060)(4) 2017 GWQS)

e. A copy of the Operator's signed Stormwater Pollution Prevention Plan (SWPPP) and signed Notice of Intent (NOI) and Notice of Termination (NOT) submitted to EPA for review and approval, shall concurrently be submitted to Guam EPA, consistent with condition A4. Coordination with Guam EPA is encouraged when the receiving water(s) for the proposed discharge is/are being identified. (§10105.B.5.d.) GSESCR; (§51060)(4) 2017 GWQS)

f. The Operator must comply with the conditions and requirements set forth in 22 GAR 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR).

g. Before submitting the NOT to EPA, Operators shall comply with GSESC regulations at §10105.B10. (Stabilization of Affected Areas) and §10107.B. {Final Inspection and Approval)

h. All operators/owners shall comply with the general design criteria for best management practices (BMPs) acceptable for meeting the Construction and Post-construction stormwater criteria in the 2006 CNMI and Guam Stormwater Management Manual. (E.O. 2012-02)

i. Operating reports and monitoring and analytical data (e.g. Discharge Monitoring Reports (DMRs), follow-up monitoring reports, Exceedance Reports for Numerical Effluent Limits, etc.) submitted to EPA shall be concurrently submitted to Guam EPA, consistent with condition A4. §51060)(4) 2017 GWQS

j. The Operators who install a sediment basin or similar impoundment shall maintain the storage capacity of five thousand cubic feet {5,000 cu. ft.) per acre of project area tributary to the basin. (§10105.B.5.i.) GSESCR

k. (1) This Order does not authorize EPA to qualify Rainfall Erosivity Waivers to stormwater discharges associated with small construction activities (i.e. 1-5 acres). Operators are required to apply for an NOI for those projects eligible for coverage under the proposed 2022 CGP. An Erosion and Sediment Control Plan is required for every site that would be covered by the proposed 2022 CGP. (22 GAR §10104) The average annual rainfall for Guam and the CNMI exceeds I00 inches per year in many locations. These climatic conditions combined with the region's unique limestone, volcanic geologic formations, sensitive water resources and significant land

[108] By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

development forces make stormwater discharges a very significant environmental and economic issue. (2006 CNMJ/Guam Stormwater Management Manual) E.O. 2012-02

(2) This Order does not authorize EPA to approve a Sediment TMDL Waiver for the Ugum River. Operators of construction activities eligible for a TMDL Waiver in lieu of coverage under the proposed 2022 CGP, shall submit a complete and accurate waiver certification as described in C.2., Appendix C - (Small Construction Waivers) to Guam EPA per condition A4., prior to notifying EPA of its intention to obtain a waiver. §51060)(4) 2017 GWQS

l. The Project Proponent shall submit to Guam EPA a signed Statement of Understanding of Water Quality Certification Conditions.[109] (see Attachment A for an example) per condition A4. §51060)(4) 2017 GWQS

m. The Operator shall comply with applicable provisions of the Guam Pesticides Act of2007 (10 GCA Chapter 50) and implementing regulations at Title 22 GAR Chapter 15 for any use and application of pesticides.

n. Point source discharge(s) to waterbodies under the jurisdiction of Guam EPA must be consistent with the antidegradation policy in 22 GAR §510l(b).

o. The operator shall carry out construction activities in such a manner that will not violate Guam Water Quality Standards (GWQS). Proposed 2022 CGP discharges are prohibited as follows:

- **i.** In Marine Waters, Category M-1 Excellent 22 GAR Chapter 5 §5102(b)(I); and
- **ii.** In Surface Waters, Category S-1 High 22 GAR Chapter 5 §5102(c)(I)

p. In addition to complying with construction dewatering requirements in Part 2.4 and site inspection requirements for all areas where construction dewatering is taking place in Part 4 of the proposed 2022 CGP, Operators shall comply with all dewatering conditions and requirements set forth in 22 GAR 7, Water Resources Development and Operating Regulations, to include securing Guam EPA permits prior to any dewatering activities.

q. The Operator shall develop and implement a Spill Prevention and Containment Plan.

r. The Operator shall have adequate and appropriate spill response materials on hand to respond to emergency release of oil, petroleum or any other material into waters of the territory.

s. Any unpermitted discharge into territorial waters or onto land with a potential for entry into territorial waters, is prohibited. If this occurs, the Operator shall immediately take the following actions:

- **i.** Cease operations at the location of the violation or spill.
- **ii.** Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
- **iii.** Notify Guam EPA of the failure to comply. All petroleum spills shall be reported immediately to:

[109] By incorporating this condition into the permit, EPA acknowledges receipt of Guam's certification conditions.

(x) Guam's Emergency 911 system

(y) Guam EPA's 24-Hour Spill Response Team at (671) 888-6488 or during working hours (671) 300-4751

(z) US Coast Guard Sector Guam (671) 355-4824

(aa) National Response Center 1-800-424-8802

iv. Submit a detailed written report to Guam EPA within five days of noncompliance that describes the nature of the event corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

t. Compliance with this condition does not relieve the Operator from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.

u. Submittal or reporting of any of this information does not provide relief from any subsequent enforcement actions for unpermitted discharges to waters of the United States.

v. This Order is valid for five (5) Years from Date of Certification, unless otherwise approved by the Guam EPA Administrator.

w. The Operator shall be required to adhere to the current Guam Coral Spawning Moratorium dates for both hard and soft corals where in-water activities and/or construction activity in close proximity with marine waters may impair water quality. These dates can be obtained from the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, or the NOAA NMFS Pacific Islands Regional Office Habitat Conservation Division.

x. The Operator shall provide notice to Guam EPA consistent with Condition A4:

(a) Immediately upon discovery of noncompliance with the provisions of this Order.

y. A Notice of Violation/Work Stop Order will be issued if certification conditions are not adhered to or when significant or sustained water quality degradation occurs. Work or discharge shall be suspended or halted until the Operator addresses environmental problems/concerns to Guam EPA's satisfaction. Guam EPA may also levy penalties and fines (10 GCA §47111). Invalidity or enforceability of one or more provisions of this certification shall not affect any other provision of this certification.

9.10 EPA REGION 10

9.10.1 IDR10I000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)

a. Shoshone-Bannock Tribes

i. Copies of the following information must be sent to the SBT-WRD:

(a) Notice of Intents (NOI)

The Notice of Intent shall be forwarded to the SBT-WRD within thirty (30) days of receipt of submitting NOI to the USEPA.

Shoshone-Bannock Tribes Water Resources Department
PO Box 306 Pima Drive
Fort Hall, ID 83203 Phone: (208) 239-4582
Fax: (208) 239-4592
Or Email ctanaka@sbtribes.com

ii. If requested by the SBT-WRD, the permittee must submit a copy of the SWPPP to SBT- WRD within fourteen (14) days of the request.

9.10.2 ORR10I000 Indian country within the State of Oregon, except Fort McDermitt Reservation lands (see Region 9)

a. Confederated Tribes of Coos, Lower Umpqua, and Siuslaw

i. No activities allowed under the CGP shall result in the degradation of any Tribal waters or affect resident aquatic communities or resident or migratory wildlife species at any life stage.

ii. The operator shall be responsible for achieving compliance with CTCLUSI Water Quality Standards and all other tribal codes, regulations, and laws as they exist at the time that the permit is submitted.

iii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTCLUSI Water Quality Program before, or at the same time as, it is submitted to EPA.

iv. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTCLUSI Water Quality Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.

v. The operator shall be responsible for reporting an exceedance to Tribal Water Quality Standards to the CTCLUSI Water Quality Program at the same time it is reported to EPA.

vi. The THPO will be provided 30 days to comment on the APE as defined in the permit application.

vii. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the THPO (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; http://www.nps.gov/history/local-law/arch_stnds_O.htm) and documented according to Oregon Reporting Standards (Reporting_Guidelines.pdf) (oregon.gov). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.

viii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

b. Confederated Tribes of the Umatilla Indian Reservation

i. The operator shall be responsible for achieving compliance with the Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Water Quality

Standards.

ii. The operator shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to the CTUIR Water Resources Program at the address below, at the same time it is submitted to EPA.

iii. The operator shall be responsible for submitting all Stormwater Pollution Prevention Plans (SWPPP) required under this general permit to the CTUIR Water Resources Program for review and determination that the SWPPP is sufficient to meet Tribal Water Quality Standards, prior to the beginning of any discharge activities taking place.

iv. The operator shall be responsible for reporting an exceedance to Tribal Water QualityStandards to the CTUIR Water Resources Program at the same time it is reported to EPA.

Confederated Tribes of the Umatilla Indian Reservation
Water Resources Program
46411 Timíne Way
Pendleton, OR 97801
(541) 429-7200

v. The THPO will be provided 30 days to comment on the APE as defined in the permit application.

vi. If the project is an undertaking, a cultural resource assessment must occur. All fieldwork must be permitted by the Tribal Historic Preservation Office (as appropriate), conducted by qualified personnel (as outlined by the Secretary of Interior's Standards and Guidelines; http://www.nps.gov/history/local-law/arch_stnds_0.htm) and documented according to Oregon Reporting Standards (Reporting_Guidelines.pdf (oregon.gov). The resulting report must be submitted to the THPO and the THPO must concur with the finding of effect and recommendations before any ground disturbing work can occur. The THPO requires 30 days to review all reports.

vii. The operator must obtain THPO concurrence in writing. If historic properties are present, this written concurrence will outline measures to be taken to prevent or mitigate adverse effects to historic properties.

9.10.3 WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator

a. For purposes of this Order, the term "Project Proponent" shall mean those that are seeking coverage under this permit, and its agents, assignees and contractors.

b. The Federal Agency shall mean the US Environmental Protection Agency. The Federal Agency shall enforce the permit and ensure that the Project Proponent complies with the conditions of the permits at all times.

c. Failure of any person or entity to comply with this Certification may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Certification.

d. The Certification conditions within this Order must be incorporated into EPA's final NPDES permit. Per 40 CFR 121.10(a), all certification conditions herein that satisfy the requirements of 40 CFR 121.7(d) must be incorporated into the permit. Per 40 CFR

121.10(b), the permit must clearly identify all certification conditions.

e. This Certification does not authorize exceedances of water quality standards established in chapter 173-201A WAC.

f. Discharges from construction activity must not cause or contribute to violations of the Water Quality Standards for Surface Water of the State of Washington (chapter 173-201A WAC), Ground Water Quality Standards (chapter 173- 200 WAC), Sediment Management Standards (chapter 173-204 WAC), and standards in the EPA's Revision of certain Federal water quality criteria applicable to Washington (40 CFR 131.45). Discharges that do not comply with these standards are prohibited.

g. Prior to discharge of stormwater and non-stormwater to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate Stormwater Pollution Prevention Plan (SWPPP), with all appropriate Best Management Practices (BMPs) installed and maintained in accordance with the SWPPP and the terms and conditions of the permit.

i. BMPs must be consistent with:

(a) The Stormwater Management Manual for Western Washington (most current approved edition at the time this permit was issued), for sites west of the crest of the Cascade Mountains; or

(b) The Stormwater Management Manual for Eastern Washington (most current approved edition at the time this permit was issued), for sites east of the crest of the Cascade Mountains; or

(c) Revisions to either manual, or other stormwater management guidance documents or manuals which provide equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230. (For purposes of this section, the stormwater manuals listed in Appendix 10 of the Phase I Municipal Stormwater Permit are approved by Ecology); or

(d) Documentation in the SWPPP that the BMPs selected provided an equivalent level of pollution prevention, compared to the applicable stormwater management manuals, including:

- The technical basis for the selection of all stormwater BMPs (scientific, technical studies, and/or modeling) that support the performance claims for the BMPs being selected.
- An assessment of how the selected BMP will satisfy AKART requirements and the applicable federal technology-based treatment requirements under 40 CFR part 125.3.

The Stormwater Management Manuals for Eastern and Western Washington can be found at: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals.

ii. An adequate SWPPP must include a narrative and drawings. All BMPs must be clearly referenced in the narrative and marked on the drawings. The SWPPP narrative must include documentation to explain and justify the pollution

prevention decisions made for the project. Documentation must include:

(a) Information about existing site conditions (topography, drainage, soils, vegetation, etc.).

(b) Potential erosion problem areas.

(c) The 13 elements of a SWPPP, including BMPs used to address each element. Unless site conditions render the element unnecessary and the exemption is clearly justified in the SWPPP, the 13 elements are as follows:

- Preserve Vegetation/Mark Clearing Limits
- Establish Construction Access
- Control Flow Rates
- Install Sediment Controls
- Stabilize Soils
- Protect Slopes
- Protect Drain Inlets
- Stabilize Channels and Outlets
- Control Pollutants
- Control Dewatering
- Maintain BMPs
- Manage the Project
- Protect Low Impact Development (LID) BMPs

h. Discharges of stormwater and authorized non-stormwater must be monitored for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH must also be monitored. As applicable based on project specifics, monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.10-16) of the Washington State Construction Stormwater General Permit, effective January 1, 2021, shall apply.

i. Discharges to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter identified in 303(d) listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
• Turbidity • Fine Sediment • Phosphorus	Turbidity	NTU	SM2130	25 NTUs at the point where the stormwater is discharged from the site.
High pH	pH	su	pH meter	In the range of 6.5 – 8.5

All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA-approved listing of impaired waters that exists on the

effective date of the permit, or the date when the operator's complete permit application is received by EPA, whichever is later.

The EPA approved WQ Assessment can be found at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d

j. Discharges to a waterbody that is subject to a Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus must be consistent with the TMDL.

i. Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements established by the applicable TMDL.

ii. Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.

iii. Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.

iv. Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.

Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus which has been completed and approved by EPA as of the effective date of the permit, or prior to the date of the operator's complete application for permit coverage is received by EPA, whichever is later.

k. Discharges to waters of the state from the following activities are prohibited:

i. Concrete wastewater.

ii. Wastewater from washout and clean-up of stucco, paint, form release oils, curing compounds and other construction materials.

iii. Process wastewater as defined by 40 Code of Federal Regulations (CFR) 122.2.

iv. Slurry materials and waste from shaft drilling, including process wastewater from shaft drilling for construction of building, road, and bridge foundations unless managed to prevent discharge to surface water.

v. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.

vi. Soaps or solvents used in vehicle and equipment washing.

vii. Wheel wash wastewater, unless managed to prevent discharge to surface water.

viii. Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, unless managed according to appropriate controls described within the permit.

l. This Certification is valid until the expiration date including any administrative extension or termination date of the NPDES 2022 Construction General Permit. (40 CFR § 122.46)

m. The Federal Agency shall enforce and the Project Proponent must comply with all the reporting and notification conditions of the NPDES 2022 Construction General Permit in order to comply with this Order and the certification conditions herein (40 CFR § 121.11).

n. You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Noel Tamboer
Department of Ecology
P.O. Box 47600
Olympia, WA 98503-7600

(360) 701-6171
noel.tamboer@ecy.wa.gov

9.10.4 WAR10I000 Indian country within the State of Washington

a. Lummi Nation

i. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtaina land use permit from the Lummi Planning Department as provided in Title 15 of theLummi Code of Laws and regulations adopted thereunder.

ii. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm WaterPollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.

iii. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi

iv. Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).

v. Each operator shall submit a signed copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.

vi. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.

vii. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:

Lummi Natural Resources Department
ATTN: Water Resources Manager 2665 Kwina Road
Bellingham, WA 98226-9298

b. Port Gamble S'Klallam Tribe

i. No discharge from the project site shall cause exceedances of Port Gamble S'KlallamSurface Water Quality Standards narrative or numeric criteria in Tribal waters. This includes activities outside of Tribal lands that occur upstream of Tribal waters.

(a) If any exceedance of these water quality standards occurred, the Natural Resources Department shall be notified immediately.

- The Department shall additionally be provided a complete draft of the proposed corrective action within a reasonable timeframe and its approval will be required before any corrective action may be taken.

ii. Operators performing activities under the CGP that may affect Tribal waters will requirea permit and shall submit their plans to the Port Gamble S'Klallam Natural Resources Department for review.

- The Department has the right to require conditions outside of this Water QualityCertification prior to permit approval.

iii. No activities allowed under the CGP shall result in the degradation of any Tribal

watersor change in designated uses.

iv. No activities allowed under the CGP shall affect resident aquatic communities or resident/migratory wildlife species at any life stage.
- Biological assessment methods used to determine the effect of an activity allowedunder the CGP shall be approved by the PGST Natural Resources Department.

v. No activities allowed under the CGP shall be conducted within wetland and stream bufferzones, nor shall said activities affect in any way wetland or stream buffers, as defined by *PGST Law and Order Code 24.08.01(c)*.

vi. Concentrations for substances listed within the table in *Water Quality Standards for Surface Waters* sec. 7(7) shall not be exceeded by activities allowed under the CGP.

c. Spokane Tribe of Indians

i. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;

ii. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.

iii. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.

iv. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA

The correspondence address for the Spokane Tribe Water Control Board is:

Water Control Board c/o Brian Crossley PO Box480
Wellpinit WA 99040
(509)626-4409
crossley@spokanetribe.com

d. Swinomish Tribe

i. Owners and operators seeking coverage under this permit must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.

ii. Owners and operators must also submit to the DEP changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.

iii. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.

e. Tulalip Tribes

i. Submission of NOI: Copies of the Notice of Intent (NOI),) Certification shall be submitted to the Tribe's Natural Resources Department to notify the Tribes of the pending project and in order for the Tribes to review the projects potential impacts to endangered or threatened species.

ii. Submission of SWPPP: A copy of the Stormwater Pollution Plans (SWPPPs) shall be submitted to the Tribe's Natural Resources Department along with the NOI during the 30 day waiting period.

iii. Submission of Monitoring Data and Reports: The results of any monitoring required by this permit and reports must be sent to the Tribe's Natural Resources Depa1tment,

iv. The Tulalip Tribes are federally recognized successors in the interest to the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the Treaty of Point Elliott.

v. including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).

vi. Authorization to Inspect: The Tribe's Natural Resources Department may conduct an inspection of any facility covered by this permit to ensure compliance with tribal water quality standards. The Department may enforce its certification conditions.

vii. Submission of Inspection Reports: Inspection reports must be sent to the Tribe's Natural Resources Department, including a description of the corrective actions required and undertaken to meet effluent limits or benchmarks (as applicable).

viii. Permits on-site: A copy of the pe1mit shall be kept on the job site and readily available for reference by the construction supervisor, construction managers and foreman, and Tribal inspectors.

ix. Project Management: The applicant shall ensure that project managers, construction managers and foreman, and other responsible parties have read and understand conditions of the permit, this certification, and other relevant documents, to avoid violations or noncompliance with this certification.

x. Emergency Spill Notification Requirements: In the event of a spill or the contractor shall immediately take action to stop the violation and correct the problem, and immediately repo1t spill to the Tulalip Tribes Police Department (425) 508-1565. Compliance with this condition does not relieve the applicant from responsibility to maintain continuous compliance with the tem1S and conditions of this certification or the resulting liability from failure to comply.

xi. Discharges to CERCLA Sites: This permit does not autho1ize direct stormwater discharges to certain sites undergoing remedial cleanup actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) unless first approved by the appropriate EPA Regional office. In the case of the Tulalip Landfill site (WAD980639256), the Tulalip Tribes also requests notification by the facility and consultation with EPA prior to discharge. Contaminants at this site may include but are not limited to: dioxins, furans, arsenic, copper, lead, zinc, 4- methyl-phenol, Hex-CB, HPAHs, PCBs, PCE, cadmium, mercury, and LPAHs.

xii. Discharge-related Activities that have Potential to Cause an Adverse Effect on Historic Properties: Installation of stormwater controls that involve subsurface disturbances may potentially have an adverse impact on historic properties.

xiii. Procedures detailed in the permit shall be completed. Richard Young, of the Tulalip Tribe's Cultural Resources Department shall be contacted prior to initiating

discharge- related activities that may have an impact on historic properties. His contact information is (360) 716-2652, ryoung@tulaliptribes-nsn.gov.

xiv. Invalidation: This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in

xv. the permit. This certification will also cease to be valid and the applicant must reapply with an updated application if info1mation contained in the permit is voided by subsequent submittals.

xvi. Modification: Nothing in this certification waives the Tulalip Tribes of Washington's authority to issue modifications to this ce1iification if additional impacts due to operational changes are identified, or if additional conditions are necessary to protect water quality or further protect the Tribal Communities interest.

xvii. incorporation by reference: TI1is certification does not exempt the applicant from compliance with other statues and codes administered by the Tribes, county, state and federal agencies.

xviii. Compliance with Tribe's I996 Water Quality Standards: Each permittee shall be responsible for controlling discharges and achieving compliance with the T1ibe's Water Quality Standards.

xix. Compliant with Tulalip Tribes Tidelands Management Policy: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Tidelands Management Policy. (Tulalip Tribal Code Title 8 Chapter 8.30).

xx. Compliant with Tulalip Tribes Environmental Infractions: Permittee shall be responsible for achieving compliance with applicable sections of the Tulalip Tribe's Environmental Infractions. (Tulalip Tribal Code Title 8 Chapter 8.20).

xxi. Where to Submit information and for further Coordination: All requested documents should be sent to the: Tulalip Tribes Natural Resources Environmental Department c/o Kurt Nelson and Valerie Streeter, 6704 Marine Drive, Tulalip, Washington 98271. For further 40 I Certification coordination with the Tulalip Tribes Natural Resources Department, please contact Mr. Kurt Nelson (360) 716-4617 knelson@tu1aliptribes- nsn.gov. 6406 Marine Dr., Tulalip WA 98271.

f. Makah Tribe

i. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Makah Tribe's Water Quality Standards if the discharge point is located within the Makah's U&A treaty reserved areas.

ii. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Makah Fisheries Management, Water Quality Department at the address listed below at the same time it is submitted to the EPA.

Makah Water Quality
Makah Fisheries Management (MFM)
ray.colby@makah.com
PO Box 115
Neah bay, WA 98357

iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Habitat programs for their review.

iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Assistant Fisheries Director, ray.colby@makah.com.

v. The permittee shall submit all Stormwater Pollution Prevention plan (SWPP) to MFM for review and approval prior to beginning any activities resulting in a discharge to Makah tribal waters.

vi. The permittee shall notify Ray Colby, ray.colby@makah.com (360) 645-3150 prior to conducting inspections at construction sites generating stormwater discharges to tribal waters.

vii. The operator shall treat dewatering discharges with controls necessary to minimize discharges of pollutants to surface waters, or ground waters, and from stormwater runoff onsite from excavations, trenches, foundations, or storage areas. To the extent feasible, at all points where dewatering is discharged, comply with the velocity dissipation using check dams, sediment traps, and grouted outlets.

g. Puyallup Tribe of Indians

i. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation procedures.

ii. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor, Tribal Water Quality Manager at the following e-mail address: (char.naylor@puyalluptribe-nsn.gov) at the same time it is submitted to EPA.

iii. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to Char Naylor, Tribal Water Quality Manager/Assistant Fisheries Director (char.naylor@puyalluptribe-nsn.gov) for review.

iv. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Char Naylor at the email address listed above.

v. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to Puyallup tribal waters.

vi. The permittee shall contact Brandon Reynon (Brandon.reynon@puyalluptribe-nsn-gov), Tribe's Historic Preservation Officer or Jennifer Keating (Jennifer.keating@puyalluptribe-nsn.gov), Tribe's Assistant Historic Preservation Officer regarding historic properties and cultural resources.

vii. To minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or other storage areas, treat dewatering discharges with controls necessary to minimize discharges of pollutants. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube

settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, utilize velocity dissipation controls. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

viii. The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the boundaries. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.

10 ADDITIONAL PERMIT CONDITIONS APPLICABLE TO LANDS OF EXCLUSIVE FEDERAL JURISDICTION

All projects that discharge to receiving waters located within Lands of Exclusive Federal Jurisdiction must comply with the provisions in this Part in addition to Parts 1, 2, and 3.2 thru 8 of this permit.[110] [111] [112]

10.1 INSPECTION FREQUENCIES

You must comply with the increased inspection frequencies specified in Part 4.3.1.

10.2 STABILIZATION DEADLINES

You must comply with the stabilization deadlines specified in Part 2.2.14b.iv.

10.3 TURBIDITY BENCHMARK MONITORING FOR DEWATERING DISCHARGES

You must comply with the benchmark monitoring requirements in Part 3.3 for sites discharging dewatering water.

10.4 ADDITIONAL WATER QUALITY-BASED LIMITATIONS FOR STORMWATER AND AUTHORIZED NON-STORMWATER DISCHARGES

Your discharge must not contain:

a. Observable deposits of floating solids, scum, sheen, or other substances;

b. An observable film, sheen, or discoloration from oil and grease; or

c. Foam or substances that produce an observable change in color, odor, or cloudiness in the discharge.

[110] The requirements of Part 9 do not apply to projects within Lands of Exclusive Federal Jurisdiction.

[111] This section does not apply to projects within Denali National Park and Preserve or projects that are eligible for coverage in Appendix B for federal facilities in Vermont, Delaware, and Colorado and for areas in Washington where construction activities are carried out by a Federal Operator.

[112] EPA notes that reference to water quality standards in Part 7.2.6(b)(vi)(c) for projects that discharge to receiving waters in Lands of Exclusive Federal Jurisdiction means the requirements of Part 10.4.a-c.

If any of these conditions are observed, except with respect to dewatering discharges, you must treat this as triggering corrective action under Part 5, which requires that you take corrective action and document the corrective actions as required in Part 5.2.[113]

For sites discharging from dewatering operations, you must implement corrective actions if any of the conditions described in Part 5.1.5 occur and comply with the requirements of Part 5.2.2 for responding to these conditions.

[113] Consistent with this requirement, with respect to projects discharging to receiving waters in Lands of Exclusive Federal Jurisdiction, the triggering condition in Part 5.1.3 relating to water quality standards means that one of the discharge conditions in this section (Part 10.4.a-c) has occurred.

Appendix A - Definitions and Acronyms

1. Definitions

"Action Area" – all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. See 50 CFR 402. For the purposes of this permit and for application of the threatened and endangered species protection eligibility requirements, the following areas are included in the definition of action area:

- The areas on the construction site where stormwater discharges originate and flow toward the point of discharge into the receiving waters. This includes:
    - areas on the construction site where excavation, site development, or other ground disturbance activities occur, and
    - areas where stormwater controls will be constructed and operated, including any areas where stormwater flows to and from the stormwater controls.
- The areas in the vicinity of the construction site where stormwater discharges flow from the construction site to one or more points of discharge into receiving waters. (Example: Where stormwater flows into an off-site ditch, swale, or gully that leads to receiving waters.
- The extent of the receiving water potentially affected by stormwater discharges from your construction site through alteration of water chemistry, turbidity, temperature, or bank structure (i.e., erosive flow), regardless of whether the construction site is adjacent to the receiving water.

"Agricultural Land" - cropland, grassland, rangeland, pasture, and other agricultural land, on which agricultural and forest-related products or livestock are produced and resource concerns may be addressed. Agricultural lands include cropped woodland, marshes, incidental areas included in the agricultural operation, and other types of agricultural land used for the production of livestock.

"Antidegradation Policy" or "Antidegradation Requirements" - the water quality standards regulation that requires States and Tribes to establish a three-tiered antidegradation program:

1. Tier 1 maintains and protects existing uses and water quality conditions necessary to support such uses. An existing use can be established by demonstrating that fishing, swimming, or other uses have actually occurred since November 28, 1975, or that the water quality is suitable to allow such uses to occur. Where an existing use is established, it must be protected even if it is not listed in the water quality standards as a designated use. Tier 1 requirements are applicable to all surface waters.
2. Tier 2 maintains and protects "high quality" waters -- waterbodies where existing conditions are better than necessary to support CWA § 101(a)(2) "fishable/swimmable" uses. Water quality can be lowered in such waters. However, State and Tribal Tier 2 programs identify procedures that must be followed and questions that must be answered before a reduction in water quality can be allowed. In no case may water quality be lowered to a level which would interfere with existing or designated uses.
3. Tier 3 maintains and protects water quality in outstanding national resource waters (ONRWs). Except for certain temporary changes, water quality cannot be lowered in such waters. ONRWs generally include the highest quality waters of the United States. However, the ONRW classification also offers special protection for waters of exceptional ecological significance, i.e., those which are important, unique, or sensitive ecologically.

Decisions regarding which water bodies qualify to be ONRWs are made by States and authorized Indian Tribes.

"Arid Areas" – areas with an average annual rainfall of 0 to 10 inches. For assistance in determining average annual rainfall in specific locations, refer to the NOAA National Mapping webpage (https://www.ncdc.noaa.gov/cag/national/mapping), the PRISM Climate Group's Time Series Values for individual locations (https://prism.oregonstate.edu/explorer/), or EPA's US EPA EnviroAtlas (https://www.epa.gov/enviroatlas).

"Bank" (e.g., stream bank or river bank) – the rising ground bordering the channel of a water of the U.S.

"Biodegradable" – capable of decomposing under ambient soil conditions into naturally occurring materials over a period of time (e.g., one year).

"Bluff" – a steep headland, promontory, riverbank, or cliff.

"Borrow Areas" – the areas where materials are dug for use as fill, either onsite or off-site.

"Business day" – for the purposes of this permit, a business day is a calendar day on which construction activities will take place.

"Bypass" – the intentional diversion of waste streams from any portion of a treatment facility. See 40 CFR 122.41(m)(1)(i).

"Cationic Treatment Chemical" – polymers, flocculants, or other chemicals that contain an overall positive charge. Among other things, they are used to reduce turbidity in stormwater discharges by chemically bonding to the overall negative charge of suspended silts and other soil materials and causing them to bind together and settle out. Common examples of cationic treatment chemicals are chitosan and cationic PAM.

"Commencement of Construction Activities" – the initial disturbance of soils (or 'breaking ground') associated with clearing, grading, or excavating activities or other construction-related activities (e.g., grubbing; stockpiling of fill material; placement of raw materials at the site).

"Common Plan of Development or Sale" – A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one common plan. The "common plan" of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot.

"Construction Activities" – earth-disturbing activities, such as the clearing, grading, and excavation of land, and other construction-related activities (e.g., grubbing; stockpiling of fill material; placement of raw materials at the site) that could lead to the generation of pollutants. Some of the types of pollutants that are typically found at construction sites are:

- sediment;
- nutrients;
- heavy metals;
- pesticides and herbicides;
- oil and grease;
- bacteria and viruses;
- trash, debris, and solids;

- treatment polymers; and
- any other toxic chemicals.

"Construction and Development Effluent Limitations and New Source Performance Standards" (C&D Rule) – as published in 40 CFR § 450, the regulation requiring effluent limitations guidelines (ELGs) and new source performance standards (NSPS) for controlling the discharge of pollutants from construction sites.

"Construction Site" or "Site" – the land or water area where construction activities will occur and where stormwater controls will be installed and maintained. The construction site includes construction support activities, which may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether.

"Construction Support Activity" – a construction-related activity that specifically supports the construction activity and involves earth disturbance or pollutant-generating activities of its own, and can include activities associated with concrete or asphalt batch plants, equipment staging yards, materials storage areas, excavated material disposal areas, and borrow areas.

"Construction Waste" – discarded material (such as packaging materials; scrap construction materials; masonry products; timber, steel, pipe, and electrical cuttings; plastics; and styrofoam).

"Conveyance Channel" – a temporary or permanent waterway designed and installed to safely convey stormwater flow within and out of a construction site.

"Critical Habitat" – as defined in the Endangered Species Act at 16 U.S.C. 1531 for a threatened or endangered species, (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

"CWA" – the Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.

"Dewatering" – the act of draining accumulated stormwater and/or ground water from building foundations, vaults, and trenches, or other similar points of accumulation. Examples can include, but are not limited to:

- Surface area dewatering: water pumped from disturbed surface areas (e.g., trenches, sumps, excavation pits, or other excavations associated with construction where sediment-laden ground water or surface water/storm inflow must be removed) or from sediment basins or similar impoundments for maintenance or decommissioning purposes.
- Ground water dewatering: water discharged from well development, well pump tests, or pumping of ground water from a construction area. Common methods of ground water dewatering from a construction area include sumps and wells, generally described as follows:
  - Sumps: lowers ground water levels near the construction area. Dewatering using sumps consists of pumping ground water out of a lower collection point(s) typically gravity-fed by local ground water.
  - Wells: drilled wells, including bored/augured, driven, or jetted, which use vacuum or pumping to lower the ground water at greater depths than sumps. The two most common types of wells used for dewatering ground water are:

- Wellpoints: small-diameter shallow wells which are connected via a header pipe. A pump creates a vacuum in the header pipe.
- Deep Wells: larger-diameter holes, drilled relatively deep (typically greater than 10 feet), pumped by submersible electric pumps.

"Dewatering Water" – as used in this permit, water discharged from dewatering operations.

"Discharge" – when used without qualification, means the "discharge of a pollutant."

"Discharge of a Pollutant" – any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. See 40 CFR 122.2.

"Discharge Point" – for the purposes of this permit, the location where collected and concentrated stormwater flows or dewatering water are discharged from the construction site.

"Discharge-Related Activity" – activities that cause, contribute to, or result in stormwater and allowable non-stormwater point source discharges, and measures such as the siting, construction, and operation of stormwater controls to control, reduce, or prevent pollutants from being discharged.

"Discharge to an Impaired Water" – for the purposes of this permit, a discharge to an impaired water occurs if the first water of the U.S. to which you discharge is identified by a State, Tribe, or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting an applicable water quality standard and (1) requires development of a total maximum daily load (TMDL) (pursuant to section 303(d) of the CWA; or (2) is addressed by an EPA-approved or established TMDL; or (3) is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1). For discharges that enter a storm sewer system prior to discharge, the water of the U.S. to which you discharge is the first water of the U.S. that receives the stormwater discharge from the storm sewer system.

"Domestic Waste" – for the purposes of this permit, typical household trash, garbage or rubbish items generated by construction activities.

"Drainageway" – an open linear depression, whether constructed or natural, that functions for the collection and drainage of surface water.

"Drought-Stricken Area" – for the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely: (1) "Drought to persist or intensify", (2) "Drought ongoing, some improvement", (3) "Drought likely to improve, impacts ease", or (4) "Drought development likely". See http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php.

"Earth-Disturbing Activity"– actions taken to alter the existing vegetation and/or underlying soil of a site, such as clearing, grading, site preparation (e.g., excavating, grubbing, cutting, and filling), soil compaction, and movement and stockpiling of top soils.

"Earth-Disturbing Activities Conducted Prior to Active Mining Activities" – Consists of two classes of earth-disturbing (i.e., clearing, grading and excavation) activities:

a. activities performed for purposes of mine site preparation, including: cutting new rights of way (except when related to access road construction); providing access to a mine site for vehicles and equipment (except when related to access road construction); other earth disturbances associated with site preparation activities on any areas where active mining

activities have not yet commenced (e.g., for heap leach pads, waste rock facilities, tailings impoundments, wastewater treatment plants); and

b. construction of staging areas to prepare for erecting structures such as to house project personnel and equipment, mill buildings, etc., and construction of access roads.

Note: only earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining (see (b) above) are considered to be "construction" and therefore stormwater discharges from these activities are eligible for coverage under this permit. See Part 1.2.1.b. The activities described in (a) above are not considered to be "construction" and therefore stormwater discharges associated with this activity are not eligible for coverage under this permit.

"Effective Operating Condition" – for the purposes of this permit, a stormwater control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

"Effluent Limitations" – for the purposes of this permit, any of the Part 2 or Part 3 requirements.

"Effluent Limitations Guideline" (ELG) – defined in 40 CFR § 122.2 as a regulation published by the Administrator under section 304(b) of the CWA to adopt or revise effluent limitations.

"Eligible" – for the purposes of this permit, refers to stormwater and allowable non-stormwater discharges that are authorized for coverage under this general permit.

"Emergency-Related Project" – a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services.

"Endangered Species" – defined in the Endangered Species Act at 16 U.S.C. 1531 as any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.

"Excursion" – a measured value that exceeds a specified limit.

"Existing Site" – a site where construction activities commenced prior to February 16, 2017.

"Exit Points" – any points of egress from the construction site to be used by vehicles and equipment during construction activities.

"Exposed Soils" – for the purposes of this permit, soils that as a result of earth-disturbing activities are left open to the elements.

"Federal Facility" – any buildings, installations, structures, land, public works, equipment, aircraft, vessels, and other vehicles and property, owned by, or constructed or manufactured for the purpose of leasing to, the Federal government.

"Federal Operator" – an entity that meets the definition of "Operator" in this permit and is either any department, agency or instrumentality of the executive, legislative, and judicial branches of the Federal government of the United States, or another entity, such as a private contractor, performing construction activity for any such department, agency, or instrumentality.

"Final Stabilization" – on areas not covered by permanent structures, either (1) uniform, perennial vegetation *(e.g., evenly distributed, without large bare areas)* has been established, or for arid or semi-arid areas, will be established that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas, and/or (2) permanent non-

vegetative stabilization measures (e.g., riprap, gravel, gabions, and geotextiles) have been implemented to provide effective cover for exposed portions of the site

"General Contractor" – for the purposes of this permit, the primary individual or company solely accountable to perform a contract. The general contractor typically supervises activities, coordinates the use of subcontractors, and is authorized to direct workers at a site to carry out activities required by the permit.

"Hazardous Substances" or "Hazardous or Toxic Waste" – for the purposes of this permit, any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. See also 40 CFR §261.2.

"Historic Property" – as defined in the National Historic Preservation Act regulations, means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria.

"Impaired Water"– a water identified by the State, Tribe, or EPA as not meeting an applicable water quality standard and (1) requires development of a TMDL (pursuant to section 303(d) of the CWA; or (2) is addressed by an EPA-approved or established TMDL; or (3) is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1).

"Impervious Surface" – for the purpose of this permit, any land surface with a low or no capacity for soil infiltration including, but not limited to, pavement, sidewalks, parking areas and driveways, packed gravel or soil, or rooftops.

"Indian Country" or "Indian Country Lands" – defined at 40 CFR §122.2 as:

1. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation;
2. All dependent Indian communities with the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a State; and
3. All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-ways running through the same.

"Infeasible" – for the purpose of this permit, infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices. EPA notes that it does not intend for any permit requirement to conflict with State water rights law.

"Install" or "Installation" – when used in connection with stormwater controls, to connect or set in position stormwater controls to make them operational.

"Jar test" – a test designed to simulate full-scale coagulation/flocculation/sedimentation water treatment processes by taking into account the possible conditions.

Lands of Exclusive Federal Jurisdiction – all land where the Federal government has exclusive jurisdiction in relative respects.

"Landward" – positioned or located away from a waterbody, and towards the land.

"Large Construction Activity" – defined at 40 CFR § 122.26(b)(14)(x) and incorporated here by reference. Large construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than five acres of land or will disturb less

than five acres of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than five acres. Large construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

"Linear Construction Site" – includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

"Minimize" – to reduce and/or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

"Mining Activity" – for the purposes of this permit, includes mining-related construction activities defined at 40 CFR 122.26(b)(14)(x) and 122.26(b)(15)(i), and active mining activities defined at 40 CFR 122.26(b)(14)(iii). Both of these sub categories of activities include earth-disturbing activities, with the latter also including such activities as: extraction, removal or recovery, and beneficiation of mined material from the earth; removal of overburden and waste rock to expose mineable material; and site reclamation and closure activities.

"Mining Operations" – for the purposes of this permit, mining operations are grouped into two distinct categories, with distinct effluent limits and requirements applicable to each: 1) earth-disturbing activities conducted prior to active mining activities; and 2) active mining activities, which includes reclamation.

"Municipal Separate Storm Sewer System" or "MS4" – defined at 40 CFR §122.26(b)(8) as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

1. Owned and operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian Tribe or an authorized Indian Tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
2. Designed or used for collecting or conveying stormwater;
3. Which is not a combined sewer; and
4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

"National Pollutant Discharge Elimination System" (NPDES) – defined at 40 CFR §122.2 as the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of CWA. The term includes an 'approved program.'

"Native Topsoil" – the uppermost layer of naturally occurring soil for a particular area, and is often rich in organic matter, biological activity, and nutrients.

"Natural Buffer" – for the purposes of this permit, an area of undisturbed natural cover surrounding waters of the United States within which construction activities are restricted. Natural cover includes the vegetation, exposed rock, or barren ground that exists prior to commencement of earth-disturbing activities.

"Natural Vegetation" – vegetation that occurs spontaneously without regular management, maintenance, or species introductions or removals, and that generally has a strong component of native species..

"New Operator of a Permitted Site" – an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a "new site" or an "existing site".

"New Site" – a site where construction activities commenced on or after February 16, 2017.

"New Source" – for the purposes of this permit, a construction project that commenced construction activities after February 1, 2010.

"New Source Performance Standards (NSPS)" – for the purposes of this permit, NSPS are technology-based standards that apply to construction sites that are new sources under 40 CFR 450.24.

"Non-Stormwater Discharges" – discharges that do not originate from storm events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, or pipe testing water.

"Non-Turbid" – a discharge that is free from visual turbidity.

"Notice of Intent" (NOI) – the form (electronic or paper) required for authorization of coverage under the Construction General Permit.

"Notice of Termination" (NOT) – the form (electronic or paper) required for terminating coverage under the Construction General Permit.

"NPDES eReporting Tool" (NeT) – EPA's online system for submitting electronic Construction General Permit forms.

"Operational" – for the purposes of this permit, stormwater controls are made "operational" when they have been installed and implemented, are functioning as designed, and are properly maintained.

"Operator" – for the purposes of this permit and in the context of stormwater discharges associated with construction activity, any party associated with a construction project that meets either of the following two criteria:

1. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications *(*e.g. *in most cases this is the owner of the site)*; or
2. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g.*, they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor of the project)*.

This definition is provided to inform permittees of EPA's interpretation of how the regulatory definitions of "owner or operator" and "facility or activity" are applied to discharges of stormwater associated with construction activity. Subcontractors generally are not considered operators for the purposes of this permit.

"Ordinary High Water Mark" – the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris.

"Permitting Authority" – for the purposes of this permit, EPA, a Regional Administrator of EPA, or an authorized representative.

"Point(s) of Discharge" – see "Discharge Point."

"Point Source" – any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

"Pollutant" – defined at 40 CFR §122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

"Pollution Prevention Controls" – stormwater controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

"Polymers" – for the purposes of this permit, coagulants and flocculants used to control erosion on soil or to enhance the sediment removal capabilities of sediment traps or basins. Common construction site polymers include polyacrylamide (PAM), chitosan, alum, polyaluminum chloride, and gypsum.

"Prohibited Discharges" – discharges that are not allowed under this permit, including:

1. Wastewater from washout of concrete;
2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Soaps or solvents used in vehicle and equipment washing;
5. Toxic or hazardous substances from a spill or other release; and
6. Waste, garbage, floatable debris, construction debris, and sanitary waste.

"Provisionally Covered Under this Permit" – for the purposes of this permit, EPA provides temporary coverage under this permit for emergency-related projects prior to receipt of a complete and accurate NOI. Discharges from earth-disturbing activities associated with the emergency-related projects are subject to the terms and conditions of the permit during the period of temporary coverage.

"Qualified Person" – a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

"Receiving Water" – a "Water of the United States" as defined in 40 CFR §122.2 into which the regulated stormwater discharges.

"Run-On" – sources of stormwater that drain from land located upslope or upstream from the regulated site in question.

"Seasonally Dry Period" – a month in which the long-term average total precipitation is less than or equal to 0.5 inches. Refer to EPA's Seasonally Dry Period Locator and supporting maps for assistance in determining whether a site is operating during a seasonally dry period for the area,

located at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates.

"Sediment-Related parameter" – for the purposes of this permit, a pollutant parameter that is closely related to sediment such as turbidity, total suspended solids (TSS), transparency, sedimentation, and siltation.

"Semi-Arid Areas" – areas with an average annual rainfall of 10 to 20 inches. For assistance in determining average annual rainfall in specific locations, refer to the NOAA National Mapping webpage (https://www.ncdc.noaa.gov/cag/national/mapping), the PRISM Climate Group's Time Series Values for individual locations (https://prism.oregonstate.edu/explorer/), or EPA's US EPA EnviroAtlas (https://www.epa.gov/enviroatlas).

"Shared Control" - for the purposes of this permit, a stormwater control, such as a sediment basin or pond, used by two or more operators that is installed and maintained for the purpose of minimizing and controlling pollutant discharges from a construction site with multiple operators associated with a common plan of development or sale. Any operators that are contributing stormwater from their construction activities to a shared control are considered to rely upon a shared control.

"Small Construction Activity" – defined at 40 CFR §122.26(b)(15) and incorporated here by reference. A small construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

"Small Residential Lot" – for the purpose of this permit, a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

"Snowmelt" – the conversion of snow into overland stormwater and ground water flow as a result of warmer temperatures.

"Spill" – for the purpose of this permit, the release of a hazardous or toxic substance from its container or containment.

"Stabilization" – the use of vegetative and/or non-vegetative cover to prevent erosion and sediment loss in areas exposed through the construction process.

"Steep Slopes" – where a State, Tribe, local government, or industry technical manual (e.g., stormwater BMP manual) has defined what is to be considered a "steep slope", this permit's definition automatically adopts that definition. Where no such definition exists, steep slopes are automatically defined as those that are 15 percent or greater in grade.

"Storm Sewer System" – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) designed or used for collecting or conveying stormwater.

"Stormwater" – stormwater runoff, snowmelt runoff, and surface runoff and drainage.

"Stormwater Control" - refers to any best management practice or other method (including narrative effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the United States.

"Stormwater Discharge Associated with Construction Activity" – as used in this permit, a discharge of pollutants in stormwater to waters of the United States from areas where earth-

disturbing activities (e.g., clearing, grubbing, grading, or excavation) occur, or where construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck chute washdown, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants), are located.

"Stormwater Inlet" – a structure placed below grade to conduct water used to collect stormwater runoff for conveyance purposes.

"Stormwater Team" – the group of individuals responsible for oversight of the development and modifications of the SWPPP, and oversight of compliance with the permit requirements. The individuals on the "Stormwater Team" must be identified in the SWPPP.

"Storm Event" – a precipitation event that results in a measurable amount of precipitation.

"Storm Sewer" – a system of pipes (separate from sanitary sewers) that carries stormwater runoff from buildings and land surfaces.

"Subcontractor" – for the purposes of this permit, an individual or company that takes a portion of a contract from the general contractor or from another subcontractor.

"SWPPP" (Stormwater Pollution Prevention Plan) – a site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at the construction site; (2) describes stormwater controls to reduce or eliminate pollutants in stormwater discharges from the construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of this general permit.

"Temporary Stabilization" – a condition where exposed soils or disturbed areas are provided temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

"Thawing Conditions" – for the purposes of this permit, thawing conditions are expected based on the historical likelihood of two or more days with daytime temperatures greater than 32˚F. This date can be determined by looking at historical weather data. Note: the estimation of thawing conditions is for planning purposes only. During construction the permittee will be required to conduct site inspections based upon actual conditions (i.e., if thawing conditions occur sooner than expected, the permittee will be required to conduct inspections at the regular frequency).

"Threatened Species" – defined in the Endangered Species Act at 16 U.S.C. 1531 as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

"Tier 2 Waters" – for antidegradation purposes, pursuant to 40 CFR 131.12(a)(2), those waters that are characterized as having water quality that exceeds the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water.

"Tier 2.5 Waters" – for antidegradation purposes, those waters designated by States or Tribes as requiring a level of protection equal to and above that given to Tier 2 waters, but less than that given Tier 3 waters. Some States have special requirements for these waters.

"Tier 3 Waters" – for antidegradation purposes, pursuant to 40 CFR 131.12(a)(3), Tier 3 waters are identified by States as having high quality waters constituting an Outstanding National Resource Water (ONRW), such as waters of National Parks and State Parks, wildlife refuges, and waters of exceptional recreational or ecological significance.

"Total Maximum Daily Load" or "TMDL" – the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If receiving water has only one point source discharger, the TMDL is the sum of that point source

WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure.

"Toxic Waste" – see "Hazardous Substances."

"Treatment Chemicals" – polymers, flocculants, or other chemicals used to reduce turbidity in stormwater.

"Turbidity" – a condition of water quality characterized by the presence of suspended solids and/or organic material.

"Uncontaminated Discharge" – in the context of authorized non-stormwater discharges, a discharge that meets applicable water quality standards.

"Upland" – the dry land area above and 'landward' of the ordinary high water mark.

"Upset" – Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond your reasonable control. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR 122.41(n)(1).

"Visual Turbidity" – for the purposes of this permit, visual turbidity is present when there is a sediment plume in the discharge or the discharge appears cloudy, opaque, or has a visible contrast that can be visually identified by an observer.

"Water-Dependent Structures" – structures or facilities that are required to be located directly adjacent to a waterbody or wetland, such as a marina, pier, boat ramp, etc.

"Water Quality Standards" – defined in 40 CFR § 131.3, and are provisions of State (including Tribal) or Federal law which consist of a designated use or uses for the waters of the United States, water quality criteria for such waters based upon such uses, and an antidegradation policy to protect high-quality waters. Water quality standards protect the public health or welfare, enhance the quality of water and serve the purposes of the Act.

"Waters of the United States" – see definition at 40 CFR 122.2.

"Wetland" – those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. On-site evaluations are typically required to confirm the presence and boundaries of wetlands.

2. Acronyms

ACHP – Advisory Council on Historic Preservation

BMP – Best Management Practice

CBI – Confidential Business Information

CGP – Construction General Permit

CFR – Code of Federal Regulations

CWA – Clean Water Act

CZMA – Coastal Zone Management Act

ECHO – EPA Enforcement and Compliance History Online

ELG – Effluent Limitations Guideline
EPA – United States Environmental Protection Agency
ESA – Endangered Species Act
FR – Federal Register
MS4 – Municipal Separate Storm Sewer System
MSGP – Multi-Sector General Permit
NEPA – National Environmental Policy Act
NeT – NPDES eReporting Tool
NTU - Nephelometric turbidity units
NHPA – National Historic Preservation Act
NMFS – United States National Marine Fisheries Service
NPDES – National Pollutant Discharge Elimination System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
NRC – National Response Center
NRCS – National Resources Conservation Service
NSPS – New Source Performance Standards
ONRW – Outstanding National Resource Water
PAM – Polyacrylamide
POTW – Publicly Owned Treatment Works
RUSLE – Revised Universal Soil Loss Equation
SDS – Safety Data Sheet
SHPO – State Historic Preservation Office
SPCC – Spill Prevention Control and Countermeasure
SWPPP – Stormwater Pollution Prevention Plan
THPO – Tribal Historic Preservation Office
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
UIC – Underground Injection Control
USDA – United States Department of Agriculture
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
WQS – Water Quality Standard

Appendix B - Permit Areas Eligible for Coverage and EPA Regional Addresses

Permit coverage for stormwater discharges from construction activity occurring within the following areas is provided by legally separate and distinctly numbered permits. For assistance in determining whether your construction activities are located within Indian country, refer to the Bureau of Indian Affairs' digital map of the land areas of Federally-recognized Tribes at https://biamaps.doi.gov/indianlands/#.

B.1 EPA Region 1

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 1:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
CTR10I000	Indian country within the State of Connecticut
MAR100000	Commonwealth of Massachusetts (except Indian country)
MAR10I000	Indian country within the State of Massachusetts
NHR100000	State of New Hampshire
RIR10I000	Indian country within the State of Rhode Island
VTR10F000	Areas in the State of Vermont located at a Federal Facility (as defined in Appendix A)
1R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
01R10F000	All Lands of Exclusive Federal Jurisdiction, except in the State of Vermont (which is already covered by Permit No. VTR10F000) that are on the confirmed 2024 list below provided by the National Parks Service (NPS) or on the list compiled by the U.S. General Services Administration as of 1962 (available at https://publiclandjurisdiction.com/wp-content/uploads/2020/01/JURISD1.pdf). The NPS list includes the following: Acadia National Park.

For stormwater discharges in EPA Region 1 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 1 Address:
U.S. EPA Region 1
Office of Ecosystem Protection
Stormwater and Construction Permits Section
5 Post Office Square, Suite 100
(OEP 06-1)
Boston, MA 02109-3912

B.2 EPA Region 2

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 2:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
NYR10I000	Indian country within the State of New York
PRR100000	Commonwealth of Puerto Rico
02R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
02R10F000	All Lands of Exclusive Federal Jurisdiction

For stormwater discharges in EPA Region 2 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 2 Address:
For Puerto Rico:
U.S. EPA Region 2
Caribbean Environmental Protection Division
NPDES Stormwater Program
City View Plaza II – Suite 7000
48 Rd. 165 Km 1.2
Guaynabo, PR 00968-8069

For New York:
U.S. EPA Region 2
NPDES Stormwater Program
290 Broadway, 24th Floor
New York, NY 10007-1866

B.3 EPA Region 3

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 3:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
DCR100000	District of Columbia
DER10F000	Areas in the State of Delaware located at a Federal Facility (as defined in Appendix A)
VAR10I000	Indian country within the State of Virginia
03R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
03R10F000	All Lands of Exclusive Federal Jurisdiction, except in the State of Delaware (which is already covered by Permit No. DER10F000) that are on the confirmed 2024 list below provided by the National Parks Service (NPS) or on the list compiled by the U.S. General Services Administration as of 1962 (available at https://publiclandjurisdiction.com/wp-content/uploads/2020/01/JURISD1.pdf). The NPS list includes the following: Antietam National Battlefield, Baltimore-Washington Parkway, Battleground National Cemetery, Fredericksburg & Spotsylvania National Military Park, George Washington Memorial Parkway, Gettysburg National Military Park, Petersburg National Battlefield, and Shenandoah National Park.[1] EPA notes that the 1962 list is not all-inclusive and that the information contained in these lists has not been recently confirmed and/or updated.

For stormwater discharges in EPA Region 3 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 3 Address:
U.S. EPA Region 3
Clean Water Branch
Permits Section, Mailcode 3WD41
Four Penn Center
1600 John F Kennedy Blvd.
Philadelphia, PA 19103-2029

[1] In its Clean Water Act section 401 certification, EPA Region 3 authorized coverage for three additional locations, Fort McHenry National Monument & Historic Shrine, Fort Necessity National Battlefield, and Independence National Historic Park. Subsequent to the certification, it became known that these locations are not considered Lands of Exclusive Federal Jurisdiction, and therefore construction activities in these areas are not eligible for coverage under the CGP.

B.4 EPA Region 4

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 4:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
ALR10I000	Indian country within the State of Alabama
FLR10I00E	Indian country within the State of Florida
MSR10I000	Indian country within the State of Mississippi
NCR10I000	Indian country within the State of North Carolina
04R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country (except Catawba lands in South Carolina)
04R10F000	All Lands of Exclusive Federal Jurisdiction

For stormwater discharges in EPA Region 4 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 4 Address:
U.S. EPA Region 4
Water Protection Division
NPDES Stormwater Program
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303-3104

B.5 EPA Region 5

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 5:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
MIR10I000	Indian country within the State of Michigan, except the L'Anse Reservation of the Keweenaw Bay Indian Community
MNR10I000	Indian country within the State of Minnesota, except sites located in the Fond du Lac Reservation discharging to Outstanding Reservation Resources Waters (ORRWs)[2]
WIR10I000	Indian country within the State of Wisconsin, except sites located in the Bad River Band of Lake Superior Tribe of Chippewa Indians discharging to Outstanding Tribal Resource Waters (OTRWs) or Tier 3 waters[3]
05R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
05R10F000	All Lands of Exclusive Federal Jurisdiction

For stormwater discharges in EPA Region 5 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 5 Address:
U.S. EPA Region 5
NPDES Program Branch
77 W. Jackson Blvd.
Mail Code WN16J
Chicago, IL 60604-3507

[2] The Tribe has identified Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake as ORRWs.
[3] The Tribe has identified the following as OTRWs or Tier 3 waters: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River.

B.6 EPA Region 6

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 6:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
LAR10I000	Indian country within the State of Louisiana
NMR100000	State of New Mexico, except Indian country
NMR10I000	Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I.
OKR10I000	Indian country within the State of Oklahoma, except areas of Indian country covered by an extension of state program authority pursuant to Section 10211 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA).
OKR10F000	Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, or the Oklahoma Department of Agriculture and Forestry including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).
TXR10I000	Indian country within the State of Texas
06R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
06R10F000	All Lands of Exclusive Federal Jurisdiction

For stormwater discharges in EPA Region 6 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 6 Address:
U.S. EPA Region 6
NPDES Stormwater Program (WQ-PP)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

B.7 EPA Region 7

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 7:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
IAR10I000	Indian country within the State of Iowa
KSR10I000	Indian country within the State of Kansas
NER10I000	Indian country within the State of Nebraska, except Pine Ridge Reservation lands (see Region 8)
07R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
07R10F000	All Lands of Exclusive Federal Jurisdiction

For stormwater discharges in EPA Region 7 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 7 Address:
U.S. EPA Region 7
NPDES Stormwater Program
11201 Renner Blvd
Lenexa, KS 66219

B.8 EPA Region 8

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 8:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
COR10F000	Areas in the State of Colorado located at a Federal Facility (as defined in Appendix A), except those located on Indian country
COR10I000	Indian country within the State of Colorado, as well as the portion of the Ute Mountain Reservation located in New Mexico
MTR10I000	Indian country within the State of Montana
NDR10I000	Indian country within the State of North Dakota, as well as that portion of the Standing Rock Reservation located in South Dakota (except for the portion of the lands within the former boundaries of the Lake Traverse Reservation which is covered under South Dakota permit SDR10000I listed below)
SDR10I000	Indian country within the State of South Dakota, as well as the portion of the Pine Ridge Reservation located in Nebraska and the portion of the lands within the former boundaries of the Lake Traverse Reservation located in North Dakota (except for the Standing Rock Reservation which is covered under North Dakota permit NDR10000I listed above)
UTR10I000	Indian country within the State of Utah, except Goshute and Navajo Reservation lands (see Region 9)
WYR10I000	Indian country within the State of Wyoming
08R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
08R10F000	All Lands of Exclusive Federal Jurisdiction, except in the State of Colorado (which is already covered by Permit No. COR10F000)

For stormwater discharges in EPA Region 8 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 8 Address:
EPA Region 8 Storm Water Program
Mailcode: 8P-W-WW
1595 Wynkoop Street
Denver, CO 80202-1129

B.9 EPA Region 9

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 9:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
ASR100000	Island of American Samoa
AZR10I000	Indian country within the State of Arizona, as well as Navajo Reservation lands in New Mexico and Utah
CAR10I000	Indian country within the State of California
GUR100000	Island of Guam
JAR100000	Johnston Atoll
MPR100000	Commonwealth of the Northern Mariana Islands
MWR100000	Midway Island and Wake Island
NVR10000I	Indian country within the State of Nevada, as well as the Duck Valley Reservation in Idaho, the Fort McDermitt Reservation in Oregon and the Goshute Reservation in Utah
09R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
09R10F000	All Lands of Exclusive Federal Jurisdiction

For stormwater discharges in EPA Region 9 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 9 Address:
U.S. EPA Region 9
Water Division
NPDES Stormwater Program (WTR-2-3)
75 Hawthorne Street
San Francisco, CA 94105-3901

B.10 EPA Region 10

The permit offers coverage for stormwater discharges from construction activity from the following areas in EPA Region 10:

Permit No.	Areas of Coverage/Where EPA is Permitting Authority
AKR10I000	Indian country lands as defined in 18 U.S.C. 1151 within the State of Alaska
AKR10F000	Denali National Park and Preserve
IDR10I000	Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)
ORR10I000	Indian country within the State of Oregon, except Fort McDermitt Reservation lands (see Region 9)
WAR10F000	Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator
WAR10I000	Indian country within the State of Washington
010R10I000	All areas of Indian country not identified above that are not already covered by an EPA-approved permitting program with authorization to issue permits in Indian country
010R10F000	All Lands of Exclusive Federal Jurisdiction, except Denali National Park (Denali National Park is already covered by Permit No. AKR10F000) and areas in the State of Washington subject to construction activity by a Federal Operator (which is already covered by Permit No. WAR10F000)

For stormwater discharges in EPA Region 10 outside the areas of coverage identified above, please contact your State NPDES permitting authority to obtain coverage under a State-issued NPDES permit.

EPA Region 10 Address:
U.S. EPA Region 10
NPDES Stormwater Program
1200 6th Avenue (OWW-191)
Seattle, WA 98101-3140

Appendix C - Small Construction Waivers and Instructions

These waivers are only available to stormwater discharges associated with small construction activities (i.e., 1-5 acres). As the operator of a small construction activity, you may be able to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on: (A) a low rainfall erosivity factor, (B) a TMDL analysis, or (C) an equivalent analysis that determines allocations for small construction sites are not needed. Each operator, otherwise needing permit coverage, must notify EPA of its intention for a waiver. It is the responsibility of those individuals wishing to obtain a waiver from coverage under this general permit to submit a complete and accurate waiver certification as described below. Where the operator changes or another is added during the construction project, the new operator must also submit a waiver certification to be waived.

C.1 Rainfall Erosivity Waiver

Under this scenario the small construction project's rainfall erosivity factor calculation ("R" in the Revised Universal Soil Loss Equation) is less than five during the period of construction activity. The operator must certify to EPA that construction activity will occur only when the rainfall erosivity factor is less than five. The period of construction activity begins at initial earth disturbance and ends with final stabilization. Where vegetation will be used for final stabilization, the date of installation of a stabilization practice that will provide interim non-vegetative stabilization can be used for the end of the construction period, provided the operator commits (as a condition of waiver eligibility) to periodically inspect and properly maintain the area until the criteria for final stabilization as defined in the CGP have been met. If use of this interim stabilization eligibility condition was relied on to qualify for the waiver, signature on the waiver with its certification statement constitutes acceptance of and commitment to complete the final stabilization process. The operator must submit a waiver certification to EPA prior to commencing construction activities.

> *Note: The rainfall erosivity factor "R" is determined in accordance with Chapter 2 of Agriculture Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE), pages 21–64, dated January 1997; United States Department of Agriculture (USDA), Agricultural Research Service.*

EPA has developed an online rainfall erosivity calculator to help small construction sites determine potential eligibility for the rainfall erosivity waiver. You can access the calculator from EPA's website at: https://www.epa.gov/npdes/rainfall-erosivity-factor-calculator-small-construction-sites. The R factor can easily be calculated by using the construction site latitude/longitude or address and estimated start and end dates of construction. This calculator may also be useful in determining the time periods during which construction activity could be waived from permit coverage. You may find that moving your construction activity by a few weeks or expediting site stabilization will allow you to qualify for the waiver. Use this online calculator or the Construction Rainfall Erosivity Waiver Fact Sheet (https://www.epa.gov/sites/production/files/2015-10/documents/fact3-1.pdf) to assist in determining the R Factor for your small construction site.

If you are the operator of the construction activity and eligible for a waiver based on low erosivity potential, you can submit a rainfall erosivity waiver electronically via EPA's NPDES eReporting Tool (NeT) (https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting), unless you received a waiver from your EPA Regional Office (see Part 1.4.1 of the CGP for information about receiving a waiver from electronic reporting).

Note: If the R factor is five or greater, you do not qualify for the rainfall erosivity waiver, and must obtain coverage under an NPDES permit (e.g., the CGP), unless you qualify for the Water Quality Waiver as described in section B below.

If your small construction project continues beyond the projected completion date given on the waiver certification, you must recalculate the rainfall erosivity factor for the new project duration. If the R factor is below five, you must update all applicable information on the waiver certification and retain a copy of the revised waiver as part of your records. The new waiver certification must be submitted prior to the projected completion date listed on the original waiver form to assure your exemption from permitting requirements is uninterrupted. If the new R factor is five or above, you must obtain NPDES permit coverage.

C.2 TMDL Waiver

This waiver is available if EPA has established or approved a TMDL that addresses the pollutant(s) of concern for the impaired water and has determined that controls on stormwater discharges from small construction activity are not needed to protect water quality. The pollutant(s) of concern include sediment (such as total suspended solids, turbidity or siltation) and any other pollutant that has been identified as a cause of impairment of any waterbody that will receive a discharge from the construction activity. Information on TMDLs that have been established or approved by EPA is available from EPA online at https://www.epa.gov/tmdl and from State and Tribal water quality agencies.

If you are the operator of the construction activity and eligible for a waiver based on compliance with an EPA-established or approved TMDL, you must provide the following information in order to be waived from permitting requirements:

1. Name, address and telephone number of the construction site operator(s);
2. Name (or other identifier), address, county or similar governmental subdivision, and latitude/longitude of the construction project or site;
3. Estimated construction start and completion (i.e., final stabilization) dates, and total acreage (to the nearest quarter acre) to be disturbed;
4. The name of the waterbody(s) that would be receiving stormwater discharges from your construction project;
5. The name and approval date of the TMDL;
6. A statement, signed and dated by an authorized representative as provided in Appendix G, Subsection G.11, that certifies that the construction activity will take place and that the stormwater discharges will occur, within the drainage area addressed by the TMDL.

C.3 Equivalent Analysis Waiver

This waiver is available for discharges to non-impaired waters only. The operator can develop an equivalent analysis that determines allocations for his/her small construction site for the pollutant(s) of concern or determines that such allocations are not needed to protect water quality. This waiver requires a small construction operator to develop an equivalent analysis based on existing in-stream concentrations, expected growth in pollutant concentrations from all sources, and a margin of safety.

If you are a construction operator who wants to use this waiver, you must develop your equivalent analysis and provide the following information to be waived from permitting requirements:

1. Name, address and telephone number of the construction site operator(s);

2. Name (or other identifier), address, county or similar governmental subdivision, and latitude/longitude of the construction project or site;
3. Estimated construction start and completion (i.e., final stabilization) dates, and total acreage (to the nearest quarter acre) to be disturbed;
4. The name of the waterbody(s) that would be receiving stormwater discharges from your construction project;
5. Your equivalent analysis;
6. A statement, signed and dated by an authorized representative as provided in Appendix G, Subsection G.11, that certifies that the construction activity will take place and that the stormwater discharges will occur, within the drainage area addressed by the equivalent analysis.

C.4 Waiver Deadlines and Submissions

1. Waiver certifications must be submitted prior to commencement of construction activities.
2. If you submit a TMDL or equivalent analysis waiver request, you are not waived until EPA approves your request. As such, you may not commence construction activities until receipt of approval from EPA.
3. Late Notifications: Operators are not prohibited from submitting waiver certifications after initiating clearing, grading, excavation activities, or other construction activities. The Agency reserves the right to take enforcement for any unpermitted discharges that occur between the time construction commenced and waiver authorization is granted.

Submittal of a waiver certification is an optional alternative to obtaining permit coverage for discharges of stormwater associated with small construction activity, provided you qualify for the waiver. Any discharge of stormwater associated with small construction activity not covered by either a permit or a waiver may be considered an unpermitted discharge under the Clean Water Act. As mentioned above, EPA reserves the right to take enforcement for any unpermitted discharges that occur between the time construction commenced and either discharge authorization is granted or a complete and accurate waiver certification is submitted. EPA may notify any operator covered by a waiver that they must obtain NPDES permit coverage. EPA may notify any operator who has been in non-compliance with a waiver that they may no longer use the waiver for future projects. Any member of the public may petition EPA to take action under this provision by submitting written notice along with supporting justification.

Complete and accurate TMDL or equivalent analysis waiver requests must be sent to the applicable EPA Regional Office address specified in Appendix B.

Appendix D - Eligibility Worksheet Relating to Threatened and Endangered Species Protection

D.1 Introduction

This appendix provides a printable worksheet that can be helpful in selecting and documenting your eligibility criteria with respect to the protection of Federally listed threatened or endangered species and Federally designated "critical habitat" under the Endangered Species Act (ESA) [hereinafter "ESA-listed species and designated critical habitat(s)"] from discharges and discharge-related activities authorized under this permit. This is important because Section 9 of the ESA prohibits all persons and agencies from "taking" threatened and endangered species (16 U.S.C. § 1532(19)).

While coordination between you and the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) (together, referred to as the "Services") may not be required in all cases, EPA encourages you to coordinate with the Services, to document that coordination, and to do so early in the planning process prior to submitting your NOI.

D.2 Certifying ESA Eligibility Criterion for the CGP

To be eligible for coverage under the CGP, you must certify that you meet one of the criteria listed in this worksheet (Section D.5), which is then submitted with your NOI for coverage under this permit. If you do not meet one of the ESA eligibility criteria outlined in the worksheet below, you are not eligible for coverage under this permit. These criteria ensure that coverage is available only for discharges and discharge-related activities that (1) avoid or eliminate any short- or long-term adverse effects to ESA-listed species and designated critical habitat(s), or (2) may result in any short- or long-term adverse effects that result in incidental take addressed under the incidental take statement of a biological opinion or permit for take issued under Section 10 of the ESA.

As part of your determination of eligibility, EPA has developed a worksheet that assists operators in arriving at the correct criterion. The following requirements apply to the completion of the worksheet depending on how you are submitting your NOI for permit coverage:

1. If the EPA Regional Office grants you a waiver from electronic reporting, in accordance with Part 1.1.5 of the CGP, you must complete the worksheet in section D.4 of this appendix to provide all information as required on your NOI that supports the eligibility criterion you qualify under per Part 1.1.5 of the permit. **You must submit the worksheet with your NOI. If you do not submit the worksheet with your NOI, your NOI will be considered incomplete.**
2. If you do not have a waiver from electronic reporting, you must **complete your eligibility criteria selection outlined in the Endangered Species Protection section of the NOI in the NPDES eReporting Tool (NeT-CGP)** and provide all information as required on your NOI that supports the eligibility criterion you qualify under per Part 1.1.5 of the permit. The printable worksheet in this appendix may be helpful to you in preparing to submit your NOI, but you do not have to use it.

D.3 What to Expect Once you Submit your NOI

After you submit your NOI and before your NOI is authorized, EPA may notify you if any additional controls are necessary to ensure your discharges are not likely to result in any short- or long-term adverse effects on ESA-listed species and critical habitat.

The Services have the opportunity, within 14 days of submission of the NOI, to advise EPA whether either agency believes the planned discharges meet the selected eligibility criterion; whether the eligibility criterion could be met with additional conditions; or whether the eligibility criterion is not met. With respect to ESA issues, EPA recognizes the Services' expertise and will carefully consider their conclusion(s) in identifying eligibility for authorization, either with or without additional conditions. In the event EPA has placed a hold on your NOI based on NMFS or USFWS' recommendation, EPA will notify you as to whether your discharges are authorized or whether an individual permit will be required. If you do not hear from EPA within 14 days, you may assume that your discharge is authorized without further conditions.

D.4 Worksheet Instructions

Follow the instructions within the worksheet below to determine which criterion you are eligible for coverage under this permit. Check only 1 criterion, answer the required questions, and include the required information.

Please keep the following in mind as you complete the worksheet:

- The worksheet requires that you answer questions in a sequential order so that you can select the correct eligibility criterion. The worksheet does not go through each criterion alphabetically, but rather is organized in a way that allows you to eliminate those criteria that do not apply to your site. For instance, Step 1 of the worksheet requires you to determine whether criterion B, E, or F applies first, in that order, before proceeding to determining whether criterion A applies in Step 2.
- You must consider ESA-listed species and/or designated critical habitat(s) under the jurisdiction of both the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) and select the criterion that best applies to your site. You must comply with any applicable terms, conditions, or other requirements developed in theprocess of meeting one of the eligibility criteria in this section to remain eligible for coverage under this permit.
- When evaluating the potential effects of your activities, you must consider effects to listed species or critical habitats within the "action area" of your construction activity, as identified by the USFWS IPaC and/or the NOAA website resources on page D-10 through D-11 of this appendix. Please Note: *NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.* The definition of "action area," which is contained in Appendix A, is repeated below forconvenience.

"Action Area" – all areas to be affected directly or indirectly by the federal action and not merely theimmediate area involved in the action. See 50 CFR part 402. For the purposes of this permit and for application of the Endangered Species Act requirements, the following areas are included in the definition of action area:

- The **areas on the construction site** where stormwater discharges originate and flow toward the point of discharge into the receiving waters. This includes:
  - areas on the construction site where excavation, site development, or other ground disturbance activities occur, and
  - areas where stormwater controls will be constructed and operated, including any areas where stormwater flows to and from the stormwater controls.
- The areas **in the vicinity of the construction site** where stormwater discharges flow from the construction site to one or more points of discharge into receiving waters. (Example: Where stormwater flows into an off-site ditch, swale, or gully that leads to receiving waters.)
- **The extent of the receiving water** potentially affected by stormwater discharges from your construction site through alteration of water chemistry, turbidity, temperature, or bank structure (i.e., erosive flow), regardless of whether the construction site is adjacent to the receiving water.

D.5 Worksheet

Step 1 – Determine if You Meet the Eligibility Requirements of Criterion B, E, or F

Instructions

- First determine whether you are eligible under Criterion B by reviewing the eligibility requirements below.
- If you determine that your facility does not meet Criterion B (e.g., due to difference in action area described, lack of analysis of appropriate effects, new listings or designation of critical habitat), proceed to check if you meet the requirements for Criterion E or F.

Criterion B Eligibility Requirements

If your discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility under the current 2022 CGP that included your action area (e.g., a general contractor or developer may have completed and filed an NOI for the entire action area with the necessary ESA certifications (Criterion A, C, D, E, or F)), you may be eligible under Criterion B. In order to be eligible for coverage, you must confirm that **all** three of the following are true (**check all that apply**):

☐ I have confirmed that the other operator's certification of eligibility accounted for my action area and that the eligibility certification was valid.

☐ There has been no lapse of NPDES permit coverage in the other operator's certification.

☐ I will comply with all measures that formed the basis of the other operator's valid certification of eligibility.

Instructions

- **If all three of the above are true, you may check Criterion B below and answer questions B1-B5, and if applicable, B6-B7.**
- **If any of the above are not true** (for example, if there are any listed species in your action area that were not addressed in the other operator's certification, you are not eligible under Criterion B), **you may not select Criterion B and must proceed to check if you meet the requirements for Criterion E or F.**

☐ **B Eligibility requirements met by another operator under the 2022 CGP.** The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility Criterion A, C, D, E, or F of the 2022 CGP and you have confirmed that no additional ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS not considered in the

that certification may be present or located in the "action area." To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other CGP operator's certification. By certifying eligibility under this criterion, you agree to comply with any conditions upon which the other CGP operator's certification was based. You must include below the NPDES ID from the other 2022 CGP operator's notification of authorization under this permit and list any measures that you must comply with). If your certification is based on another 2022 CGP operator's certification under Criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in Criterion C.

B1. Provide the NPDES ID from the other CGP operator's NOI authorized under this permit:

_ _ _ _ _ _ _ _ _ _

B2. Identify the eligibility criterion of the other CGP operator's NOI? (check only one)

☐ A ☐ C ☐ D ☐ E ☐ F

B3. Provide the authorization date of the other CGP operator's NOI (MM/DD/YYYY):

_ _ / _ _ / _ _ _ _

By certifying eligibility under Criterion B, you must comply with any terms and conditions imposed under the eligibility requirements of the criterion for which the other operator has established eligibility (either Criterion A, C, D, E, or F) to ensure that your discharges and discharge-related activities are protective of listed species and/or critical habitat. *Note: If you are unable to meet these eligibility requirements, then you may either establish eligibility under one of the other criteria, or you may consider applying to EPA for an individual permit.*

B4. List any measures that formed the basis of the other operator's valid certification of eligibility that you will comply with (or enter "N/A" if none exist):

B5. Check to confirm you have provided documentation in your SWPPP supporting your eligibility under Criterion B, including any of the terms and conditions, as well as the other operator's basis for establishing eligibility. Yes ☐

If your certification is based on another operator's certification under Criterion C, you must provide the following:

B6. What Federally listed species and/or designated habitat are located in your "action area"? (attached separate sheet if necessary)

B7. What is the distance between your site and the listed species or designated critical habitat (in miles)? _____

Instructions

- **If you selected Criterion B above and answered questions B1-B5, and if applicable, B6-B7, you are done with this worksheet. If you are *not* filing electronically, you must submit this worksheet with your NOI.**



- If you are not eligible under Criterion B, proceed to check if you meet the requirements for Criterion E or F. Note that for projects located in Lands of Exclusive Federal Jurisdiction carried by or on behalf of a Federal agency, your options are limited to selecting Criterion E.



Criterion E Eligibility Requirements

If consultation under ESA section 7 has concluded, you may be eligible for coverage under Criterion E. In order to be eligible for coverage under Criterion E, **you must confirm that both of the following are true (check all that apply)**:

☐ A consultation between a Federal agency and USFWS and/or the NMFS under section 7 of the ESA has concluded**.** Consultations can be either formal or informal, and would have occurred only as a result of a separate Federal action (e.g., during application for an individual wastewater discharge permit or the issuance of a wetlands dredge and fill permit), and the consultation must have addressed the effects of your construction activity's discharges and discharge-related activities on all ESA-listed threatened or endangered species and all designated critical habitat under the jurisdiction of each Service, as appropriate, in your action area. The result of this consultation must be either:

i. A biological opinion currently in effect that determined that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is likely to adversely affect, but is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The biological opinion must have included the effects of your facility's discharges[1] and discharge-related activities on all the listed species and designated

[1] Effects of discharge include, but are not limited to, the analysis of the hydrological, chemical, and biological effects of the discharge on listed species, their prey, and their habitat, as well as critical habitat, where designated. For example, the

critical habitat in your action area under the jurisdiction of each Service, as appropriate. To be eligible under (i), any reasonable and prudent measures specified in the incidental take statement must be implemented;

ii. Written concurrence (e.g., letter of concurrence) from the applicable Service(s) with a determination that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. The concurrence letter must have included the effects of your facility's discharges and discharge-related activities on all the ESA-listed species and/or designated critical habitat on your species list(s) acquired from USFWS and/or NMFS as part of this worksheet.

☐ The consultation does not warrant reinitiation under 50 CFR §402.16; or, if reinitiation of consultation is required (e.g., due to a new species listing, critical habitat designation, or new information), the Federal action agency has reinitiated the consultation and the result of the consultation is consistent with the statements above. Include any reinitiation documentation from the Services or consulting Federal agency with your NOI.

Instructions

- **If both of the above are true, you may check Criterion E below and answer questions E1-E6.**
  - For more information on section 7 consultation, see 50 CFR part 402. If you receive a "jeopardy opinion," you may continue to work with USFWS and/or NMFS and your permitting authority to modify your project so that it will not jeopardize listed species or designated critical habitat.
  - Note that most consultations are accomplished through informal consultation. When conducting informal ESA section 7 consultation as a non-Federal representative, you must follow the procedures found in 50 CFR Part 402 of the ESA regulations. You must notify the Services of your intention and agreement to conduct consultation as a non-Federal representative.
  - Consultation may also occur in the context of another Federal action at the construction site (e.g., where ESA section 7 consultation was performed for issuance of a wetlands dredge and fill permit for the project or where a NEPA review is performed for the project that incorporates a section 7 consultation).
  - Any terms and conditions developed through consultations to protect listed species and critical habitat must be incorporated into the SWPPP. As noted above, a Federal operator may, if they wish, initiate consultation with the Services at Step Four. Non-Federal operators may seek technical assistance from the Services at Step 5.
  - Whether ESA section 7 consultation must be performed with either USFWS, NMFS, or both Services depends on the listed species that may be affected by the operator's stormwater discharges. In general, NMFS has jurisdiction over marine, estuarine, and anadromous species. Operators should also be aware that while formal section 7 consultation provides protection from incidental takings liability, informal consultation does not.

- **If not, proceed to check if you meet the requirements for Criterion F.**

effects analysis would have evaluated whether the various pollutants in the discharge (e.g., TSS, metals) would adversely affect listed species through exposure to the pollutants, or to their prey or habitat. Effects that look only at short-term effects unrelated to the stormwater discharge effects to listed species are not sufficient for these purposes.

☐ **E** **ESA Section 7 consultation has successfully concluded.** Consultation between a Federal Agency and the USFWS and/or NMFS under section 7 of the ESA has concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, **Indicate the result of the consultation**:

☐ Biological opinion and/or conference opinion and incidental take statement currently in effect currently in effect from USFWS and/or NMFS that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of ESA-listed species, nor the destruction or adverse modification of critical habitat;

Or

☐ Written concurrence from USFWS and/or NMFS with a finding that the site's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat.

E1. Identify the federal action agency or agencies involved:

E2. Identify the Service(s) field or regional offices providing the consultation:

E3. Identify any tracking numbers associated with the consultation (e.g., IPaC number, ECO number):

E4. What is the date the consultation was completed? (MM/DD/YYYY) __ __ / __ __ / __ __ __ __

E5. Check to confirm that correspondence with USFWS and/or NMFS documenting the Biological Opinion, conference opinion (IPaC or ECO tracking number) or concurrence is attached. Yes ☐

E6. Check to confirm you have provided documentation in your SWPPP supporting your eligibility under Criterion E, including copies of the correspondence between yourself and the Services. Yes ☐

Instructions

- **If you selected Criterion E above and answered questions E1-E6, you are done with this worksheet. If you are not filing electronically, you must submit this worksheet with your NOI.**
- If you are not eligible under Criterion E, proceed to check if you meet the requirements for Criterion F.

Criterion F Eligibility Requirements

If your construction activities are the subject of a permit under ESA section 10, and this authorization addresses the effects of your site's discharges and discharge-related activities on ESA-listed species and designated critical habitat in your action area, you may be eligible for coverage under Criterion F. In order to be eligible or coverage under Criterion F, **you must confirm that the following is true:**

☐ A permit or permits issued under section 10 of the ESA specifically address the effects of your facility's discharges and discharge-related activities (if applicable) on all federally-listed species and designated critical habitat in your action area.

Note: You must follow USFWS and/or NMFS procedures when applying for an ESA section 10 permit (see 50 CFR §17.22(b)(1) for USFWS and §222.22 for NMFS). Application instructions for section 10 permits can be obtained from http://www.fws.gov and http://www.nmfs.noaa.gov or by contacting the appropriate Service office.

Instructions

- **If the above is true, you may check Criterion F below and answer questions F1-F6.**
- If you are not eligible under criterion F, proceed to Step 2.

☐ **F** **Issuance of section 10 permit**. Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the site's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

F1. Which Service provided the section 10 permit? (check all that apply)

USFWS ☐ NMFS ☐

F2. Identify the field or regional offices providing the permit(s):

F3. Identify any tracking numbers associated with the consultation (e.g., IPaC number, ECO number):

F4. What is the date the permit(s) was granted? (MM/DD/YYY) __ __ / __ __ / __ __ __ __
(2nd permit date, if applicable: __ __ / __ __ / __ __ __ __)

F5. Check to confirm that correspondence with USFWS and/or NMFS and a copy of the section 10 permit or relevant tracking number(s) (IPaC and/or ECO number) is attached. Yes ☐

F6. Check to confirm you have provided documentation in your SWPPP supporting your eligibility under Criterion F, including a copy of the section 10 permit and copies of the correspondence between yourself and the Services. Yes ☐

Instructions

- **If you selected Criterion F above and answered questions F1-F6, you are done with this worksheet. If you are not filing electronically, you must submit this worksheet with your NOI.**
- If you are not eligible under Criterion F, proceed to Step 2.

Step 2 – Determine if Listed Threatened or Endangered Species or their Designated Critical Habitat(s) are Likely to Occur in your Site's Action Area

Instructions

- **First, determine the extent of your action area.** You must determine whether species listed as either threatened or endangered, or their critical habitat(s) are located in your site's action area (i.e., all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action, including areas beyond the footprint of the site that are likely to be affected by stormwater discharges, discharge-related activities, and authorized non-stormwater discharges).

You must consider the following in determining the action area for your site, and **confirm that all the following are true**:

☐ In determining my "action area", I have considered that discharges of pollutants from the project site can expand the action area well beyond the footprint of my site and the discharge point(s). I have taken into account the controls I will be implementing to minimize pollutants and the receiving waterbody characteristics (e.g., perennial, intermittent, ephemeral) in determining the extent of physical, chemical, and/or biotic effects of the

discharges. I confirm that all receiving waterbodies that could receive pollutants from my site are included in my action area.

☐ In determining my "action area", I have considered that discharge-related activities must also be accounted for in determining my action area. I understand that discharge-related activities are any activities that cause, contribute to, or result in stormwater and authorized non-stormwater point source discharges, and measures such as the siting, construction, timing,[2] and operation of stormwater controls to control, reduce, or prevent pollutants from being discharged. I understand that any new or modified stormwater controls that will have noise or other similar effects, and any disturbances associated with construction of controls, are part of my action area.

If you have any questions about determining the extent of your action area, you may contact EPA or the Services for assistance. https://www.epa.gov/npdes/contact-us-stormwater#regional

Instructions

- **Next, you must identify, to the best of your ability, any species listed as either threatened or endangered, or their critical habitat(s), that are located in your site's action area (see definitions of these terms in Appendix A).** You must follow the instructions on the https://www.epa.gov/npdes/construction-general-permit-threatened-and-endangered-species to obtain lists of any ESA-protected species and/or critical habitat that are expected to exist in your county, township, or the receiving water for your discharge.
- If ESA-protected resources occur within your action area, keep a copy of the species and critical habitat list(s) from the Service(s) with your SWPPP and use the list(s) to complete your NOI. For USFWS species, attach to this worksheet the full printout from your IPaC query/Official Species List. You can include the map from your IPaC query. For NMFS species, attach to this worksheet the full printout of the report from your query of the mapping resource you used (either the National or Greater Atlantic Region Mapper). The printed report from NMFS mappers will include a map of your query.

[2] Timing considerations could be related to, for example, a time of the year where a migratory bird species is present in the action area and the operator might want to consider that in terms of their construction sequencing; there are other times of the year where this consideration might not be relevant.

Instructions

- **After completing Step 2 above, if there are <u>no</u> listed species and <u>no</u> critical habitat areas in your action area,** you may be eligible for criterion A.

Criterion A Eligibility Requirements

In order to be eligible for coverage under criterion A, you must confirm that all the following are true (**check all that apply**):

☐ I confirm that I have used the species location resources of **BOTH** NMFS and USFWS to identify any ESA-listed species within my action area.

☐ I have confirmed there to be no ESA-listed species and no critical habitat in my action area.

Instructions

- **If all of the above are true, you may check criterion A below and answer questions A1-A5.**
- **If any of the above is not true, you may not select criterion A and must proceed to Step 3** to determine if you can become eligible under criterion C.

Note: For existing dischargers that have previously obtained coverage under criterion A, you must verify whether ESA-protected species and/or critical habitat are expected to exist in your action area, as described above. Please note that if you now find that your action area overlaps with ESA-protected species or critical habitat, you must proceed to Step 3.

☐ **A <u>No ESA-listed species and/or designated critical habitat present in action area</u>**. You certify that ESA-listed species and designated critical habitat(s) under the jurisdiction of the USFWS or NMFS are not likely to occur in your site's "action area" as defined in Appendix A of this permit.. *Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.*

A1. USFWS information sources used (reliance on State resources is not acceptable):

Note: If your Official Species List from USFWS indicated no species or critical habitat were present in your action area, include the full consultation tracking code at the top of your Official Species List in your NOI in the basis statement for Criterion A. If an Official Species List was not available on IPaC, list the contact date and name of the Service staff with whom you corresponded to verify no USFWS species or critical habitat were present in your action area.

A2. NMFS information sources used (reliance on State resources is not acceptable):

A3. I confirm that aerial image(s) of the site is attached. Yes ☐

A4. I confirm that a printout of the species' list(s) showing no ESA-listed species or critical habitat in my action area is attached. Yes ☐

A5. Check to confirm you have provided documentation in your SWPPP supporting your eligibility under Criterion A. For USFWS species, include the full printout from your IPaC query/Official Species List. You can include the map from your IPaC query. For NMFS species, include the full printout from the appropriate NMFS website resources on page X with the correct Region selected. Yes ☐

Instructions

- **If you selected Criterion A above and answered questions A1-A5, you are done with this worksheet. If you are not filing electronically, you must submit this worksheet with your NOI.**



- **If listed species and/or critical habitat may exist in your action area, you must do one or more of the following**:



  - **Conduct visual inspections.** This method may be particularly suitable for construction sites that are smaller in size or located in non-natural settings such as highly urbanized areas or industrial parks where there is little or no natural habitat, or for construction activities that discharge directly into municipal stormwater collection systems.
  - **Conduct a formal biological survey**. In some cases, particularly for larger construction sites with extensive stormwater discharges, biological surveys may be an appropriate way to assess whether species are located in the action area and whether there are likely to be short- or long-term adverse effects to such species. Biological surveys are frequently performed by environmental consulting firms.
  - **If required, conduct an environmental assessment under the National Environmental Policy Act (NEPA).** Some construction activities might require review under NEPA for specific reasons, such as Federal funding or other Federal involvement in the project. Note: Coverage under the CGP does not trigger such a review for individual projects/sites. EPA has complied with NEPA in the issuance of the CGP.

    and
  - **Follow the instructions in Steps 3 – 5 below, as applicable.** Note that many but not all measures imposed to protect listed species under these steps will also protect critical habitat. Thus, meeting the eligibility requirements of this CGP may require measures to protect critical habitat that are separate from those to protect listed species.

Step 3 – Assess if the Construction Activity's Discharges or Discharge-Related Activities Are Likely to Result in Short- or Long-Term Adverse Effects to Listed Threatened or Endangered Species or Designated Critical Habitat

Instructions

- If in Step 2 you identified that listed species and/or designated critical habitat could exist in your action area, **you must next assess whether your discharges or discharge-related activities are likely to result in short- or long-term adverse effects to ESA-listed threatened or endangered species or designated critical habitat**.

Potential short- or long-term adverse effects from discharges and discharge-related activities include:

- **Hydrological**. Stormwater discharges may cause siltation, sedimentation, or induce other changes in receiving waters such as temperature, salinity, or pH. These effects will vary with the amount of stormwater discharged and the volume and condition of the receiving water. Where a stormwater discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely. Construction activity itself may also alter drainage patterns on a site where construction occurs that can impact listed species or critical habitat.
- **Habitat**. Excavation, site development, grading, and other surface disturbance activities from construction activities, including the installation or placement of stormwater controls, may result in adverse effects to listed species or their habitat. Stormwater may drain or inundate listed species habitat.
- **Toxicity**. In some cases, pollutants in construction stormwater may have toxic effects on listed species. For example: Stormwater discharges from construction on or adjacent to agricultural property may contain pesticides. Stormwater discharges from projects involving pavement and roofing could include tar and asphalt.

The scope of effects to consider will vary with each site. If you are having difficulty determining whether your project is likely to result in short- or long-term adverse effects to listed species or critical habitat, or one of the Services has already raised concerns to you, you should contact the appropriate Services office for assistance.

Instructions

- **If any short- or long-term adverse effects to listed threatened or endangered species or their critical habitat <u>are not</u> likely, then you may check Criterion C below and answer questions C1-C8.**
- **If any short- or long-term adverse effects to listed threatened or endangered species or their critical habitat <u>are</u> likely, you must follow Step 4 below.** You may still be eligible for Criterion C if you are able to install and implement appropriate measures to avoid the likelihood of adverse effects.

Criterion C Eligibility Requirements

☐ **C** **Discharges not likely to result in any short- or long-term adverse effects to ESA-listed species and/or designated critical habitat.** ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects to ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects to ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, you must indicate below1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in this Appendix; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how short- or long-term adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. You must also include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with your NOI.

C1. I confirm that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in my evaluation. Yes ☐

C2. Provide the USFWS information resources and expertise used to arrive at this criterion selection:

C3. Provide the NMFS information resources and expertise used to arrive at this criterion selection:

C4. What ESA-listed species and/or designated critical habitat are located in your "action area?" (or attach a printout of the species' list(s))

C5. What is the distance between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed)? _____

C6. Provide the rationale describing specifically how any short- or long-term adverse effects to ESA-listed species will be avoided from the discharge and discharge-related activities.

C7. I confirm that a site map from my SWPPP showing the upland and in-water extent of my "action area" is attached. Yes ☐

C8. Check to confirm you have provided documentation in your SWPPP supporting your eligibility under Criterion C. Yes ☐

Instructions

- **If you selected Criterion C above and answered questions C1-C8, you are done with this worksheet. If you are not filing electronically, you must submit this worksheet with your NOI.** 

- If not, please proceed to step 4. 

Step 4 - Determine if Measures Can Be Implemented to Avoid Adverse Effects

Instructions

If you make a preliminary decision in Step 3 that short- or long-term adverse effects from your construction activity's discharges or discharge-related activities are likely to occur, you can still receive coverage under eligibility Criterion C of the CGP if appropriate measures are undertaken to avoid or eliminate the likelihood of short- or long-term adverse effects prior to applying for CGP coverage.

These measures may involve relatively simple changes to construction activities such as re-routing a stormwater discharge to bypass an area where species are located, relocating stormwater controls, or by modifying the "footprint" of the construction activity. If you are unable to ascertain which measures to implement to avoid the likelihood of short- or long-term adverse effects, you must coordinate with USFWS and/or NMFS, in which case you would not be eligible for coverage under eligibility Criterion C, but may instead be eligible for coverage under eligibility criterion D (described in more detail in Step 5).

- **If you are able to install and implement appropriate measures to avoid the likelihood of short- or long-term adverse effects, then <u>you</u> <u>may go back</u> and check eligibility Criterion C above and answer questions C1-C8 above, <u>and</u> C9-C10 below.** The measures you adopt to avoid or eliminate short- or long-term adverse effects must be implemented for the duration of the construction project and your coverage under the CGP.
- **If you cannot ascertain which measures to implement to avoid the likelihood of adverse effects,** you must follow the procedures in Step 5.

C9. I confirm that I have or will install and implement appropriate measures to avoid the likelihood of any short- or long-term adverse effects to ESA-listed threatened or endangered species or their critical habitat. Yes ☐

C10. Provide a description of the measures installed/to be installed and implemented to avoid likelihood of any short- or long-term adverse effects.

Instructions

- **If you selected Criterion C above and answered questions C1-C10, you are done with this worksheet. If you are not filing you NOI electronically, you must submit this worksheet with your NOI.**
- If you are not eligible for Criterion C, please proceed to step 5.

Step 5 - Determine if the Eligibility Requirements of Criterion D Can Be Met

Instructions

- If in Step 4 you cannot ascertain which measures to implement to avoid the likelihood of short- or long-term adverse effects, you must contact USFWS and/or NMFS. You may still be eligible for CGP coverage if likely adverse effects can be addressed through meeting criterion D.
- If you meet the requirements of criterion D, **then you may check criterion D below and answer questions D1-D5.**

Criterion D Eligibility Requirements

☐ **D** **Coordination with USFWS and/or NMFS has successfully concluded.** Coordination between you and the USFWS and/or NMFS has concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS, and resulted in a written confirmation from USFWS and/or NMFS that the effects of your site's discharges and discharge-related activities are not likely to result in short- or long-term adverse effects for ESA-listed species and/or designated critical habitat in your action area. By certifying eligibility under this criterion, you agree to comply with any conditions you must meet for your site's discharges and discharge-related activities to not likely result in any short- or long-term adverse effects. You must include copies of the correspondence with the participating agencies in your SWPPP and your NOI.

D1. Which Service participated in coordination? (check all that apply) USFWS ☐ NMFS ☐

D2. Identify the field and/or regional office(s) that provided the coordination?

D3. What is the date the coordination concluded? (MM/DD/YYY) __ __ / __ __ / __ __ __ __

D4. Check to confirm that correspondence with USFWS and/or NMFS documenting concurrence is attached. Yes ☐

D5. Check to confirm you have provided documentation in your SWPPP supporting your eligibility under Criterion D, including copies of the correspondence between yourself and the Services. Yes ☐

Instructions

- **If you selected Criterion D above and answered questions D1-D5, you are done with this worksheet. If you are not filing electronically, you must submit this worksheet with your NOI.**



Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0305). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 3.3 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Appendix E – Historic Property Screening Process

Background

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of Federal "undertakings", such as the issuance of this permit, on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. To address any issues relating to historic properties in connection with the issuance of this permit, EPA developed the screening process in this appendix that enables construction operators to appropriately consider the potential impacts, if any, of their installation of stormwater controls on historic properties and to determine whether actions can be taken, if applicable, to mitigate any such impacts. Although the coverages of individual construction sites under this permit do not constitute separate Federal undertakings, the screening process in this appendix provides an appropriate site-specific means of addressing historic property issues in connection with EPA's issuance of the permit.

Key Terms

Historic property- prehistoric or historic districts, sites, buildings, structures, or objects that are included in or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and remains that are related to and located within such properties

SHPO – The State Historic Preservation Officer for a particular State

THPO or Tribal representative – The Tribal Historic Preservation Officer for a particular Tribe or, if there is no THPO, the representative designated by such Tribe for NHPA purposes

Instructions for All Construction Operators

You are required to follow the screening process in this appendix to determine if your installation of stormwater controls on your site has the potential to cause effects to historic properties, and whether or not you need to contact your SHPO, THPO, or other Tribal representative for further information. **You may not submit your NOI until you have completed this screening process.** The following four steps describe how applicants can meet the historic property requirements under this permit:

Step 1 *Are you installing any stormwater controls that require subsurface earth disturbance?*[1]

The first step of the screening process is to determine if you will install stormwater controls that cause subsurface earth disturbance. The installation of the following types of stormwater controls require subsurface earth disturbance:[2]

- Dikes
- Berms
- Catch Basins
- Ponds
- Ditches
- Trenches
- Culverts
- Channels

[1] You are only required to consider earth-disturbing activities related to the installation of stormwater controls in the NHPA screening process. You are not reqired to consider other earth-disturbing activities at the site. If you are installing one of the above stormwater controls or another type of control that requires subsurface earth disturbance, your stormwater controls have the potential to have an effect on historic properties. If this is the case, then you must proceed to Step 2.

[2] This list is not intended to be exhaustive. Other stormwater controls that are not on this list may involve earth-disturbing activities and must also be examined for the potential to affect historic properties.

- Perimeter Drains
- Swales

If you are not installing one of the above stormwater controls or another type of control that requires subsurface earth disturbance, then you may indicate this on your NOI, and no further screening is necessary. During the 14-day waiting period after submitting your NOI, the SHPO, THPO, or other Tribal representative may request that EPA hold up authorization based on concerns about potential adverse effects to historic properties. EPA will evaluate any such request and notify you if any additional controls to address adverse effects to historic properties are necessary.

Step 2 *Have prior professional cultural resource surveys or other evaluations determined that historic properties do not exist, or have prior disturbances precluded the existence of historic properties?*

If you are installing a stormwater control that requires subsurface earth disturbance, you must next determine if no historic properties exist on your site based on prior professional cultural resource surveys or other evaluations, or if the existence of historic properties has been precluded because of prior earth disturbances.

If prior to your project it has already been determined that no historic properties exist at your site based on available information, including information that may be provided by your applicable SHPO, THPO, or other Tribal representative, then you may indicate this on your NOI, and no further screening steps are necessary. Similarly, if prior earth disturbances have eliminated the possibility that historic properties exist on your site, you may indicate this on your NOI, and no further screening steps are necessary. After submitting your NOI, and during the 14-day waiting period, the SHPO, THPO, or other Tribal representative may request that EPA hold up authorization based on concerns about potential adverse effects to historic properties. EPA will evaluate any such request and notify you if any additional measures to address adverse effects to historic properties are necessary.

If neither of these circumstances exists for your project, you must proceed to Step 3.

Step 3 *If you are installing any stormwater controls that require subsurface earth disturbance, you must determine if these activities will have an effect on historic properties.*

If your answer to the question in Step 2 is "no", then you must assess whether your earth-disturbing activities related to the installation of stormwater controls will have an effect on historic properties. This assessment may be based on historical sources, knowledge of the area, an assessment of the types of earth-disturbing activities you are engaging in, considerations of any controls and/or management practices you will adopt to ensure that your stormwater control-related earth-disturbing activities will not have an effect on historic properties, and any other relevant factors. If you determine based on this assessment that earth disturbances related to the installation of your stormwater controls will have no effect on historic properties, you may indicate this on your NOI, and document the basis for your determination in your SWPPP, and no further screening steps are necessary. After submitting your NOI, and during the 14-day waiting period, the SHPO, THPO, or other Tribal representative may request that EPA hold up authorization based on concerns about potential adverse effects to historic properties. EPA will evaluate any such request and notify you if any further processes are necessary including any additional measures to address adverse effects to historic properties are necessary.

If none of the circumstances in Steps 1 - 3 exist for your project, you must proceed to Step 4.

Step 4: *If you are installing any stormwater controls that require subsurface earth disturbance and you have not satisfied the conditions in Steps 1 - 3, you must contact and consult with the appropriate historic preservation authorities.*

Where you are installing stormwater controls that require subsurface earth disturbance, and you cannot determine in Step 3 that these activities will have no effect on historic properties, then you must contact the relevant SHPO, THPO, or other Tribal representative to request their views as to the likelihood that historic properties are potentially present on your site and may be impacted by the installation of these controls.

> *Note: Addresses for SHPOs may be found at https://ncshpo.org/directory/, and addresses for THPOs may be found at https://grantsdev.cr.nps.gov/THPO_Review/index.cfm. If a Tribe does not have a THPO, you should contact the appropriate Tribal government office designated by the Tribe for this purpose.*

You must submit the following minimum information in order to properly initiate your request for information:

1. Project name (*i.e.*, the name or title most commonly associated with your project);
2. A narrative description of the project;
3. Name, address, phone and fax number, and email address (if available) of the operator;
4. Most recent U.S. Geological Survey (USGS) map section (7.5 minute quadrangle) showing actual project location and boundaries clearly indicated; and
5. Sections of the SWPPP site map (see Part 7.2.4) that show locations where stormwater controls that will cause subsurface earth disturbance will be installed (see Step 1).

Without submitting this minimum information, you will not have been considered to have properly initiated your request. You will need to provide the SHPO, THPO, or other Tribal representative **a minimum of 15 calendar days** after they receive these materials to respond to your request for information about your project.

If you do not receive a response within 15 calendar days after receipt by the SHPO, THPO, or other Tribal representative of your request, then you may indicate this on your NOI, and no further screening steps are necessary. Or, if the applicable SHPO, THPO, or other Tribal representative responds to your request with an indication that no historic properties will be affected by the installation of stormwater controls at your site, then you may indicate this on your NOI, and no further screening steps are necessary. After submitting your NOI, and during the 14-day waiting period, the SHPO, THPO, or other Tribal representative may request that EPA hold up authorization based on concerns about potential adverse effects to historic properties. EPA will evaluate any such request and notify you if any further processes are necessary including any additional measures to address adverse effects to historic properties are necessary.

If within 15 calendar days of receipt of your request the applicable SHPO, THPO, or other Tribal representative responds with a request for additional information or for further consultation regarding appropriate measures for treatment or mitigation of effects on historic properties caused by the installation of stormwater controls on your site, you must comply with this request and proceed to Step 5.

Step 5: *Consultation with applicable consulting parties.*

If, following your discussions with the appropriate historic preservation authorities in Step 4, the applicable SHPO, THPO, Tribal representative, or any other consulting party requests additional information or further consultation, you must respond with such information or consult to determine impacts to historic properties that may be caused by the installation of stormwater controls on your site and appropriate measures for treatment or mitigation of such impacts. If as a result of your discussions with the applicable SHPO, THPO, Tribal representative, or any other

consulting party, you enter into, and comply with, a written agreement regarding treatment and/or mitigation of impacts on your site, then you may indicate this on your NOI, and no further screening steps are necessary.

If, however, agreement on an appropriate treatment or mitigation plan cannot be reached between you and the SHPO, THPO, Tribal representative, or any other consulting party within 30 days of your response to the SHPO, THPO, Tribal representative, or any other consulting party's request for additional information or further consultation, you may submit your NOI, but you must indicate that you have not negotiated measures to avoid or mitigate such effects. You must also include in your SWPPP the following documentation:

1. Copies of any written correspondence between you and the SHPO, THPO, Tribal representative, or any other consulting party; and
2. A description of any significant remaining disagreements as to mitigation measures between you and the SHPO, THPO, Tribal representative, or any other consulting party.

After submitting your NOI, and during the 14-day waiting period, the SHPO, THPO, ACHP, Tribal representative, or any other consulting party may request that EPA place a hold on authorization based upon concerns regarding potential adverse effects to historic properties. EPA, in coordination with the ACHP, will evaluate any such request and notify you if any further processes are necessary including any additional measures to address adverse effects to historic properties are necessary.

Appendix F – Buffer Requirements.

The purpose of this appendix is to assist you in complying with the requirements in Part 2.2.1 of the permit regarding the establishment of natural buffers and/or equivalent sediment controls. This appendix is organized as follows:

F.1 SITES THAT ARE REQUIRED TO PROVIDE AND MAINTAIN NATURAL BUFFERS AND/OR EQUIVALENT EROSION AND SEDIMENT CONTROLS 2
F.2 COMPLIANCE ALTERNATIVES AND EXCEPTIONS 3
F.2.1 Compliance Alternatives 3
F.2.2 Exceptions to the Compliance Alternatives 3
F.2.3 Requirements for Providing and Maintaining Natural Buffers 4
F.2.4 Guidance for Providing the Equivalent Sediment Reduction as a 50-foot Buffer 7
F.3 SMALL RESIDENTIAL LOT COMPLIANCE ALTERNATIVES 12
F.3.1 Small Residential Lot Compliance Alternative Eligibility 12
F.3.2 Small Residential Lot Compliance Alternatives 12

F.1 SITES THAT ARE REQUIRED TO PROVIDE AND MAINTAIN NATURAL BUFFERS AND/OR EQUIVALENT EROSION AND SEDIMENT CONTROLS

The requirement in Part 2.2.1 to provide and maintain natural buffers and/or equivalent erosion and sediment controls applies for any discharges to waters of the U.S. located within 50 feet of your site's earth disturbances. If the receiving water is not located within 50 feet of earth-disturbing activities, Part 2.2.1 does not apply. See Figure F – 1.

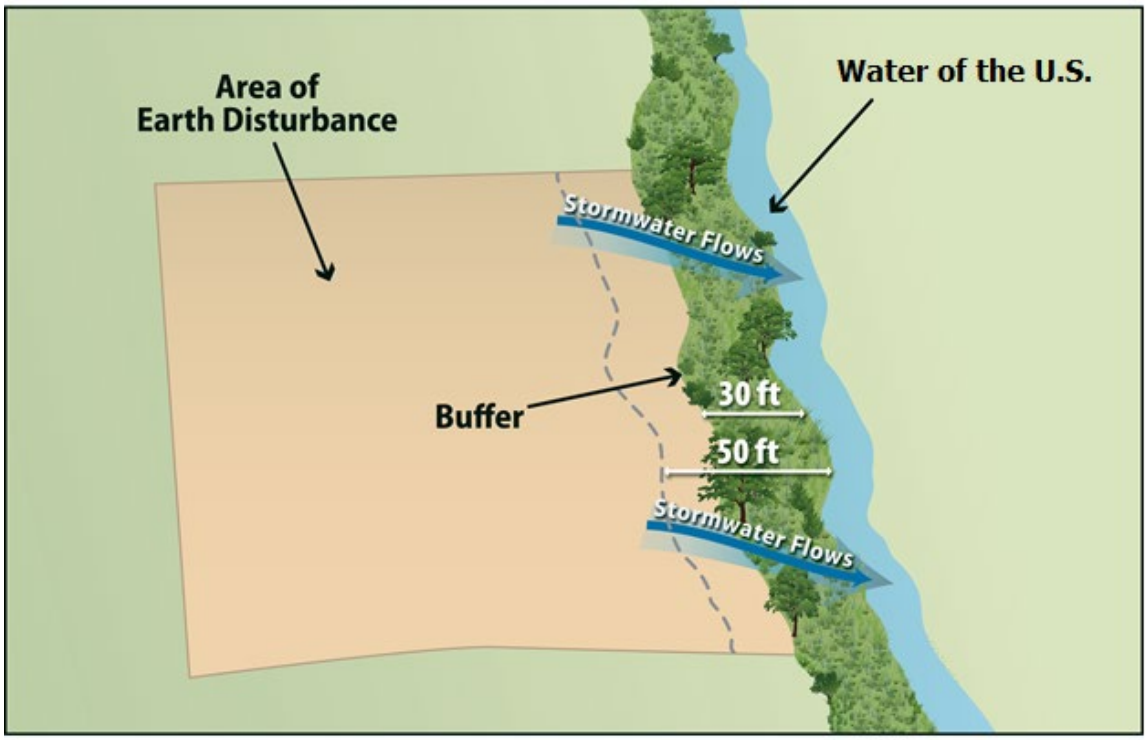


Figure F-1 Example of earth-disturbing activities within 50 feet of a water of the U.S.

F.2 COMPLIANCE ALTERNATIVES AND EXCEPTIONS

F.2.1 Compliance Alternatives

If Part 2.2.1 applies to your site, you have three compliance alternatives from which you can choose, unless you qualify for any of the exceptions (see below and Part 2.2.1.a):

1. Provide and maintain a 50-foot undisturbed natural buffer; or
2. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
3. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

The compliance alternative selected must be maintained throughout the duration of permit coverage.

See Part F.2.2 below for exceptions to the compliance alternatives.

See Part F.2.3 for requirements applicable to providing and maintaining natural buffers under compliance alternatives 1 and 2 above.

See Part F.2.4 for requirements applicable to providing erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer under compliance alternatives 2 and 3 above.

F.2.2 Exceptions to the Compliance Alternatives

The following exceptions apply to the requirement to implement one of the Part 2.2.1.a compliance alternatives (see also Part 2.2.1.b):

- The following disturbances are exempt from the requirements Part 2.2.1 and this Appendix[1]:
  - Construction approved under a CWA Section 404 permit; or
  - Construction of a water-dependent structure or water access areas *(e.g., pier, boat ramp, trail)*.
- If there is no discharge of stormwater to waters of the U.S. through the area between the disturbed portions of the site and any waters of the U.S. located within 50 feet of your site, you are not required to comply with the requirements in Part 2.2.1 and this Appendix. This includes situations where you have implemented controls measures, such as a berm or other barrier, that will prevent such discharges.
- Where no natural buffer exists due to preexisting development disturbances *(e.g., structures, impervious surfaces)* that occurred prior to the initiation of planning for the current development of the site, you are not required to comply with the requirements in Part 2.2.1 and this Appendix.
  Where some natural buffer exists but portions of the area within 50 feet of the receiving water are occupied by preexisting development disturbances, you are

[1] This exemption does not apply, however, to disturbances within 50 feet of a receiving water that are adjacent to the disturbances listed here (i.e., construction permitted under CWA Section 404, or construction of a water-dependent structure or water access area) and that are covered by this permit.

required to comply with the requirements in Part 2.2.1 and this Appendix. For the purposes of calculating the sediment load reduction for either compliance alternative 2 or 3, you are not expected to compensate for the reduction in buffer function that would have resulted from the area covered by these preexisting disturbances. Clarity about how to implement the compliance alternatives for these situations is provided in F.2.3 and F.2.4 below.

If during your project, you will disturb any portion of these preexisting disturbances, the area removed will be deducted from the area treated as a "natural buffer."

- For "linear construction sites" (see Appendix A), you are not required to comply with this requirement if site constraints *(e.g., limited right-of-way)* make it infeasible to implement one of the Part 2.2.1.a compliance alternatives, provided that, to the extent feasible, you limit disturbances within 50 feet of any waters of the U.S. and/or you provide supplemental erosion and sediment controls to treat stormwater discharges from earth disturbances within 50 feet of the receiving water You must also document in your SWPPP your rationale for why it is infeasible for you to implement one of the Part 2.2.1.a compliance alternatives, and describe any buffer width retained and supplemental erosion and sediment controls installed.
- For "small residential lot" construction *(i.e., a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre),* you have the option of complying with one of the "small residential lot" compliance alternatives in Part F.3 of this appendix.

Note that you must document in your SWPPP if any disturbances related to any of the above exceptions occurs within the buffer area on your site.

F.2.3 Requirements for Providing and Maintaining Natural Buffers

This part of the appendix applies to you if you choose compliance alternative 1 (50-foot buffer), compliance alternative 2 (a buffer of < 50 feet supplemented by additional erosion and sediment controls that achieve the equivalent sediment load reduction as the 50-foot buffer), or if you are providing a buffer in compliance with one of the "small residential lot" compliance alternatives in Part F.3.

Buffer Width Measurement

Where you are retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:

1. The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
2. The edge of the stream or river bank, bluff, or cliff, whichever is applicable.

Refer to Figures F – 2 and F - 3. You may find that specifically measuring these points is challenging if the flow path of the receiving water changes frequently, thereby causing the measurement line for the buffer to fluctuate continuously along the path of the waterbody. Where this is the case, EPA suggests that rather than measuring each change or deviation along the water's edge, it may be easier to select regular intervals

from which to conduct your measurement. For instance, you may elect to conduct your buffer measurement every 5 to 10 feet along the length of the water.

Additionally, note that if earth-disturbing activities will take place on both sides of a receiving water that flows through your site, to the extent that you are establishing a buffer around this water, it must be established on both sides. For example, if you choose compliance alternative 1, and your project calls for disturbances on both sides of a small stream, you would need to retain the full 50 feet of buffer on both sides of the water. However, if your construction activities will only occur on one side of the stream, you would only need to retain the 50-foot buffer on the side of the stream where the earth-disturbance will occur.

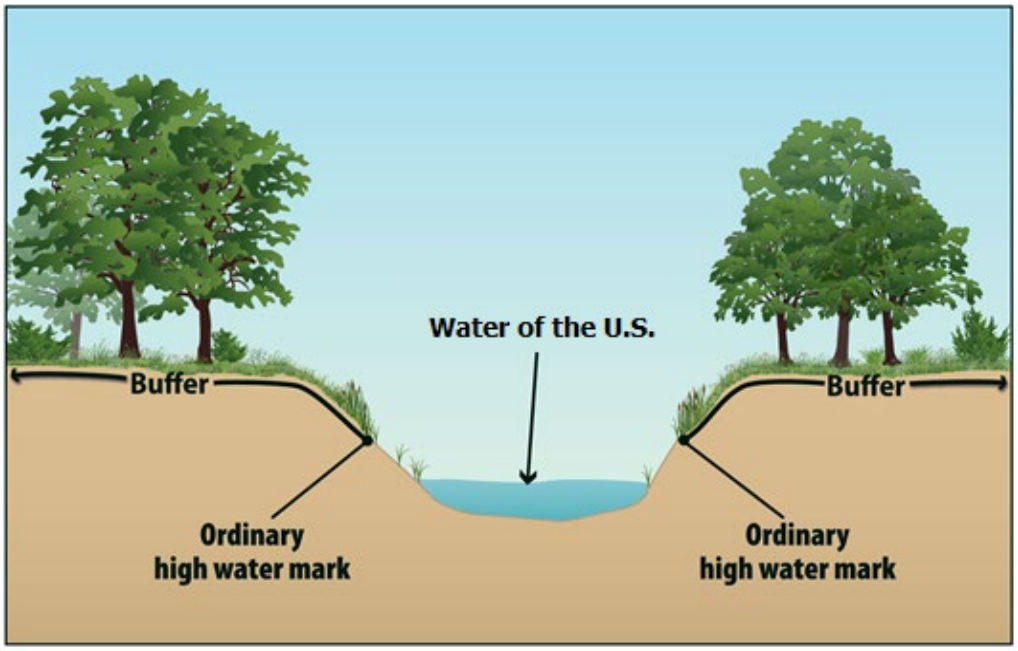


Figure F-2 Buffer measurement from the ordinary high water mark of the water body, as indicated by a clear natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, and/or the presence of litter/debris.

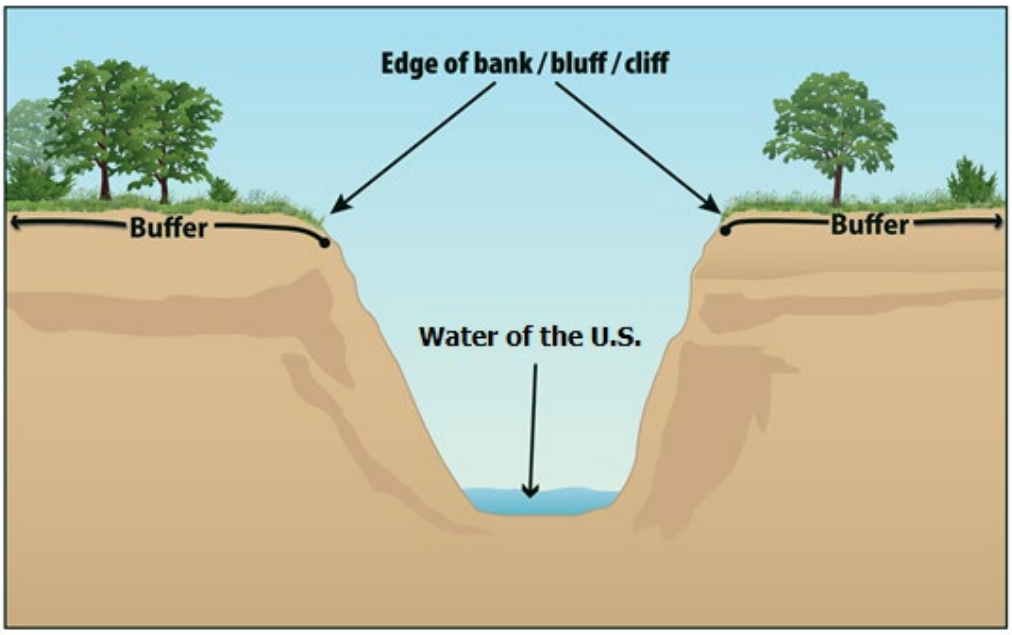


Figure F-3 Buffer measurement from the edge of the bank, bluff, or cliff, whichever is applicable.

Limits to Disturbance Within the Buffer

You are considered to be in compliance with the requirement to provide and maintain a natural buffer if you retain and protect from construction activities the natural buffer that existed prior to the commencement of construction. If the buffer area contains no vegetation prior to the commencement of construction (e.g., sand or rocky surface), you are not required to plant vegetation. As noted above, any preexisting structures or impervious surfaces may occur in the natural buffer provided you retain and protect from disturbance the buffer areas outside of the preexisting disturbance.

To ensure that the water quality protection benefits of the buffer are retained during construction, you are prohibited from conducting any earth-disturbing activities within the buffer during permit coverage. In furtherance of this requirement, **prior to commencing earth-disturbing activities on your site, you must delineate, and clearly mark off, with flags, tape, or a similar marking device, the buffer area on your site.** The purpose of this requirement is to make the buffer area clearly visible to the people working on your site so that unintended disturbances are avoided.

While you are not required to enhance the quality of the vegetation that already exists within the buffer, you are encouraged to do so where such improvements will enhance the water quality protection benefits of the buffer. (Note that any disturbances within the buffer related to buffer enhancement are permitted and do not constitute construction disturbances.) For instance, you may want to target plantings where limited vegetation exists, or replace existing vegetation where invasive or noxious plant species (see http://plants.usda.gov/java/noxiousDriver) have taken over. In the case of invasive or noxious species, you may want to remove and replace them with a diversity of native trees, shrubs, and herbaceous plants that are well-adapted to the climatic, soil, and hydrologic conditions on the site. You are also encouraged to limit the removal of naturally deposited leaf litter, woody debris, and other biomass, as this material contributes to the ability of the buffer to retain water and filter pollutants.

If a portion of the buffer area adjacent to the receiving water is owned by another party and is not under your control, you are only required to retain and protect from construction activities the portion of the buffer area that is under your control. For example, if you comply with compliance alternative 1 (provide and maintain a 50-foot buffer), but 10 feet of land immediately adjacent to the receiving water is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you must only retain and protect from construction activities the 40-foot buffer area that occurs adjacent to the property on which your construction activities are taking place. EPA would consider you to be in compliance with this requirement regardless of the activities that are taking place in the 10-foot area that is owned by a different party than the land on which your construction activities are taking place that you have no control over.

Discharges to the Buffer

You must ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls (*for example, you must comply with the Part 2.2.3 requirement to install sediment controls along any perimeter areas of the site that will receive pollutant discharges*), **and if necessary to prevent erosion caused by stormwater flows within the buffer, you must use velocity dissipation devices**. The purpose of this requirement is to decrease the rate of stormwater flow and encourage infiltration so that the pollutant filtering functions of the buffer will be achieved. To comply with this requirement, construction operators typically will use devices that physically dissipate stormwater flows so that the discharge entering the buffer is spread out and slowed down.

SWPPP Documentation

You are required to document in your SWPPP the natural buffer width that is retained. For example, if you are complying with alternative 1, you must specify in your SWPPP that you are providing a 50-foot buffer. Or, if you will be complying with alternative 2, you must document the reduced width of the buffer you will be retaining (and you must also describe the erosion and sediment controls you will use to achieve an equivalent sediment reduction, as required in Part F.2.4 below). Note that you must also show any buffers on your site map in your SWPPP consistent with Part 7.2.4.j. Additionally, if any disturbances related to the exceptions in Part F.2.2 occur within the buffer area, you must document this in the SWPPP.

F.2.4 Guidance for Providing the Equivalent Sediment Reduction as a 50-foot Buffer

This part of the appendix applies to you if you choose compliance alternative 2 (provide and maintain a buffer that is less than 50 feet that is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot buffer) or compliance alternative 3 (implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot buffer).

Determine Whether it is Feasible to Provide a Reduced Buffer

EPA recognizes that there will be a number of situations in which it will be infeasible to provide and maintain a buffer of any width. While some of these situations may exempt you from the buffer requirement entirely (see F.2.2), if you do not qualify for one of these exemptions, there still may be conditions or circumstances at your site that make it infeasible to provide a natural buffer. For example, there may be sites where a significant portion of the property on which the earth-disturbing activities will occur is located within the buffer area, thereby precluding the retention of natural buffer areas.

Therefore, you should choose compliance alternative 2 if it is feasible for you to retain some natural buffer on your site. (Note: For any buffer width retained, you are required to comply with the requirements in Part F.2.3, above, concerning the retention of vegetation and restricting earth disturbances.) Similarly, if you determine that it is infeasible to provide a natural buffer of any size during construction, you should choose alternative 3.

Design Controls That Provide Equivalent Sediment Reduction as 50-foot Buffer

You must next determine what additional controls must be implemented on your site that, alone or in combination with any retained natural buffer, achieve a reduction in sediment equivalent to that achieved by a 50-foot buffer.

Note that if only a portion of the natural buffer is less than 50 feet, you are only required to implement erosion and sediment controls that achieve the sediment load reduction equivalent to the 50-foot buffer for discharges through that area. You would not be required to provide additional treatment of stormwater discharges that flow through 50 feet or more of natural buffer. See Figure F-4.

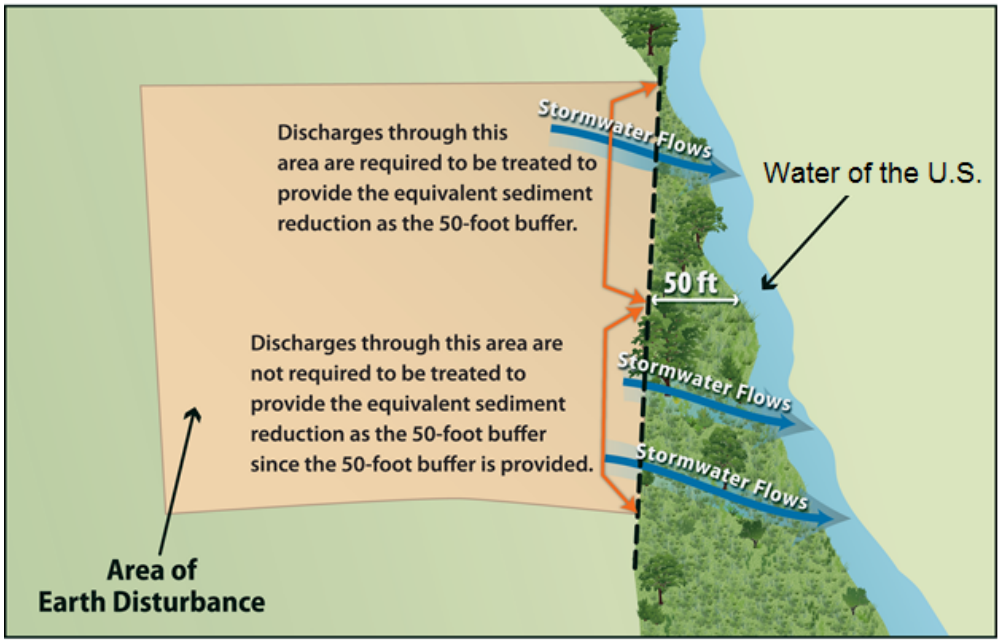


Figure F-4 Example of how to comply with the requirement to provide the equivalent sediment reduction when only a portion of your earth-disturbances discharge to a buffer of less than 50-feet.

Steps to help you meet compliance alternative 2 and 3 requirements are provided below.

Step 1 - Estimate the Sediment Reduction from the 50-foot Buffer

In order to design controls that match the sediment removal efficiency of a 50-foot buffer, you first need to know what this efficiency is for your site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of erosion and sediment controls used to reduce the discharge of sediment prior to the buffer. EPA has simplified this calculation by developing buffer performance tables covering a range of vegetation and soil types for the areas covered by the CGP. See

Attachment 1 of this Appendix, Tables F-8 through F-15. Note: buffer performance values in Tables F-8 through F-15 represent the percent of sediment captured through the use of perimeter controls (e.g., silt fences) and 50-foot buffers at disturbed sites of fixed proportions and slopes.[2]

Using Tables F-8 through F-15 (see Attachment 1 of this Appendix), you can determine the sediment removal efficiency of a 50-foot buffer for your geographic area by matching the vegetative cover type that best describes your buffer area and the type of soils that predominate at your site. For example, if your site is located in Massachusetts (Table F-9), and your buffer vegetation corresponds most closely with that of tall fescue grass, and the soil type at your site is best typified as sand, your site's sediment removal efficiency would be 81 percent.

In this step, you should choose the vegetation type in the tables that most closely matches the vegetation that would exist naturally in the buffer area on your site regardless of the condition of the buffer. However, because you are not required to plant any additional vegetation in the buffer area, in determining what controls are necessary to meet this sediment removal equivalency in Step 2 below, you will be able to take credit for this area as a fully vegetated "natural buffer."

Similarly, if a portion of the buffer area adjacent to the receiving water is owned by another party and is not under your control, you can treat the area of land not under your control as having the equivalent vegetative cover and soil type that predominates on the portion of the property on which your construction activities are occurring.

For example, if your earth-disturbances occur within 50 feet of a receiving water, but the 10 feet of land immediately adjacent to the receiving water is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you can treat the 10 foot area adjacent to the stream as having the equivalent soil and vegetation type that predominates in

[2] EPA used the following when developing the buffer performance tables:

- The sediment removal efficiencies are based on the U.S. Department of Agriculture's RUSLE2 ("Revised Universal Soil Loss Equation 2") model for slope profiles using a 100-foot long denuded slopes.
- Sediment removal was defined as the annual sediment delivered at the downstream end of the 50-foot natural buffer (tons/yr/acre) divided by the annual yield from denuded area (tons/yr/acre).
- As perimeter controls are also required by the CGP, sediment removal is in part a function of the reduction due to a perimeter control (i.e., silt fence) located between the disturbed portion of the site and the upstream edge of the natural buffer and flow traveling through a 50-foot buffer of undisturbed natural vegetation.
- It was assumed that construction sites have a relatively uniform slope without topographic features that accelerate the concentration for erosive flows.
- It was assumed that vegetation has been removed from the disturbed portion of the site and a combination of cuts and fills have resulted in a smooth soil surface with limited retention of near-surface root mass.

To represent the influence of soil, EPA analyzed 11 general soil texture classifications in its evaluation of buffer performance. To represent different types of buffer vegetation, EPA evaluated 4 or more common vegetative types for each State/Territory covered under the permit. For each vegetation type evaluated, EPA considered only permanent, non-grazed, and non-harvested vegetation, on the assumption that a natural buffer adjacent to the receiving water will typically be undisturbed. EPA also evaluated slope steepness and found that sediment removal efficiencies present in Tables G-8 through G-15 are achievable for slopes that are less than nine percent.

the 40 foot area under your control. You would then make the same assumption in Step 2 for purposes of determining the equivalent sediment removal.

Alternatively, you may do your own calculation of the effectiveness of the 50-foot buffer based upon your site-specific conditions, and may use this number as your sediment removal equivalency standard to meet instead of using Tables F-8 through F-15. This calculation must be documented in your SWPPP.

Step 2 - Design Controls That Match the Sediment Removal Efficiency of the 50-foot Buffer

Once you determine the estimated sediment removal efficiency of a 50-foot buffer for your site in Step 1, you must next select stormwater controls that will provide an equivalent sediment load reduction. These controls can include the installation of a single control, such as a sediment pond or additional perimeter controls, or a combination of stormwater controls. Whichever control(s) you select, you must demonstrate in your SWPPP that the controls will provide at a minimum the same sediment removal capabilities as a 50-foot natural buffer (Step 1). You may take credit for the removal efficiencies of your required perimeter controls in your calculation of equivalency, because these were included in calculating the buffer removal efficiencies in Tables F-8 through F-15. (Note: You are reminded that the controls must be kept in effective operating condition until you complete final stabilization on the disturbed portions of the site discharging to the receiving water)

To make the determination that your controls and/or buffer area achieve an equivalent sediment load reduction as a 50-foot buffer, you should use a model or other type of calculation. As mentioned above, there are a variety of models available that can be used to support your calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other models. A couple of examples are provided in Attachment 3 to help illustrate how this determination could be made.

If you retain a buffer of less than 50 feet, you may take credit for the removal that will occur from the reduced buffer and only need to provide additional controls to make up the difference between the removal efficiency of a 50 foot buffer and the removal efficiency of the narrower buffer. For example, if you retain a 30 foot buffer, you can account for the sediment removal provided by the 30 foot buffer retained, and you will only need to design controls to make up for the additional removal provided by the 20 feet of buffer that is not being provided. To do this, you would plug the width of the buffer that is retained into RUSLE or another model, along with other stormwater controls that will together achieve a sediment reduction equivalent to a natural 50-foot buffer.

As described in Step 1 above, you can take credit for the area you retained as a "natural buffer" as being fully vegetated, regardless of the condition of the buffer area.

For example, if your earth-disturbances occur 30 feet from a receiving water, but the 10 feet of land immediately adjacent to the receiving water is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you can treat the 10-foot area as a natural buffer, regardless of the activities that are taking place in the area. Therefore, you can assume (for purposes of your equivalency calculation) that your site is providing the sediment removal equivalent of a 30-foot buffer, and you will only need to design controls to make up for the additional removal provided by the 20-foot of buffer that is not being provided.

Step 3 - Document How Site-Specific Controls Will Achieve the Sediment Removal Efficiency of the 50-foot Buffer

In Steps 1 and 2, you determined both the expected sediment removal efficiency of a 50-foot buffer at your site, and you used this number as a performance standard to design controls to be installed at your site, which alone or in combination with any retained natural buffer, achieves the expected sediment removal efficiency of a 50-foot buffer at your site. The final step is to document in your SWPPP the information you relied on to calculate the equivalent sediment reduction as an undisturbed natural buffer.

EPA will consider your documentation to be sufficient if it generally meets the following:

- For Step 1, refer to the table in Attachment 1 that you used to derive your estimated 50-foot buffer sediment removal efficiency performance. Include information about the buffer vegetation and soil type that predominate at your site, which you used to select the sediment load reduction value in Tables F-8 through F-15. Or, if you conducted a site-specific calculation for sediment removal efficiency, provide the specific removal efficiency, and the information you relied on to make your site-specific calculation.
- For Step 2, (1) Specify the model you used to estimate sediment load reductions from your site; and (2) the results of calculations showing how your controls will meet or exceed the sediment removal efficiency from Step 1.

If you choose compliance alternative 3, you must also include in your SWPPP a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size.

F.3 SMALL RESIDENTIAL LOT COMPLIANCE ALTERNATIVES

EPA has developed two additional compliance alternatives applicable only to "small residential lots" that are unable to provide and maintain a 50 foot buffer.

A **small residential lot** is a lot or grouping of lots being developed for residential purposes that will disturb less than 1 acre of land, but that is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

The following steps describe how a small residential lot operator would achieve compliance with one these 2 alternatives.

F.3.1 Small Residential Lot Compliance Alternative Eligibility

In order to be eligible for the small residential lot compliance alternatives, the following conditions must be met:

a. The lot or grouping of lots meets the definition of "small residential lot"; and

b. The operator must follow the guidance for providing and maintaining a natural buffer in Part F.2.3 of this Appendix, including:

i. Ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls, and use velocity dissipation devices if necessary to prevent erosion caused by stormwater within the buffer;

ii. Document in the SWPPP the natural buffer width retained on the property, and show the buffer boundary on your site plan; and

iii. Delineate, and clearly mark off, with flags, tape, or other similar marking device, all natural buffer areas.

F.3.2 Small Residential Lot Compliance Alternatives

You must next choose from one of two small residential lot compliance alternatives and implement the stormwater control practices associated with that alternative.

Note: The compliance alternatives provided below are not mandatory. Operators of small residential lots can alternatively choose to comply with the any of the options that are available to other sites in Part 2.2.1.a and F.2.1 of this Appendix.

Small Residential Lot Compliance Alternative 1

Alternative 1 is a straightforward tiered-technology approach that specifies the controls that a small residential lot must implement based on the buffer width retained. To meet the requirements of small residential lot compliance alternative 1, you must implement the controls specified in Table F–1 based on the buffer width to be retained. See footnote 3, below, for a description of the controls you must implement.

For example, if you are an operator of a small residential lot that will be retaining a 35-foot buffer and you choose Small Residential Lot Compliance Alternative 1, you must implement double perimeter controls between earth disturbances and the receiving water

In addition to implementing the applicable control, you must also document in your SWPPP how you will comply with small residential lot compliance alternative 1.

Table F-1 Alternative 1 Requirements[3]

Retain 50-foot Buffer	Retain <50 and >30 foot Buffer	Retain ≤ 30 foot Buffer
No Additional Requirements	Double Perimeter Controls	Double Perimeter Controls and 7-Day Site Stabilization

Small Residential Lot Compliance Alternative 2

Alternative 2 specifies the controls that a builder of a small residential lot must implement based on both the buffer width retained and the site's sediment discharge risk. By incorporating the sediment risk, this approach may result in the implementation of controls that are more appropriate for the site's specific conditions.

Step 1 – Determine Your Site's Sediment Risk Level

To meet the requirements of Alternative 2, you must first determine your site's sediment discharge "risk level" based on the site's slope, location, and soil type. To help you to determine your site's sediment risk level, EPA developed five different tables for different slope conditions. You should select the table that most closely corresponds to your site's average slope.

For example, if your site's average slope is 7 percent, you should use Table G–4 to determine your site's sediment risk.

After you determine which table applies to your site, you must then use the table to determine the "risk level" (e.g., "low", "moderate", or "high") that corresponds to your site's location and predominant soil type.[4]

For example, based on Table F-3, a site located in New Hampshire with a 4 percent average slope and with predominately sandy clay loam soils would fall into the "moderate" risk level.

[3] **Description of Additional Controls Applicable to Small Residential Lot Compliance Alternatives 1 and 2:**

- **No Additional Requirements:** If you implement a buffer of 50 feet or greater, then you are not subject to any additional requirements. Note that you are required to install perimeter controls between the disturbed portions of your site and the buffer in accordance with Part 2.2.3.
- **Double Perimeter Control:** In addition to the reduced buffer width retained on your site, you must provide a double row of perimeter controls between the disturbed portion of your site and the receiving water spaced a minimum of 5 feet apart.
- **Double Perimeter Control and 7-Day Site Stabilization:** In addition to the reduced buffer width retained on your site and the perimeter control implemented in accordance with Part 2.2.3, you must provide a double row of perimeter controls between the disturbed portion of your site and the receiving water spaced a minimum of 5 feet apart, and you are required to complete the stabilization activities specified in Parts 2.2.14 within 7 calendar days of the temporary or permanent cessation of earth-disturbing activities.

[4] One source for determining your site's predominant soil type is the USDA's Web Soil Survey located at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

Table F-2 Risk Levels for Sites with Average Slopes of ≤ 3 Percent

Soil Type / Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
CNMI / Guam	Moderate	Moderate	Moderate	Moderate	High
Puerto Rico	Moderate	Moderate	Moderate	Moderate	High
Virgin Islands	Low	Moderate	Low	Moderate	Moderate
American Samoa	Moderate	Moderate	Moderate	Moderate	High
Massachusetts and New Hampshire	Low	Moderate	Low	Low	Moderate
Idaho	Low	Low	Low	Low	Low
New Mexico	Low	Low	Low	Low	Low
Washington D.C.	Low	Moderate	Low	Low	Moderate

Table F-3 Risk Levels for Sites with Average Slopes of > 3 Percent and ≤ 6 Percent

Soil Type / Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
CNMI / Guam	Moderate	Moderate	Moderate	Moderate	High
Puerto Rico	Moderate	Moderate	Moderate	Moderate	High
Virgin Islands	Moderate	Moderate	Moderate	Moderate	High
American Samoa	High	High	Moderate	High	High
Massachusetts and New Hampshire	Moderate	Moderate	Low	Moderate	High
Idaho	Low	Low	Low	Low	Low
New Mexico	Low	Low	Low	Low	Moderate
Washington D.C.	Moderate	Moderate	Moderate	Moderate	High

Table F-4 Risk Levels for Sites with Average Slopes of > 6 Percent and ≤ 9 Percent

Soil Type / Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
CNMI / Guam	Moderate	High	Moderate	High	High
Puerto Rico	Moderate	High	Moderate	Moderate	High
Virgin Islands	Moderate	Moderate	Moderate	Moderate	High
American Samoa	High	High	High	High	High
Massachusetts and New Hampshire	Moderate	Moderate	Moderate	Moderate	High
Idaho	Low	Low	Low	Low	Low
New Mexico	Low	Low	Low	Low	Moderate
Washington D.C.	Moderate	Moderate	Moderate	Moderate	High

Table F-5 Risk Levels for Sites with Average Slopes of > 9 Percent and ≤ 15 Percent

Soil Type / Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
CNMI / Guam	High	High	High	High	High
Puerto Rico	High	High	High	High	High
Virgin Islands	Moderate	High	Moderate	High	High
American Samoa	High	High	High	High	High
Massachusetts and New Hampshire	Moderate	Moderate	Moderate	Moderate	High
Idaho	Low	Low	Low	Low	Low
New Mexico	Low	Moderate	Low	Moderate	Moderate
Washington D.C.	Moderate	High	Moderate	Moderate	High

Table F-6 Risk Levels for Sites with Average Slopes of > 15 Percent

Soil Type / Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
CNMI / Guam	High	High	High	High	High
Puerto Rico	High	High	High	High	High
Virgin Islands	High	High	High	High	High
American Samoa	High	High	High	High	High
Massachusetts and New Hampshire	High	High	Moderate	High	High
Idaho	Low	Low	Low	Low	Moderate
New Mexico	Moderate	Moderate	Moderate	Moderate	High
Washington D.C.	High	High	Moderate	High	High

Step 2 – Determine Which Additional Controls Apply

Once you determine your site's "risk level", you must next determine the additional controls you need to implement on your site, based on the width of buffer you plan to retain. Table F-7 specifies the requirements that apply based on the "risk level" and buffer width retained. See footnote 3, above, for a description of the additional controls that are required.

For example, if you are the operator of a small residential lot that falls into the "moderate" risk level, and you decide to retain a 20-foot buffer, using Table F-7 you would determine that you need to implement double perimeter controls to achieve compliance with small residential lot compliance alternative 2.

You must also document in your SWPPP your compliance with small residential lot compliance alternative 2.

Table F-7. Alternative 2 Requirements[2]

Risk Level Based on Estimated Soil Erosion	Retain ≥ 50' Buffer	Retain <50' and >30' Buffer	Retain ≤30' and >10' Buffer	Retain ≤ 10' Buffer
Low Risk	No Additional Requirements	No Additional Requirements	Double Perimeter Control	Double Perimeter Control
Moderate Risk	No Additional Requirements	Double Perimeter Control	Double Perimeter Control	Double Perimeter Control and 7-Day Site Stabilization
High Risk	No Additional Requirements	Double Perimeter Control	Double Perimeter Control and 7-Day Site Stabilization	Double Perimeter Control and 7-Day Site Stabilization

ATTACHMENT 1

Sediment Removal Efficiency Tables[5]

EPA recognizes that very high removal efficiencies, even where theoretically achievable by a 50-foot buffer, may be very difficult to achieve in practice using alternative controls. Therefore in the tables below, EPA has limited the removal efficiencies to a maximum of 90%. Efficiencies that were calculated at greater than 90% are shown as 90%, and this is the minimum percent removal that must be achieved by alternative controls.

Table F-8 Estimated 50-foot Buffer Performance in Idaho*

	Estimated % Sediment Removal				
Type of Buffer Vegetation**	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Tall Fescue Grass	42	52	44	48	85
Medium-density Weeds	28	30	28	26	60
Low-density Warm-season Native Bunchgrass (i.e., Grama Grass)	25	26	24	24	55
Northern Mixed Prairie Grass	28	30	28	26	50
Northern Range Cold Desert Shrubs	28	28	24	26	50

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

Table F-9 Estimated 50-foot Buffer Performance in Massachusetts and New Hampshire*

	Estimated % Sediment Removal				
Type of Buffer Vegetation**	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Warm-season Grass (i.e., Switchgrass, Lemongrass)	79	90	90	90	90
Cool-season Dense Grass (Kentucky Bluegrass, Smooth Bromegrass, Timothy)	78	90	90	90	90
Tall Fescue Grass	76	90	81	89	90
Medium-density Weeds	66	76	60	72	66

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

[5] The buffer performances were calculated based on a denuded slope upgradient of a 50-foot buffer and a perimeter controls, as perimeter controls are a standard requirement (see Part 2.2.3).

Table F-10 Estimated 50-foot Buffer Performance in New Mexico*

	Estimated % Sediment Removal				
Type of Buffer Vegetation **	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Tall Fescue grass	71	85	80	86	90
Medium-density Weeds	56	73	55	66	78
Low-density Warm-season Native Bunchgrass (i.e., Grama Grass)	53	70	51	62	67
Southern Mixed Prairie Grass	53	71	52	63	50
Southern Range Cold Desert Shrubs	56	73	55	65	53

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

Table F-11 Estimated 50-foot Buffer Performance in Washington, DC*

	Estimated % Sediment Removal				
Type of Buffer Vegetation **	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Warm-season Grass (i.e., Switchgrass, Lemongrass)	82	90	90	90	90
Cool-season Dense Grass (Kentucky Bluegrass, Smooth Bromegrass, Timothy)	81	90	90	90	90
Tall Fescue Grass	79	90	83	89	90
Medium-density Weeds	71	79	66	75	74

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

Table F-12 Estimated 50-foot Buffer Performance in American Samoa*

	Estimated % Sediment Removal				
Type of Buffer Vegetation **	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Bahiagrass (Permanent cover)	82	90	90	90	83
Warm-season Grass (i.e., Switchgrass, Lemongrass)	82	90	90	90	85
Dense Grass	82	90	90	90	83
Tall Fescue Grass	82	89	82	89	79
Medium-density Weeds	70	73	62	75	59

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

Table F-13 Estimated 50-foot Buffer Performance in CNMI and Guam*

	Estimated % Sediment Removal				
Type of Buffer Vegetation **	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Bahiagrass (Permanent cover)	80	90	90	90	89
Warm-season Grass (i.e., Switchgrass, Lemongrass)	80	90	90	90	90
Dense Grass	79	90	90	90	89
Tall Fescue Grass	76	90	80	88	87
Medium-density Weeds	63	73	53	68	61

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

Table F-14 Estimated 50-foot Buffer Performance in Puerto Rico*

	Estimated % Sediment Removal				
Type of Buffer Vegetation**	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Bahiagrass (Permanent cover)	83	90	90	90	90
Warm-season Grass (i.e., Switchgrass, Lemongrass)	83	90	90	90	90
Dense Grass	83	90	90	90	90
Tall Fescue Grass	82	90	84	90	89
Medium-density Weeds	72	78	65	76	64

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

Table F-15 Estimated 50-foot Buffer Performance in Virgin Islands*

Type of Buffer Vegetation**	**Clay**	**Silty Clay Loam or Clay-Loam**	**Sand**	**Sandy Clay Loam, Loamy Sand or Silty Clay**	**Loam, Silt, Sandy Loam or Silt Loam**
Bahiagrass (Permanent cover)	85	90	90	90	90
Warm-season Grass (i.e., Switchgrass, Lemongrass)	86	90	90	90	90
Dense Grass	85	90	90	90	90
Tall Fescue Grass	85	90	88	90	89
Medium-density Weeds	75	77	71	78	63

* Applicable for sites with less than nine percent slope
** Characterization focuses on the under-story vegetation

ATTACHMENT 2

Using the Sediment Removal Efficiency Tables – Questions and Answers

- *What if my specific buffer vegetation is not represented in Tables F-8 through F-15?* Tables F-8 through F-15 provide a wide range of factors affecting buffer performance; however, there are likely instances where the specific buffer vegetation type on your site is not listed. If you do not see a description of the type of vegetation present at your site, you should choose the vegetation type that most closely matches the vegetation type on your site. You can contact your local Cooperative Extension Service Office (http://nifa.usda.gov/partners-and-extension-map) for assistance in determining the vegetation type in Tables F-8 through F-15 that most closely matches your site-specific vegetation.
- *What if there is high variability in local soils?* EPA recognizes that there may be a number of different soil type(s) on any given construction site. General soil information can be obtained from USDA soil survey reports (http://websoilsurvey.nrcs.usda.gov) or from individual site assessments performed by a certified soil expert. Tables F-8 through F-15 present eleven generic soil texture classes, grouping individual textures where EPA has determined that performance is similar. If your site contains different soil texture classes, you should use the soil type that best approximates the predominant soil type at your site.
- *What if my site slope is greater than 9 percent after final grade is reached?* As indicated in the buffer performance tables, the estimated sediment removal efficiencies are associated with disturbed slopes of up to 9 percent grade. Where your graded site has an average slope of greater than 9 percent, you should calculate a site-specific buffer performance.
- *How do I calculate my own estimates for sediment reduction at my specific site?* If you determine that it is necessary to calculate your own sediment removal efficiency using site-specific conditions (e.g., slopes at your site are greater than 9 percent), you can use a range of available models that are available to facilitate this calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other equivalent models.
- *What is my estimated buffer performance if my site location is not represented by Tables F-8 through F-15?* If your site is located in an area not represented by Tables F-8 through F-15, you should use the table that most closely approximates conditions at your site. You may instead choose to conduct a site-specific calculation of the buffer performance.
- *What if only a portion of my site drains to the buffer area?* If only a portion of your site drains to a receiving water, where that water is within 50 feet of your earth disturbances, you are only required to meet the equivalency requirement for the stormwater flows corresponding to those portions of the site. See Example 2 below for an example of how this is expected to work.

ATTACHMENT 3

Examples of How to Use the Sediment Removal Efficiency Tables

Example 1. Comparatively Wet Location (7.5 acre site located in Massachusetts)

The operator of a 7.5-acre construction site in Massachusetts has determined that it is infeasible to establish a buffer of any size on the site, and is now required to select and install controls that will achieve an equivalent sediment load reduction as that estimated in F-9 for their site conditions. The first step is to identify what percentage of eroded sediment is estimated to be retained from a 50-foot buffer. For this example, it is assumed that the site has a relatively uniform gentle slope (3 percent), so Table F-9 can be used to estimate the 50-foot buffer sediment load reduction. If the site's buffer vegetation is best typified by cool-season dense grass and the underlying soil is of a type best described as loamy sand, the 50-foot buffer is projected to capture 90 percent of eroded sediment from the construction site.

The second step is to determine what sediment controls can be selected and installed in combination with the perimeter controls already required to be implemented at the site (see Part 2.2.3), which will achieve the 90 percent sediment removal efficiency from Table F-9. For this example, using the RUSLE2 profile model, it was determined that installing a pair of shallow-sloped diversion ditches to convey runoff to a well-designed and maintained sediment basin provides 99 percent sediment removal. Because the estimated sediment reduction is greater than the required 90 percent that a 50-foot buffer provides, the operator will have met the buffer requirements. See Figure F-5. The operator could also choose a different set of controls, as long as they achieve at least a 90 percent sediment removal efficiency.

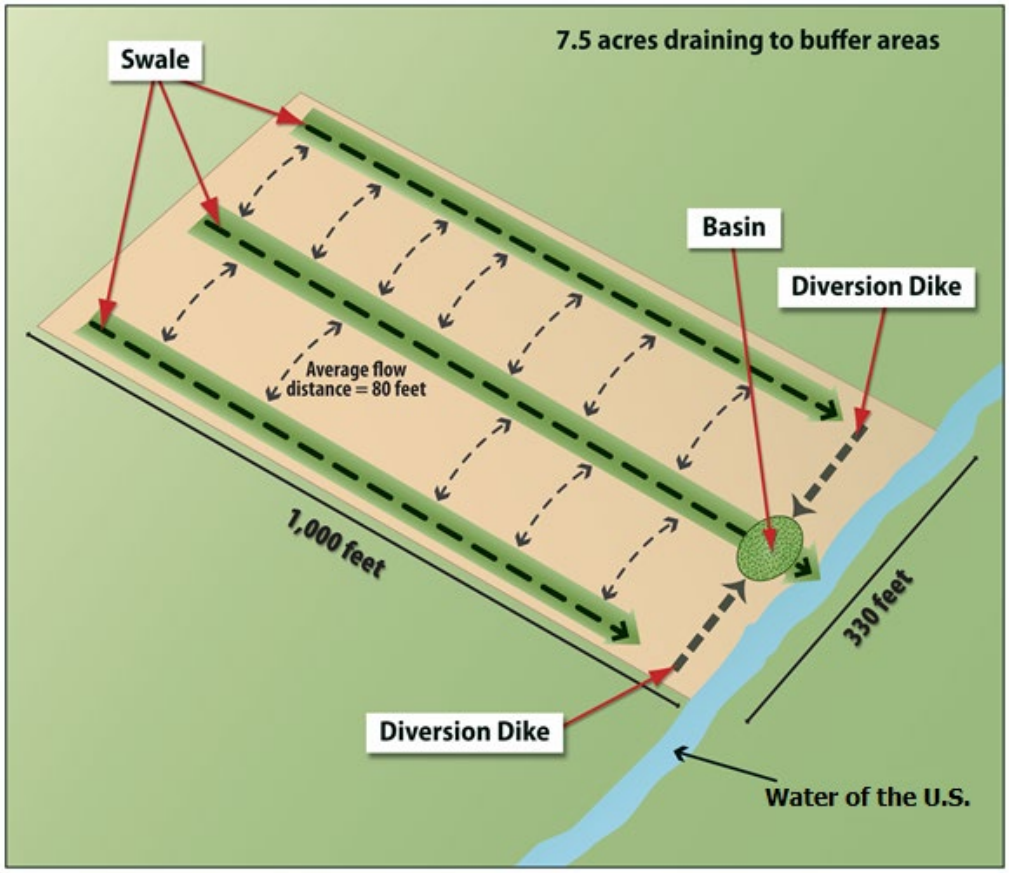


Figure F-5 Example 1 – Equivalent Sediment Load Reductions at a 7.5 ac Site in MA.

Example 2. Arid Location With Pre-existing Disturbances in the Natural Buffer (6.5 acre site located in New Mexico)

An operator of a site in New Mexico determines that it is not feasible to provide a 50-foot buffer, but a 28-foot buffer can be provided. Because the operator will provide a buffer that is less than 50 feet, the operator must determine which controls, in combination with the 28-foot buffer, achieve a sediment load reduction equivalent to the 50-foot buffer. In this example, the project will disturb 6.5 acres of land, but only 1.5 acres of the total disturbed area drains to the buffer area. Within the 28-foot buffer area is a preexisting concrete walkway. Similar to Example 1, the equivalence analysis starts with Step 1 in Part F.2.4 of this Appendix with a review of the New Mexico buffer performance (Table F-10). The operator determines that the predominate vegetation type in the buffer area is prairie grass, the soil type is similar to silt, and the site is of a uniform, shallow slope (e.g., 3 percent grade). Although the operator will take credit for the disturbance caused by the concrete walkway as a natural buffer in Step 2, here the operator can treat the entire buffer area as being naturally vegetated with prairie grass. Based on this information, the operator refers to Table F-10 to estimate that the 50-foot buffer would retain 50 percent of eroded soil.

The second step is to determine, based on the 50 percent sediment removal efficiency found in Table F-10, what sediment controls, in combination with the 28-foot buffer area, can be implemented to reduce sediment loads by 50 percent or more. The operator does not have to account the reduction in buffer function caused by the preexisting walkway, and can take credit for the entire 28-foot buffer being fully vegetated in the analysis. For this example, using the RUSLE2 profile model, the operator determined that installing a fiber roll barrier between the

silt fence (already required by Part 2.2.3) and the 28-foot buffer will achieve an estimated 84 percent sediment removal efficiency. See Figure F-6. Note that this operator is subject to the requirement in Part F.2.3 of this Appendix to ensure that discharges through the silt fence, fiber roll barrier, and 28-foot buffer do not cause erosion within the buffer. The estimated sediment reduction is greater than the required 50 percent; therefore the operator will have met the buffer alternative requirement.

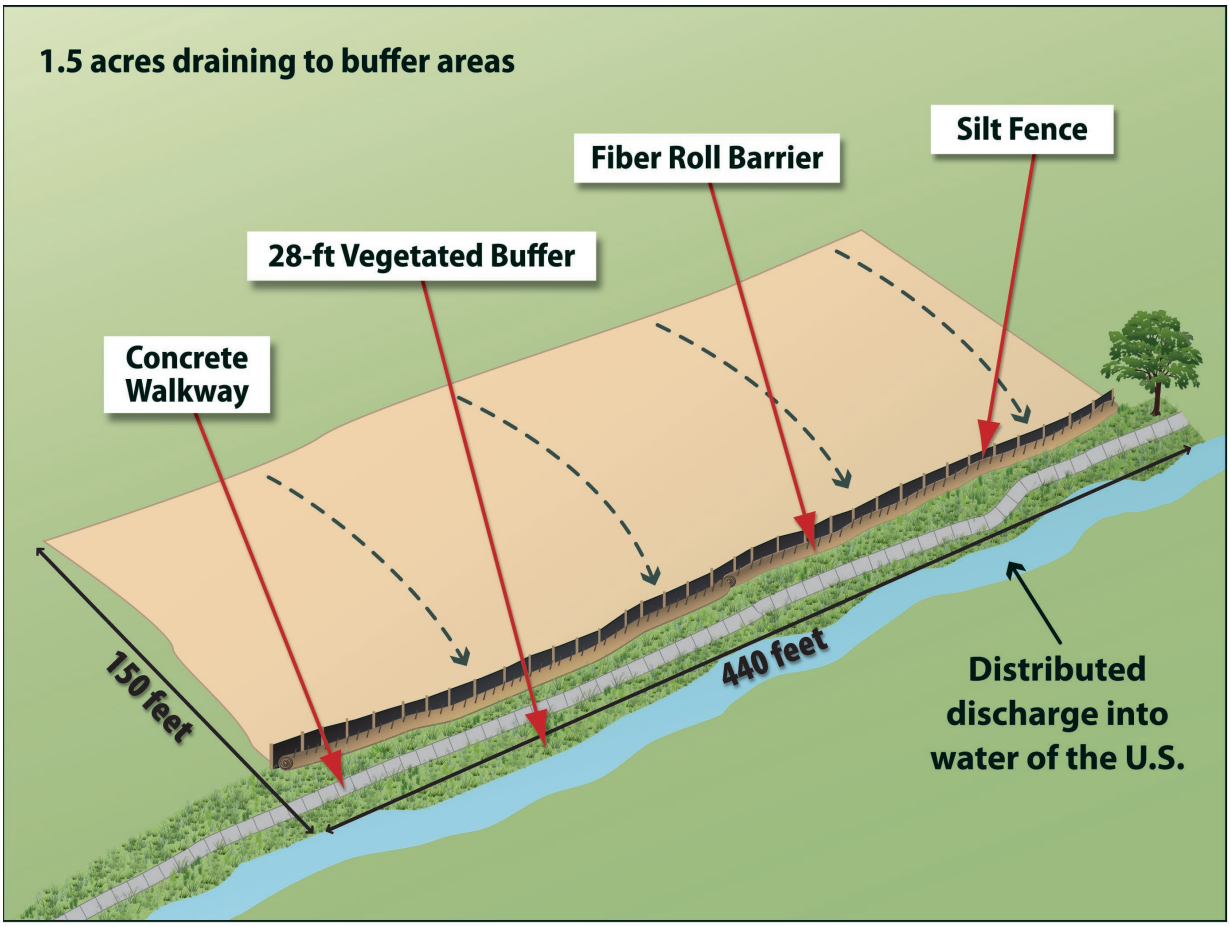


Figure F-6 Example 2 – Equivalent Sediment Load Reductions at a 6.5 ac Site in NM.

Appendix G - Standard Permit Conditions

Standard permit conditions in Appendix G are consistent with the general permit provisions required under 40 CFR 122.41.

G.1 Duty To Comply.

You must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

G.1.1 You must comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards, even if the permit has not yet been modified to incorporate the requirement.

G.1.2 Penalties for Violations of Permit Conditions: EPA and other federal agencies are required to adjust their maximum and minimum statutory civil penalty amounts through rulemaking by January 15 each year to account for inflation. EPA's annual rulemaking adjustments, codified in 40 C.F.R. § 19.4, are mandated by the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended through the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note). As such, the civil penalty amounts below may change in the future due to inflation. See 40 C.F.R. § 19.4 for the most up-to-date civil penalty amounts.

G.1.2.1 *Criminal Penalties.*

a. *Negligent Violations*. The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than two years, or both.

b. *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor morethan $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

c. *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, aperson shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision be subject to a fine of not more than $1,000,000 and can fined up to $2,000,000 for second or subsequent convictions.

d. *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

G.1.2.2 *Civil Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amount authorized by Section 309(d) of the Act, as adjusted pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990 (28 U.S.C. § 2461 note), and codified at 40 CFR § 19.4.

G.1.2.3 *Administrative Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

a. *Class I Penalty*. Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act of 1990 as amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note), and codified at 40 CFR § 19.4.

b. *Class II Penalty*. Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note), and codified at 40 CFR § 19.4.

G.2 Duty to Reapply.

If you wish to continue an activity regulated by this permit after the expiration date of this permit, you must apply for and obtain authorization as required by the new permit once EPA issues it.

G.3 Need to Halt or Reduce Activity Not a Defense.

It shall not be a defense for you in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

G.4 Duty to Mitigate.

You must take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

G.5 Proper Operation and Maintenance.

You must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by you to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the

operation of backup or auxiliary facilities or similar systems which are installed by you only when the operation is necessary to achieve compliance with the conditions of this permit.

G.6 Permit Actions.

This permit may be modified, revoked and reissued, or terminated for cause. Your filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

G.7 Property Rights.

This permit does not convey any property rights of any sort, or any exclusive privileges.

G.8 Duty to Provide Information.

You must furnish to EPA or an authorized representative (including an authorized contractor acting as a representative of EPA), within a reasonable time, any information that EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. You must also furnish to EPA or an authorized representative upon request, copies of records required to be kept by this permit.

G.9 Inspection and Entry.

You must allow EPA or an authorized representative (including an authorized contractor acting as a representative of EPA), upon presentation of credentials and other documents as may be required by law, to:

G.9.1 Enter upon your premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

G.9.2 Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

G.9.3 Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

G.9.4 Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

G.10 Monitoring and Records.

G.10.1 Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity.

G.10.2 You must retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date the permit expires or the date the permittee's authorization is terminated. This period may be extended by request of EPA at any time.

G.10.3 Records of monitoring information must include:

G.10.3.1 The date, exact place, and time of sampling or measurements;

G.10.3.2 The individual(s) who performed the sampling or measurements;

G.10.3.3 The date(s) analyses were performed

G.10.3.4 The individual(s) who performed the analyses;

G.10.3.5 The analytical techniques or methods used; and

G.10.3.6 The results of such analyses.

G.10.4 Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.

G.10.5 The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

G.11 Signatory Requirements.

G.11.1 All applications, including NOIs and NOTs, must be signed as follows:

G.11.1.1 For a corporation: By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

G.11.1.2 For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

G.11.1.3 For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

G.11.2 Your SWPPP (including changes to your SWPPP inspection reports), corrective action log, turbidity monitoring report, site inspection and dewatering inspection reports, and any other compliance documentation required under this permit, must be signed by a person described in Appendix G, Subsection G.11.1 above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

G.11.2.1 The authorization is made in writing by a person described in Appendix G, Subsection G.11.1;

G.11.2.2 The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental

matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

G.11.2.3 The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

G.11.3 Changes to Authorization. If an authorization under this permit is no longer accurate because a different operator has responsibility for the overall operation of the construction site, a new NOI must be submitted to EPA. See Table 1 in Part 1.4.3 of the permit. However, if the only change that is occurring is a change in contact information or a change in the facility's address, the operator need only make a modification to the existing NOI submitted for authorization.

G.11.4 Any person signing documents in accordance with Appendix G, Subsections G.11.1 or G.11.2 above must include the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G.11.5 For persons signing NOIs electronically, in addition to meeting other applicable requirements in Appendix G, Subsection G.11, such signatures must meet the same signature, authentication, and identity-proofing standards set forth at 40 CFR § 3.2000(b) for electronic reports (including robust second-factor authentication).

G.11.6 The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

G.12 Reporting Requirements.

G.12.1 Planned changes. You must give notice to EPA as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

G.12.1.1 The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

G.12.1.2 The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

G.12.2 Anticipated noncompliance. You must give advance notice to EPA of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

G.12.3 Transfers. This permit is not transferable to any person except after notice to EPA. Where a facility wants to change the name of the permittee, the original permittee (the first owner or operators) must submit a Notice of Termination pursuant to Part 8. The new

owner or operator must submit a Notice of Intent in accordance with Part 1.4 and Table 1. See also requirements in Appendix G, Subsections G.11.1 and G.11.2.

G.12.4 Monitoring reports. Monitoring results must be reported at the intervals specified elsewhere in this permit.

G.12.4.1 Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by EPA for reporting results of monitoring of sludge use or disposal practices.

G.12.4.2 If you monitor any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by EPA.

G.12.5 Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date.

G.12.6 Twenty-four hour reporting. In addition to reports required elsewhere in this permit:

G.12.6.1 You must report any noncompliance which may endanger health or the environment directly to the EPA Regional Office (see contacts at https://www2.epa.gov/national-pollutant-discharge-elimination-system-npdes/contact-us-stormwater#regional). Any information must be provided orally within 24 hours from the time you become aware of the circumstances. A written submission must also be provided within five days of the time you become aware of the circumstances. The written submission must contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

G.12.6.2 The following shall be included as information which must be reported within 24 hours under this paragraph.

a. Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR 122.41(m)(3)(ii))

b. Any upset which exceeds any effluent limitation in the permit

c. Violation of a maximum daily discharge limit for any numeric effluent limitation. (See 40 CFR 122.44(g).)

G.12.6.3 EPA may waive the written report on a case-by-case basis for reports under Appendix G, Subsection G.12.6.2 if the oral report has been received within 24 hours.

G.12.7 Other noncompliance. You must report all instances of noncompliance not reported under Appendix G, Subsections G.12.4, G.12.5, and G.12.6, at the time monitoring reports are submitted. The reports must contain the information listed in Appendix G, Subsection G.12.6.

G.12.8 Other information. Where you become aware that you failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Permitting Authority, you must promptly submit such facts or information.

G.13 Bypass.

G.13.1 Definitions.

G.13.1.1 Bypass means the intentional diversion of waste streams from any portion of a treatment facility See 40 CFR 122.41(m)(1)(i).

G.13.1.2 Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. See 40 CFR 122.41(m)(1)(ii).

G.13.2 Bypass not exceeding limitations. You may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Appendix G, Subsections G.13.3 and G.13.4. See 40 CFR 122.41(m)(2).

G.13.3 Notice.

G.13.3.1 Anticipated bypass. If you know in advance of the need for a bypass, you must submit prior notice, if possible at least ten days before the date of the bypass. See 40 CFR 122.41(m)(3)(i).

G.13.3.2 Unanticipated bypass. You must submit notice of an unanticipated bypass as required in Appendix G, Subsection G.12.6 (24-hour notice). See 40 CFR 122.41(m)(3)(ii).

G.13.4 Prohibition of bypass. See 40 CFR 122.41(m)(4).

G.13.4.1 Bypass is prohibited, and EPA may take enforcement action against you for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. You submitted notices as required under Appendix G, Subsection G.13.3.

G.13.4.2 EPA may approve an anticipated bypass, after considering its adverse effects, if EPA determines that it will meet the three conditions listed above in Appendix G, Subsection G.13.4.1.

G.14 Upset.

G.14.1 Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond your reasonable control. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR 122.41(n)(1).

G.14.2 Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Appendix G, Subsection G.14.3 are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. See 40 CFR 122.41(n)(2).

G.14.3 Conditions necessary for a demonstration of upset. See 40 CFR 122.41(n)(3). A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

G.14.3.1 An upset occurred and that you can identify the cause(s) of the upset;

G.14.3.2 The permitted facility was at the time being properly operated; and

G.14.3.3 You submitted notice of the upset as required in Appendix G, Subsection G.12.6.2.b (24 hour notice).

G.14.3.4 You complied with any remedial measures required under Appendix G, Subsection G.4.

G.14.4 Burden of proof. In any enforcement proceeding, you, as the one seeking to establish the occurrence of an upset, have the burden of proof. See 40 CFR 122.41(n)(4).

G.15 Retention of Records.

Copies of the SWPPP and all documentation required by this permit, including records of all data used to complete the NOI to be covered by this permit, must be retained for at least three years from the date that permit coverage expires or is terminated. This period may be extended by request of EPA at any time.

G.16 Reopener Clause.

G.16.1 Procedures for modification or revocation. Permit modification or revocation will be conducted according to 40 CFR §122.62, §122.63, §122.64 and §124.5.

G.16.2 Water quality protection. If there is evidence indicating that the stormwater discharges authorized by this permit cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard, you may be required to obtain an individual permit, or the permit may be modified to include different limitations and/or requirements.

G.16.3 Timing of permit modification. EPA may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines that may be promulgated in the course of the current permit cycle.

G.17 Severability.

Invalidation of a portion of this permit does not necessarily render the whole permit invalid. EPA's intent is that the permit is to remain in effect to the extent possible; in the event that any part of this permit is invalidated, EPA will advise the regulated community as to the effect of such invalidation.

Appendix H - Notice of Intent (NOI) Form and Instructions

Part 1.4.1 requires you to use the NPDES eReporting Tool, or "NeT" system, to prepare and submit your NOI electronically. However, if the EPA Regional Office grants you a waiver to use a paper NOI form, and you elect to use it, you must complete and submit the following form.

NPDES Form 3510-9	EPA	U.S. Environmental Protection Agency Washington, DC 20460 Notice of Intent for the 2022 NPDES Construction General Permit	OMB No. 2040-0305 Exp. Date 01/31/2025

Submission of this Notice of Intent (NOI) constitutes notice that the operator identified in Section III of this form requests authorization to discharge pursuant to the NPDES Construction General Permit (CGP) permit number identified in Section II of this form. Submission of this NOI also constitutes notice that the operator identified in Section III of this form meets the eligibility requirements of Part 1.1 CGP for the project identified in Section IV of this form. Permit coverage is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in Part 8 of the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form.

SECTION I. APPROVAL TO USE PAPER NOI FORM

Paper NOI Form

Have you been granted a waiver from electronic reporting from the Regional Office*? ☐ Yes ☐ No

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted:

☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.

☐ The owner/operator has issues regarding available computer access or computer capability.

Name of EPA staff person that granted the waiver	Date approval obtained (MM/DD/YYYY)

*** Note: You are required to obtain approval from the applicable Regional Office prior to using this paper NOI form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT).**

SECTION II. PERMIT INFORMATION

Permit

NPDES ID (EPA Use Only)	Master Permit Number (see Appendix B of the CGP for the list of eligible permit numbers)

SECTION III. OPERATOR INFORMATION

Operator Information

Operator Name

Are you requesting coverage under this NOI as a "Federal Operator" or for a "Federal Facility" as defined in Appendix A? ☐ Yes ☐ No

Mailing Address

Street

City	State	ZIP Code

County or Similar Government Division

Operator Point of Contact Information:

First Name	Middle Initial	Last Name

Title

Phone Number	Email Address

NOI Preparer

Complete if NOI was prepared by someone other than the certifier:

First Name	Middle Initial	Last Name

Organization

Phone number	Email address

SECTION IV. PROJECT/SITE INFORMATION

Project/Site Address

Project/Site Name

Street/Location

City	State	ZIP Code

County or Similar Government Division:

For the project/site you are seeking permit coverage, provide the following information:

Latitude (in decimal degrees to four decimal places):	Longitude (in decimal degrees to four decimal places):
° N	° W

Latitude/Longitude Data Source: ☐ Map ☐ GPS ☐ Other (Specify):

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

Site Information

Is your site located in Indian country lands, or on a property of religious or cultural significance to an Indian Tribe? ☐ Yes ☐ No

If yes, provide the name of the Indian Tribe associated with the area of Indian country (including name of Indian reservation, if applicable), or if not in Indian country, provide the name of the Indian Tribe associated with the property:

Project Information

Estimated Project Start Date (MM/DD/YYYY)	Estimated Project Completion Date (MM/DD/YYYY)

Estimated Area to be Disturbed (to the nearest quarter acre):

Type of Construction Site (check all that apply):

☐ Single-Family Residential ☐ Multi-Family Residential ☐ Commercial

☐ Industrial ☐ Institutional ☐ Highway or Road

☐ Utility ☐ Other (Specify):

Was the pre-development land use used for agriculture (see Appendix A for definition of "agricultural land")? ☐ Yes ☐ No

Have earth-disturbing activities commenced on your project/site? ☐ Yes ☒ No

If yes, is your project an "emergency-related project" (see Appendix A)? ☒ Yes ☐ No

Project Information

Have stormwater discharges from your project/site been covered previously under an NPDES permit?	☐ Yes	☐ No
If yes, provide the NPDES ID (if you had coverage under EPA's 2017 CGP) or the NPDES permit number (if you had coverage under an EPA individual permit): _____		
Are there other operators that are covered under this permit for the same project site?	☐ Yes	☐ No
If yes, provide the NPDES ID number for all other operators at the site who have coverage under this permit: _____		
Will there be demolition of any structure built or renovated before January 1, 1980?	☐ Yes	☐ No
If yes, do any of the structures being demolished have at least 10,000 square feet of floor space?	☐ Yes	☐ No
Will you be discharging dewatering water from your site?	☐ Yes	☐ No
If yes, will you be discharging dewatering water from a current or former Federal or State remediation site?	☐ Yes	☐ No

SECTION V. DISCHARGE INFORMATION

Project Information

By indicating "Yes," I confirm that I understand that the CGP only authorizes the allowable stormwater discharges in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, State, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the allowable stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must be covered under another NPDES permit.	☐ Yes	
Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?	☐ Yes	☐ No
Are there any waters of the U.S. within 50 feet of your project's earth disturbances?	☐ Yes	☐ No

Receiving Waters Information

For each point of discharge, provide the following receiving water information. (Attach a separate list if necessary)

Point of Discharge ID	Provide the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to:	If the receiving water is impaired (on the CWA 303(d) list), list the pollutants that are causing the impairment:	If a TMDL been completed for this receiving waterbody, providing the following information:
			TMDL Name and ID:
			Pollutant(s) for which there is a TMDL:
			TMDL Name and ID:
			Pollutant(s) for which there is a TMDL:

Receiving Waters Information

For each point of discharge, provide the following receiving water information. (Attach a separate list if necessary)			
Point of Discharge ID	**Provide the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to:**	**If the receiving water is impaired (on the CWA 303(d) list), list the pollutants that are causing the impairment:**	**If a TMDL been completed for this receiving waterbody, providing the following information:**
			TMDL Name and ID: **Pollutant(s) for which there is a TMDL:**
			TMDL Name and ID: **Pollutant(s) for which there is a TMDL:**
			TMDL Name and ID: **Pollutant(s) for which there is a TMDL:**
			TMDL Name and ID: **Pollutant(s) for which there is a TMDL:**
			TMDL Name and ID: **Pollutant(s) for which there is a TMDL:**

Are any of the waters of the U.S. to which you discharge designated by the State or Tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water) or as a Tier 3 water (Outstanding National Resource Water)? (See Appendix F). ☐ Yes ☐ No

If yes, name(s) of receiving water(s) and its designation (Tier 2, Tier 2.5 or Tier 3):

SECTION VI. CHEMICAL TREATMENT INFORMATION

Chemical Treatment

Will you use polymers, flocculants, or other treatment chemicals at your construction site? ☐ Yes ☐ No

If yes, will you use cationic treatment chemicals at your construction site*? ☐ Yes ☐ No

If yes, have you been authorized to use cationic treatment chemicals by your applicable EPA Regional Office in advance of filing your NOI*? ☐ Yes ☐ No

If you have been authorized to use cationic treatment chemicals by your applicable EPA Regional Office, attach a copy of your authorization letter and include documentation of the appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

Please indicate the treatment chemicals that you will use:

* Note: You are ineligible for coverage under this permit unless you notify your applicable EPA Regional Office in advance and the EPA office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

SECTION VII. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND PERSONNEL TRAINING INFORMATION

SWPPP

Has the SWPPP been prepared in advance of filing this NOI, as required? ☐ Yes ☐ No

By indicating "Yes," I confirm that all required personnel, including those conducting inspections at your site, will meet the training requirements in Part 6 of this permit. ☐ Yes

SWPPP Contact Information

First Name	Middle Initial	Last Name

Professional Title

Phone number	Email address

SECTION VIII. ENDANGERED SPECIES PROTECTION

Endangered Species Protection

In accordance with Part 1.1.5, if the EPA Regional Office grants you a waiver from electronic reporting, you must complete the worksheet in Appendix D to select your eligibility criteria with respect to the protection of Federally listed threatened or endangered species and Federally designated "critical habitat" under the Endangered Species Act (ESA) [hereinafter "ESA-listed species and designated critical habitat(s)"] from discharges and discharge-related activities authorized under this permit.

You must submit the ESA worksheet and all required supporting documentation with this NOI. If you do not submit the worksheet and the required supporting documentation with your NOI, your NOI will be considered incomplete. After you submit your NOI and before your NOI is authorized, EPA may notify you if any additional controls are necessary to ensure your discharges are not likely to result in any short- or long-term adverse effects on ESA-listed species and critical habitat.

By indicating "Yes," I confirm that you have included the completed ESA worksheet from Appendix D and all required supporting information for your criterion selection with the submission of this NOI. ☐ Yes

SECTION IX. HISTORIC PRESERVATION

Historic Preservation

Are you installing any stormwater controls as described in Appendix E that require subsurface earth disturbance? (Appendix E, Step 1) ☐ Yes ☐ No

If yes, have prior surveys or evaluations conducted on the site have already determined historic properties do not exist, or that prior disturbances have precluded the existence of historic properties? (Appendix E, Step 2) ☐ Yes ☐ No

If no, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? (Appendix E, Step 3) ☐ Yes ☐ No

If no, did the SHPO, THPO, or other Tribal representative (whichever applies) respond to you within the 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? (Appendix E, Step 4) ☐ Yes ☐ No

If yes, describe the nature of their response:

- ☐ Written indication that no historic properties will be affected by the installation of stormwater controls.
- ☐ Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.
- ☐ No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.
- ☐ Other (Specify):

SECTION X. CERTIFICATION INFORMATION

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name	Middle Initial	Last Name

Title

Signature	Date (MM/DD/YYYY)

Email Address

General Instructions

Who Must File an NOI Form?

Under the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et. seq.; the Act), Federal law prohibits stormwater discharges from certain construction activities to waters of the U.S. unless that discharge is covered under a National Pollutant Discharge Elimination System (NPDES) permit. Operators of construction sites where one or more acres are disturbed, smaller sites that are part of a larger common plan of development or sale where there is a cumulative disturbance of at least one acre, or any other site specifically designated by the Director, must obtain coverage under an NPDES general permit. For coverage under the 2022 CGP, each person, firm, public organization, or any other entity that meets either of the following criteria must file a Notice of Intent form: (1) they have operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (2) they have day-to-day operational control of those activities at the project necessary to ensure compliance with the permit conditions. If you have questions about whether you need a NPDES stormwater permit, or if you need information to determine whether EPA or your State agency is the permitting authority, contact your EPA Regional Office.

Completing the Form

Obtain and read a copy of the 2022 CGP, viewable at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#cgp. To complete this form, type or print uppercase letters, in the appropriate areas only. Please place each character between the marks (abbreviate if necessary to stay within the number of characters allowed for each item). Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions on this form, telephone EPA's NOI Processing Center at (866) 352-7755. **Please submit the original document with signature in ink - do not send a photocopied signature.**

Section I. Approval to Use Paper NOI Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper NOI form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA staff person who granted the waiver, and the date that approval was provided.

See https://www.epa.gov/npdes/contact-us-stormwater#regional for a list of EPA Regional Office contacts.

Section II. Permit Information

Provide the master permit number of the permit under which you are applying for coverage (see Appendix B of the general permit for the list of eligible master permit numbers)

Section III. Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the project described in this NOI. Refer to Appendix A of the permit for the definition of "operator".

Indicate whether you are seeking coverage under this permit as a "Federal Operator" or "Federal Facility" as defined in Appendix A.

Also provide a point of contact, the operator's mailing address, county, telephone number, and e-mail address (to be notified via e-mail of NOI approval when available). Correspondence for the NOI will be sent to this address.

If the NOI was prepared by someone other than the certifier (for example, if the NOI was prepared by the facility SWPPP contact or a consultant for the certifier's signature), include the full name, organization, phone number, and email address of the NOI preparer.

Section IV. Project/Site Information

Enter the official or legal name and complete street address, including city, State, ZIP code, and county or similar government subdivision of the project or site. If the project or site lacks a street address, indicate the general location of the site (e.g., Intersection of State Highways 61 and 34). Complete site information must be provided for permit coverage to be granted.

Provide the latitude and longitude of your facility in decimal degrees format. The latitude and longitude of your facility can be determined in several different ways, including through the use of global positioning system (GPS) receivers, U.S. Geological Survey (U.S.G.S.) topographic or quadrangle maps, and web-based siting tools, among others. For consistency, EPA requests that measurements be taken from the approximate center of the construction site. For linear construction sites, the measurement should be taken midpoint of the site. If known, enter the horizontal reference datum for your latitude and longitude. The horizontal reference datum is shown on the bottom left corner of USGS topographic maps; it is also available for GPS receivers.

Indicate whether the project is in Indian country lands or located on a property of religious or cultural significance to an Indian Tribe, and if so, provide the name of the Indian Tribe associated with the area of Indian country (including name of Indian reservation, if applicable), or if not in Indian country, provide the name of the Indian Tribe associated with the property.

Enter the estimated construction start and completion dates using four digits for the year (i.e., 10/06/2012). Indicate to the nearest quarter acre the estimated area to be disturbed. Indicate the type of construction site.

Indicate whether the pre-development land use of the site was used for agriculture Appendix A defines "agricultural land" as cropland, grassland, rangeland, pasture, and other agricultural land, on which agricultural and forest-related products or livestock are produced and resource concerns may be addressed. Agricultural lands include cropped woodland, marshes, incidental areas included in the agricultural operation, and other types of agricultural land used for the production of livestock.

Indicate whether earth-disturbing activities have already commenced on your project/site. If earth-disturbing activities have commenced on your site because stormwater discharges from the site have been previously covered under a NPDES permit, you must provide the 2017 CGP NPDES ID or

the NPDES permit number if coverage was under an individual permit.

Indicate if demolition is occurring, and if so, if the structure has at least 10,000 square feet of floor space.

Indicate if there are other operators covered under this permit for the same project site. If there are multiple operators, provide the NPDES ID number for the other operators at the site who have coverage under this permit.

Indicate whether you will be discharging dewatering water, as defined in Appendix A, during the course of the project. If you will be discharging dewatering water, indicate whether the site from which you will be dewatering is located on a current or former Federal or State remediation site. Federal remediation sites include cleanups covered by Superfund (both National Priorities List (NPL) sites and non-NPL sites), Resource Conservation and Recovery Act (RCRA) corrective actions sites, cleanups at Federal Facilities, and Federal, State, or Tribal brownfields sites. State remediation sites could include, for instance, brownfield site cleanups funded by the State, State superfund sites, and petroleum tank release sites. Operators may use online mapping resources, such as EPA's Cleanups in My Community Map, to help determine if they are located on a remediation site. The Cleanups in My Community Map is viewable at:

https://ordspub.epa.gov/ords/cimc/f?p=cimc:map::::71

Section V. Discharge Information

You must confirm that you understand that the CGP only authorizes the allowable stormwater discharges listed in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized under the CGP are not covered by the CGP or the permit shield provision of the CWA Section 402(k) and they cannot become authorized or shielded by disclosure to EPA, State, or local authorities via the NOI to be covered by the permit or by any other means (e.g., in the SWPPP or during an inspection). If any discharges requiring NPDES permit coverage other than the allowable stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must either be eliminated or covered under another NPDES permit.

Indicate whether discharges from the site will enter into a municipal separate storm sewer system (MS4), as defined in Appendix A.

Also, indicate whether any waters of the U.S. exist within 50 feet from your site. Note that if "yes", you are required to comply with the requirement in Part 2.2.1 of the permit to provide natural buffers or equivalent erosion and sediment controls.

For each unique point of discharge you list, you must specify the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to. You must specify whether any waters of the U.S. that you discharge to are listed as "impaired" as defined in Appendix A, and the pollutants for which the water is impaired. You must identify any Total Maximum Daily Loads (TMDL) that have been completed for any of the waters of the U.S. that you discharge to. Operators may find it useful to use EPA's Discharge Mapping Tool to determine whether the water of the U.S. is impaired, the pollutant causing the impairment, and whether a TMDL exists for the water body. The Discharge Mapping Tool is viewable at https://www.epa.gov/npdes/epas-stormwater-discharge-mapping-tools.

Indicate whether discharges from the site will enter into a water of the U.S. that is designated as a Tier 2, Tier 2.5, or Tier 3 water. A list of Tier 2, 2.5, and 3 waters is provided at https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates. If the answer is "yes", name all waters designated as Tier 2, Tier 2.5, or Tier 3 to which the site will discharge.

Section VI. Chemical Treatment Information

Indicate whether the site will use polymers, flocculants, or other treatment chemicals. Indicate whether the site will employ cationic treatment chemicals. If the answer is "yes" to either question, indicate which chemical(s) you will use. Note that you are not eligible for coverage under this permit to use cationic treatment chemicals unless you notify your applicable EPA Regional Office in advance and the EPA office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards. If you have been authorized to use cationic treatment chemicals by your applicable EPA Regional Office, attach a copy of your authorization letter and include documentation of the appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards. Examples of cationic treatment chemicals include, but are not limited to, cationic polyacrylamide (C-PAM), PolyDADMAC (POLY DIALLYL DIMETHYL AMMONIUM CHLORIDE), and chitosan.

Section VII. Stormwater Pollution Prevention Plan (SWPPP) and Personnel Training Information

All sites eligible for coverage under this permit are required to prepare a SWPPP in advance of filing the NOI, in accordance with Part 7. Indicate whether the SWPPP has been prepared in advance of filing the NOI.

Confirm that all required personnel, including those conducting inspections at your site, will meet the training requirements in Part 6 of this permit.

Indicate the street, city, State, and ZIP code where the SWPPP can be found. Indicate the contact information (name, organization, phone, and email) for the person who developed the SWPPP for this project.

Section VIII. Endangered Species Information

Confirm that you have included the completed ESA worksheet from Appendix D and all required supporting information for your criterion selection with the submission of this NOI.

Section IX. Historic Preservation

Use the instructions in Appendix E to complete the questions on the NOI form regarding historic preservation.

Section X. Certification Information

The NOI must be signed as follows:

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making

major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, State, Federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing. An unsigned or undated NOI form will not be considered eligible for permit coverage.

Modifying Your NOI

If you have been granted a waiver from your Regional Office from electronic reporting, and if after submitting your NOI you need to correct or update any fields on this NOI form, you may do so by indicating changes on this same form.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0305). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 3.3 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Submitting Your Form

Submit your NOI form by mail to one of the following addresses:

For Regular U.S. Mail Delivery:
Stormwater Notice Processing Center
Mail Code 4203M, ATTN: 2022 CGP
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:
Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: 2022 CGP
U.S. EPA
1201 Constitution Avenue, NW
Washington, DC 20004

Visit this website for instructions on how to submit electronically:

https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting

Appendix I - Notice of Termination (NOT) Form and Instructions

Part 8.3 requires you to use the NPDES eReporting Tool, or "NeT" system, to prepare and submit your NOT electronically. However, if the EPA Regional Office grants you a waiver to use a paper NOT form, and you elect to use it, you must complete and submit the following form.

NPDES Form 3510-13	EPA	U.S. Environmental Protection Agency Washington, DC 20460 Notice of Termination for the 2022 NPDES Construction General Permit	OMB No. 2040-0305 Exp. Date 01/31/2025

Submission of this Notice of Termination constitutes notice that the operator identified in Section III of this form is no longer authorized discharge pursuant to the NPDES Construction General Permit (CGP) from the site identified in Section IV of this form. All necessary information must be included on this form. Refer to the instructions at the end of this form.

SECTION I. APPROVAL TO USE PAPER NOI FORM

Paper NOI Form

Have you been granted a waiver from electronic reporting from the Regional Office*? ☐ Yes ☐ No

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted:

☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.

☐ The owner/operator has issues regarding available computer access or computer capability.

Name of EPA staff person that granted the waiver	Date approval obtained (MM/DD/YYYY)

*** Note: You are required to obtain approval from the applicable Regional Office prior to using this paper NOI form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT).**

SECTION II. PERMIT INFORMATION

Permit

NPDES ID

Reason for Termination (Check only one):

☐ You have completed all construction activities at your site, and you have met all other requirements in Part 8.2.1.

Check this box to confirm that you have attached photographs as required by Part 8.2.1.a that document your compliance with the permit's final stabilization requirements.

☐ Include the date each photograph was taken, and a brief description of the area of the site captured by the photograph (e.g., photo shows application of seed and erosion control mats to remaining exposed surfaces on northeast corner of site).

If any portion of your site is covered by one of the Part 2.2.14c.iii exceptions to the final stabilization criteria, indicate which exception applies and include a supplementary explanation with your photographs that provides the necessary context for why this portion of the site is in compliance even though it appears to be unstabilized.

☐ Another operator has assumed control over all areas of the site and that operator has submitted an NOI and obtained coverage under the CGP.

☐ You have obtained coverage under an individual permit or another general NPDES permit addressing stormwater discharges from the construction site.

SECTION III. OPERATOR INFORMATION

Operator Information

Operator Name

Mailing Address

Street

City	State	ZIP Code

County or Similar Government Division

Phone Number	Email Address

SECTION IV. PROJECT/SITE INFORMATION

Project/Site Address

Project/Site Name		
Street/Location		
City	State	ZIP Code
County or Similar Government Division:		

SECTION V. CERTIFICATION INFORMATION

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name	Middle Initial	Last Name
Title		
Signature		Date (MM/DD/YYYY)
Email Address		

General Instructions

Who May File an NOT Form?

Permittees who are presently covered under the EPA-issued 2022 Construction General Permit (CGP) for Stormwater Discharges Associated with Construction Activity may submit an NOT form when: (1) earth-disturbing activities at the site are completed and the conditions in Parts 8.2.1.a through 8.2.1.b are met; or (2) the permittee has transferred all areas under its control to another operator, and that operator has submitted and obtained coverage under this permit; or (3) the permittee has obtained coverage under a different NPDES permit for the same discharges.

Completing the Form

Type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions about this form, refer to https://www.epa.gov/npdes/stormwater-discharges-construction-activities#cgp or telephone EPA's NOI Processing Center at (866) 352-7755. **Please submit original document with signature in ink - do not send a photocopied signature.**

Section I. Approval to Use Paper NOI Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper NOT form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA staff person who granted the waiver, and the date that approval was provided.

See https://www.epa.gov/npdes/contact-us-stormwater#regional for a list of EPA Regional Office contacts.

Section II. Permit Information

Enter the existing NPDES ID assigned to the project . If you do not know the NPDES ID number, or contact EPA's NOI Processing Center at (866) 352-7755.

Indicate your reason for submitting this Notice of Termination by checking the appropriate box. Check only one. If you selected the first box, confirm that you have attached photographs as required by Part 8.2.1.a. All submitted photographs must: (1) be taken both before and after the site has met the final stabilization criteria in Part 2.2.14.c; (2) be clear and in focus, and in the original format and resolution; and (3) include the date each photograph was taken, and a brief description of the area of the site captured by the photograph (e.g., photo shows application of seed and erosion control mats to remaining exposed surfaces on northeast corner of site).

If any portion of your site is covered by one of the Part 2.2.14c.iii final stabilization exceptions, indicate which exception applies and provide an explanation with your photographs that describes why this portion of the site is in compliance even though it may appear to be unstabilized.

Section III. Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the project described in this NOT and is covered by the NPDES ID identified in Section II. Enter the complete mailing address, telephone number, and email address of the operator.

Section IV. Project/Site Information

Enter the official or legal name and complete street address, including city, State, ZIP code, and county or similar government subdivision of the project or site. If the project or site lacks a street address, indicate the general location of the site (e.g., Intersection of State Highways 61 and 34). Complete site information must be provided for termination of permit coverage to be valid.

Section V. Certification Information

The NOT, must be signed as follows:

For a corporation: By a responsible corporate officer. For the purpose of this Part, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, State, Federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

Include the name, title, and email address of the person signing the form and the date of signing. An unsigned or undated NOT form will not be considered valid termination of permit coverage.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0305). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a

currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 1.2 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Submitting Your Form

Submit your NOT form by mail to one of the following addresses:

For Regular U.S. Mail Delivery:
Stormwater Notice Processing Center
Mail Code 4203M, ATTN: 2022 CGP
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:
Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: 2022 CGP
U.S. EPA
1201 Constitution Avenue, NW
Washington, DC 20004

Visit this website for instructions on how to submit electronically:

https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting

Appendix J - Suggested Format for Request for Chemical Treatment

If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, Part 1.1.9 requires you to notify your applicable EPA Regional Office in advance of submitting your NOI. The EPA Regional Office will authorize coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will result in discharges that meet applicable water quality standards. To notify your EPA Regional Office, you may use following form.

NPDES Form 6100-066	EPA	U.S. Environmental Protection Agency Washington, DC 20460 Suggested Form for Notifying EPA about Proposed Use of Cationic Treatment Chemicals under the 2022 NPDES Construction General Permit	OMB No. 2040-0305 Exp. Date 01/31/2025

Under Part 1.1.9 of the 2022 CGP, if you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your Notice of Intent (NOI) until you notify your applicable EPA Regional Office in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will result in discharges that meet applicable water quality standards. You may use this suggested form to notify your EPA Regional Office about your proposed use of cationic treatment chemicals.

SECTION I. OPERATOR INFORMATION

Operator Information

Operator Name			
Mailing Address			
Street			
City	State	ZIP Code	
County or Similar Government Division			
Phone Number	Email Address		

SECTION II. PROJECT/SITE INFORMATION

Project/Site Information

Project/Site Name			
Project/Site Address			
Street/Location			
City	State	ZIP Code	
County or Similar Government Division			
Site Contact Information (if different from operator)			
First Name	Middle Initial	Last Name	
Phone Number			
Receiving Waterbodies			
Name(s) of Receiving Waterbodies:			

SECTION III. MAP

Map

Attach a map that illustrates the entire site including all of the below items. Include this map in your Stormwater Pollution Prevention Plan (SWPPP).
- All receiving waterbodies
- All proposed location(s) of chemical treatment system(s)
- All proposed point(s) of discharge to receiving waterbodies
- All soil types within areas to be disturbed
- All areas of earth disturbance
- Sufficient indication of topography to indicate where stormwater flows

Attach a schematic drawing of the proposed treatment system(s). Include all components of the treatment train, sample points, and pipe configurations. In addition to sufficient holding capacity upstream of treatment, the system must have the capacity to hold water for testing and to re-treat water that does not meet water quality standards.

SECTION IV. RESPONSIBLE PERSONNEL

Responsible Personnel

Treatment System Operator or Company Name (if subcontracted out):		
Street/Location		
City	State	ZIP Code

Responsible Personnel	
List personnel who will be responsible for operating the chemical treatment systems and application of the chemicals.	Cite the training that the personnel have received in operation and maintenance of the treatment system(s) and use of the specific chemical(s) proposed.

SECTION V. PROPOSED TREATMENT

Proposed Treatment

Check proposed treatment system to be used:	☐ Chitosan enhanced sand filtration with discharge to infiltration (ground water).
	☐ Chitosan enhanced sand filtration with discharge to temporary holding ponds (batch).
	☐ Chitosan enhanced sand filtration with discharge to surface waters (flow-through).
	☐ Other (describe below and submit documentation that the proposed system and chemical(s) demonstrate the ability to remove turbidity and produce non-toxic effluent/discharge):
Check proposed cationic chemical(s) to be used:	☐ FlocClear™ (2% chitosan acetate solution).
	☐ StormKlear™ LiquiFloc™ (1% chitosan acetate solution).
	☐ ChitoVan™ (1% chitosan acetate solution).
	☐ StormKlear™ LiquiFloc™ (3% chitosan acetate solution).
	☐ Other (Specify):

Estimated Treatment Period Start Date (MM/DD/YYYY)	Estimated Treatment Period End Date (MM/DD/YYYY)

Describe sampling and recordkeeping schedule. Attach additional sheets as needed:

Proposed Treatment

Explain why you have selected this proposed treatment system and chemicals. Include an explanation of why the use of cationic treatment chemicals is necessary at the site. Reference how the soil types on your site influenced your choices. Describe or provide an illustration of how the site of the discharge will be stabilized and why the discharge location will not cause erosion of the discharge water's bank or bed (please note that a permit from the Corps and State agencies may be necessary to place rock in the water body for this stabilization). Attach as many additional sheets as needed for a full explanation. If you have a report from a chemical treatment contractor describing their recommended approach you may attach that.

SECTION VI. CERTIFICATION INFORMATION

Certification Information

I have documented and hereby certify that the following information is correct and has been documented in the SWPPP for this project:

- The SWPPP includes a complete site-specific description of the chemical treatment system herein proposed for use, including specifications, design, and Material Safety Data Sheets for all chemicals to be used.
- The controls to be used on the site are compatible with the safe and effective use of cationic chemical treatment.
- I verified through jar tests that the site soil is conducive to chemical treatment.
- I verified that the chemical treatment system operators for this project received training.
- I read, understand, and will follow all conditions and design criteria in the applicable use designation(s).
- If the discharge is to Tribal waters, I notified the appropriate Tribal government of the intent to use chemical treatment on a site located within that jurisdiction.
- I will keep the use level designation, operation and maintenance manual, and training certificate on site prior to and during use of chemical treatment.
- A licensed engineer designed the system for this project including system sizing, pond sizing, and flow requirements.
- I verify that the discharge will not adversely affect downstream conveyance systems or stream channels (e.g., cause erosion).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Official

First Name	Middle Initial	Last Name

Title

Signature	Date (MM/DD/YYYY)

Email Address

Section I. Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the project. Refer to Appendix A of the permit for the definition of "operator." Provide the operator's mailing address, county, telephone number, and e-mail address.

Section II. Project/Site Information

Enter the official or legal name and complete street address, including city, State, ZIP code, and county or similar government subdivision of the project or site. If the project or site lacks a street address, indicate the general location of the site (e.g., Intersection of State Highways 61 and 34).

Provide site contact information, if different from the operator.

Provide the name of the receiving waterbodies to which your site/project will discharge.

Section III. Map

Attach a map of the entire site that includes the identified items. Attach a schematic of the proposed treatment system(s) that includes the identified items.

Section IV. Responsible Personnel

Provide the legal name of the treatment system operator or company and complete street address, including city, State, including city, State, and ZIP code.

List personnel who will be responsible for operating the chemical treatment systems and application of the chemicals. For each personnel listed, cite the training that the personnel have received in operation and maintenance of the treatment system(s) and use of the specific chemical(s) proposed.

Section V. Proposed Treatment

Indicate the proposed treatment system and proposed cationic chemicals to be used. Indicate the estimated treatment start and end dates. Describe the sampling and recordkeeping schedule. Explain why you have selected the proposed treatment system and chemicals.

Section VI. Certification Information

The form must be signed as follows:

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, State, Federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing.

Submitting Your Form

Submit this form to your applicable EPA Regional Office. Contact information can be found at: https://www.epa.gov/npdes/contact-us-stormwater#regional

Appendix K – Turbidity Monitoring Report Form and Instructions

Part 3.3 requires you to use the EPA NPDES eReporting Tool, or "NeT" system, to prepare and submit your report electronically. However, if the EPA Regional Office grants you a waiver to use a paper form, and you elect to use it, you must complete and submit the following form.

NPDES Form 6100-065	EPA	U.S. Environmental Protection Agency Washington, DC 20460 Turbidity Monitoring Report Form for Dewatering Discharges to Sensitive Waters Under the 2022 NPDES Construction General Permit	OMB No. 2040-0305 Exp. Date 01/31/2025

SECTION I. APPROVAL TO USE PAPER FORM

Paper Form

Have you been granted a waiver from electronic reporting from the Regional Office*? ☐ Yes ☐ No

If yes, check which waiver you have been granted, and provide the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted:

☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.

☐ The owner/operator has issues regarding available computer access or computer capability.

Name of EPA staff person that granted the waiver	Date approval obtained (MM/DD/YYYY)

*** Note: You are required to obtain approval from the applicable Regional Office prior to using this paper form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT).**

SECTION II. PERMIT INFORMATION

Permit

NPDES ID

Does this report fulfill turbidity monitoring report obligations of other operators that are covered under this permit for the same project site? ☐ Yes ☐ No

If yes, provide the NPDES ID number(s) for all other such operators at the same project site: _____

SECTION III. OPERATOR INFORMATION

Operator Information

Operator Name

Mailing Address

Street

City	State	ZIP Code

County or Similar Government Division:

Phone Number	Email Address

Preparer

Complete if form was prepared by someone other than the certifier:

First Name	Middle Initial	Last Name

Organization

Phone Number	Email Address

SECTION IV. SITE INFORMATION

Site Address

Site Name

Site Address

Street/Location		
City	State	ZIP Code
County or Similar Government Division:		

SECTION IV. MONITORING QUARTER

Monitoring Quarter

Identify monitoring quarter (select only one):

- ☒ Quarter 1 (January 1 – March 31)
- ☒ Quarter 2 (April 1 – June 30)
- ☒ Quarter 3 (July 1 – September 30)
- ☒ Quarter 4 (October 1 – December 31)

SECTION IVI. TURBIDITY MONITORING DATA

Turbidity Monitoring Data

Discharge Point Description/ Name:

Was dewatering water discharged during the monitoring quarter? ☐ Yes (Enter the data below) ☒ No (Skip to Section VII)

Specific Week within Monitoring Quarter[1]	Weekly Average (NTU)[2]	Benchmark Threshold (NTU)	Alternate Benchmark Threshold (NTU)[3]	Average exceeds Benchmark?[4]
Week 1		50		☒ Yes ☒ No
Week 2		50		☒ Yes ☒ No
Week 3		50		☒ Yes ☒ No
Week 4		50		☒ Yes ☒ No
Week 5		50		☒ Yes ☒ No
Week 6		50		☒ Yes ☒ No
Week 7		50		☒ Yes ☒ No
Week 8		50		☒ Yes ☒ No
Week 9		50		☒ Yes ☒ No
Week 10		50		☒ Yes ☒ No
Week 11		50		☒ Yes ☒ No
Week 12		50		☒ Yes ☒ No
Week 13		50		☒ Yes ☒ No
Week 14		50		☒ Yes ☒ No

[1] Refer to Table K-1 to determine the specific monitoring week number for which you are reporting turbidity data for this quarter.

[2] Report to the nearest whole number. Enter "N/A" if no dewatering discharge occurred during any particular week.

[3] Prior approval from the EPA Regional Office is required pursuant to Part 3.3.2.b. Unless and until EPA approves your request to use an alternate benchmark, you are required to use the standard benchmark of 50 NTU and take any required corrective actions if an exceedance occurs. Enter "N/A" if you have not received approval for an alternate benchmark threshold.

[4] If "Yes," the operator must conduct follow-up corrective action pursuant to Part 5.2.2 and document any corrective action taken in the corrective action log in accordance with Part 5.4.

VII. CERTIFICATION INFORMATION

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name	Middle Initial	Last Name

Title

Signature	Date (MM/DD/YYYY)

Phone Number	Email Address

General Instructions

Who Must Submit A Turbidity Monitoring Report to EPA?

Sites covered under the Construction General Permit (CGP or permit) that are required to monitor pursuant to Part 3.3 of the permit must submit Turbidity Monitoring Reports consistent with the reporting requirements specified in Part 3.3.4 of the permit.

When Must I Submit A Turbidity Monitoring Report to EPA?

You must submit your report to EPA no later than 30 days following the end of each monitoring quarter. Submit a form for every quarter the site is active.

Monitoring Quarter #	Months	Reporting Deadline
1	January 1 – March 31	April 30
2	April 1 – June 30	July 30
3	July 1 – September 30	October 30
4	October 1 – December 31	January 30

Completing the Form

Obtain and read a copy of the 2022 CGP, viewable at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#cgp. To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please submit the original document with signature in ink - do not send a photocopied signature. **Photocopy your form for your records before you send the completed original form to the appropriate address.**

Section I. Approval to Use Paper Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA staff person who granted the waiver, and the date that approval was provided. See https://www.epa.gov/npdes/contact-us-stormwater for a list of EPA Regional Office contacts.

Section II. Permit Information

Provide the NPDES ID (i.e., NOI tracking number) assigned to the site for which this form is being submitted. Submit the form only for sites discharging dewatering water to a sediment-impaired water or a water designated as a Tier 2, Tier 2.5, or Tier 3 water.

Indicate whether this report fulfills turbidity monitoring report obligations of other operators that are covered under this permit for the same project site. If the answer is yes, provide all relevant NPDES ID numbers.

Section III. Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that is considered the operator of the site. See Part 1.1.1 and Appendix A for the definition of "operator." Provide the operator's mailing address, phone number, and e-mail. The operator information in this Section should match the operator information provided on your NOI form.

If this form was prepared by someone other than the certifier, include the name, organization, phone number, and email address of the person who prepared this form.

Section IV. Site Information

Enter the official or legal name and complete street address, including city, State, ZIP code, and county or similar government subdivision of the site. If the site lacks a street address, indicate the general location (e.g., Intersection of State Highways 61 and 34). The site information in this Section should match the site information provided on your NOI form.

Section V. Monitoring Quarter

Indicate the appropriate monitoring quarter (Quarter 1, 2, 3, or 4). The monitoring quarters are specified in the table in the section titled "When Must I Submit A Turbidity Monitoring Report to EPA." Select only one quarter.

Section VI. Turbidity Monitoring Data

Provide the discharge point description/name if you are discharging dewatering water from more than one point at the site. If you are discharging from only one point at the site, leave the spaces blank.

Submit Section VI data for each dewatering discharge point. For example, if you are discharging dewatering water from two points at the site, then submit two Section VIs (one for each discharge point).

Indicate whether dewatering occurred during the monitoring quarter. If "Yes" enter the data in the data table. If "No" skip to Section VII.

For averaging purposes, a monitoring week starts with a Monday and ends on Sunday. A numerical value is assigned for each week, which is called a Week Number (e.g., 1, 2, 3 etc.). The form includes a Week Number for each week of the year. Refer to Table K-1 for the dates that correspond with each Week Number.

Next, calculate the weekly average turbidity value for the corresponding monitoring week. The weekly average is calculated by adding all of the individual turbidity results for that monitoring week and dividing by the total number of samples. The calculation for the weekly average includes only those days when dewatering discharge occurred. Days when no dewatering discharge occurred, and therefore do not have turbidity data associated with them, are not included in the calculation of the weekly average. For example, if turbidity samples from your dewatering discharge in week 1 result in values of 30 NTU on Tuesday, 40 NTU on Wednesday, and 45 NTU on Thursday, your weekly average turbidity value would be 38 NTU ((30+40+45) ÷ 3 = 38 NTU). If in week 2, your turbidity samples resulted in values of 45 NTU on Monday, 30 NTU on Tuesday, 25 NTU on Wednesday, and 15 NTU on Thursday, you would calculate a new average for that week, which would yield an average turbidity value of 29 NTU ((45+30+25+15) ÷ 4 = 29 NTU). By comparison, if your samples on consecutive days from Friday to Monday were 60

NTU, 45 NTU, 40 NTU, and 43 NTU, respectively, and there are no other dewatering discharges for the remainder of the week, you would calculate one weekly average for the Friday to Sunday to be 48 NTU ((60+45+40) ÷ 3 = 48 NTU), and a separate weekly average for the one Monday to be 43 NTU (43 ÷ 1 = 43 NTU).

If you collect and analyze more than one turbidity sample per day from your dewatering discharge, you must include any additional results in the calculation of your weekly average. For example, if during a monitoring week you take two turbidity samples on Tuesday with a value of 30 NTU and 35 NTU, three samples on Wednesday with a value of 40 NTU, 45 NTU, and 48 NTU, and one sample on Thursday with a value of 45 NTU, your weekly average turbidity value for this week would be 41 NTU ((30+35+40+45+48+45) ÷ 6 = 41 NTU).

Enter the weekly average turbidity values for the corresponding week into the table. Enter "N/A" into the table for the turbidity weekly average if no dewatering discharge occurred during the week.

The benchmark threshold for turbidity for this permit is 50 NTUs unless EPA has authorized the use of an alternate benchmark in accordance with Part 3.3.2.b. If you are using an alternate benchmark threshold, enter the number into the table for the corresponding week. Unless and until EPA approves your request to use an alternate benchmark, you are required to use the standard benchmark of 50 NTU and take any required corrective actions if an exceedance occurs. Enter "N/A" if you have not received approval for an alternate benchmark threshold.

For each week with a value for the weekly average, select "Yes" or "No" in the table to indicate whether the weekly average value exceeds the 50 NTU benchmark or the alternate turbidity benchmark (whichever is applicable). If "Yes", the operator must conduct follow-up corrective action pursuant to Part 5.2.2 and document any corrective action taken in the corrective action log in accordance with Part 5.4.

Section VII. Certification Information

Forms must be signed by a person described below, or by a duly authorized representative of that person.

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, State, Federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing.

A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above;

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and

3. The written authorization is submitted to the Director.

An unsigned or undated form will be considered incomplete.

Submitting Your Form

If you have been granted a waiver from your Regional Office to submit a paper form, you must send your form by mail to one of the following addresses:

For Regular U.S. Mail Delivery:

Stormwater Notice Processing Center
Mail Code 4203M, ATTN: 2022 CGP Reports
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:

Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: 2022 CGP Reports
U.S. EPA
1201 Constitution Avenue, NW
Washington, DC 20004

Visit this website for instructions on how to submit electronically:

https://epanet.zendesk.com/hc/en-us/sections/115000949868-CGP-Training-Material

Revisions to a Submitted Form

If you have previously submitted a form with an error, submit a revised form with the correct information. After discovering the error, submit the revised form as soon as possible. Make a notation on the revised form where the correction was made.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0305). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is

estimated to be 0.2 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Table K-1: 2022 CGP - Dates Corresponding to Monitoring Weeks for Each Monitoring Quarter

2022			
Monitoring Quarter	Week #	*Monday* Start Date	*Sunday* End Date
1	1	1/3/22	1/9/22
	2	1/10/22	1/16/22
	3	1/17/22	1/23/22
	4	1/24/22	1/30/22
	5	1/31/22	2/6/22
	6	2/7/22	2/13/22
	7	2/14/22	2/20/22
	8	2/21/22	2/27/22
	9	2/28/22	3/6/22
	10	3/7/22	3/13/22
	11	3/14/22	3/20/22
	12	3/21/22	3/27/22
	13	3/28/22	4/3/22
2	1	4/4/22	4/10/22
	2	4/11/22	4/17/22
	3	4/18/22	4/24/22
	4	4/25/22	5/1/22
	5	5/2/22	5/8/22
	6	5/9/22	5/15/22
	7	5/16/22	5/22/22
	8	5/23/22	5/29/22
	9	5/30/22	6/5/22
	10	6/6/22	6/12/22
	11	6/13/22	6/19/22
	12	6/20/22	6/26/22
	13	6/27/22	7/3/22
3	1	7/4/22	7/10/22
	2	7/11/22	7/17/22
	3	7/18/22	7/24/22
	4	7/25/22	7/31/22
	5	8/1/22	8/7/22
	6	8/8/22	8/14/22
	7	8/15/22	8/21/22
	8	8/22/22	8/28/22
	9	8/29/22	9/4/22
	10	9/5/22	9/11/22
	11	9/12/22	9/18/22
	12	9/19/22	9/25/22
	13	9/26/22	10/2/22
4	1	10/3/22	10/9/22
	2	10/10/22	10/16/22
	3	10/17/22	10/23/22
	4	10/24/22	10/30/22
	5	10/31/22	11/6/22
	6	11/7/22	11/13/22
	7	11/14/22	11/20/22
	8	11/21/22	11/27/22
	9	11/28/22	12/4/22
	10	12/5/22	12/11/22
	11	12/12/22	12/18/22
	12	12/19/22	12/25/22
	13	12/26/22	1/1/23

2023			
Monitoring Quarter	Week #	*Monday* Start Date	*Sunday* End Date
1	1	1/2/23	1/8/23
	2	1/9/23	1/15/23
	3	1/16/23	1/22/23
	4	1/23/23	1/29/23
	5	1/30/23	2/5/23
	6	2/6/23	2/12/23
	7	2/13/23	2/19/23
	8	2/20/23	2/26/23
	9	2/27/23	3/5/23
	10	3/6/23	3/12/23
	11	3/13/23	3/19/23
	12	3/20/23	3/26/23
	13	3/27/23	4/2/23
2	1	4/3/23	4/9/23
	2	4/10/23	4/16/23
	3	4/17/23	4/23/23
	4	4/24/23	4/30/23
	5	5/1/23	5/7/23
	6	5/8/23	5/14/23
	7	5/15/23	5/21/23
	8	5/22/23	5/28/23
	9	5/29/23	6/4/23
	10	6/5/23	6/11/23
	11	6/12/23	6/18/23
	12	6/19/23	6/25/23
	13	6/26/23	7/2/23
3	1	7/3/23	7/9/23
	2	7/10/23	7/16/23
	3	7/17/23	7/23/23
	4	7/24/23	7/30/23
	5	7/31/23	8/6/23
	6	8/7/23	8/13/23
	7	8/14/23	8/20/23
	8	8/21/23	8/27/23
	9	8/28/23	9/3/23
	10	9/4/23	9/10/23
	11	9/11/23	9/17/23
	12	9/18/23	9/24/23
	13	9/25/23	10/1/23
4	1	10/2/23	10/8/23
	2	10/9/23	10/15/23
	3	10/16/23	10/22/23
	4	10/23/23	10/29/23
	5	10/30/23	11/5/23
	6	11/6/23	11/12/23
	7	11/13/23	11/19/23
	8	11/20/23	11/26/23
	9	11/27/23	12/3/23
	10	12/4/23	12/10/23
	11	12/11/23	12/17/23
	12	12/18/23	12/24/23
	13	12/25/23	12/31/23

2024			
Monitoring Quarter	Week #	*Monday* Start Date	*Sunday* End Date
1	1	1/1/24	1/7/24
	2	1/8/24	1/14/24
	3	1/15/24	1/21/24
	4	1/22/24	1/28/24
	5	1/29/24	2/4/24
	6	2/5/24	2/11/24
	7	2/12/24	2/18/24
	8	2/19/24	2/25/24
	9	2/26/24	3/3/24
	10	3/4/24	3/10/24
	11	3/11/24	3/17/24
	12	3/18/24	3/24/24
	13	3/25/24	3/31/24
2	1	4/1/24	4/7/24
	2	4/8/24	4/14/24
	3	4/15/24	4/21/24
	4	4/22/24	4/28/24
	5	4/29/24	5/5/24
	6	5/6/24	5/12/24
	7	5/13/24	5/19/24
	8	5/20/24	5/26/24
	9	5/27/24	6/2/24
	10	6/3/24	6/9/24
	11	6/10/24	6/16/24
	12	6/17/24	6/23/24
	13	6/24/24	6/30/24
3	1	7/1/24	7/7/24
	2	7/8/24	7/14/24
	3	7/15/24	7/21/24
	4	7/22/24	7/28/24
	5	7/29/24	8/4/24
	6	8/5/24	8/11/24
	7	8/12/24	8/18/24
	8	8/19/24	8/25/24
	9	8/26/24	9/1/24
	10	9/2/24	9/8/24
	11	9/9/24	9/15/24
	12	9/16/24	9/22/24
	13	9/23/24	9/29/24
	14	9/30/24	10/6/24
4	1	10/7/24	10/13/24
	2	10/14/24	10/20/24
	3	10/21/24	10/27/24
	4	10/28/24	11/3/24
	5	11/4/24	11/10/24
	6	11/11/24	11/17/24
	7	11/18/24	11/24/24
	8	11/25/24	12/1/24
	9	12/2/24	12/8/24
	10	12/9/24	12/15/24
	11	12/16/24	12/22/24
	12	12/23/24	12/29/24
	13	12/30/24	1/5/25

2025			
Monitoring Quarter	Week #	*Monday* Start Date	*Sunday* End Date
1	1	1/6/25	1/12/25
	2	1/13/25	1/19/25
	3	1/20/25	1/26/25
	4	1/27/25	2/2/25
	5	2/3/25	2/9/25
	6	2/10/25	2/16/25
	7	2/17/25	2/23/25
	8	2/24/25	3/2/25
	9	3/3/25	3/9/25
	10	3/10/25	3/16/25
	11	3/17/25	3/23/25
	12	3/24/25	3/30/25
	13	3/31/25	4/6/25
2	1	4/7/25	4/13/25
	2	4/14/25	4/20/25
	3	4/21/25	4/27/25
	4	4/28/25	5/4/25
	5	5/5/25	5/11/25
	6	5/12/25	5/18/25
	7	5/19/25	5/25/25
	8	5/26/25	6/1/25
	9	6/2/25	6/8/25
	10	6/9/25	6/15/25
	11	6/16/25	6/22/25
	12	6/23/25	6/29/25
	13	6/30/25	7/6/25
3	1	7/7/25	7/13/25
	2	7/14/25	7/20/25
	3	7/21/25	7/27/25
	4	7/28/25	8/3/25
	5	8/4/25	8/10/25
	6	8/11/25	8/17/25
	7	8/18/25	8/24/25
	8	8/25/25	8/31/25
	9	9/1/25	9/7/25
	10	9/8/25	9/14/25
	11	9/15/25	9/21/25
	12	9/22/25	9/28/25
	13	9/29/25	10/5/25
4	1	10/6/25	10/12/25
	2	10/13/25	10/19/25
	3	10/20/25	10/26/25
	4	10/27/25	11/2/25
	5	11/3/25	11/9/25
	6	11/10/25	11/16/25
	7	11/17/25	11/23/25
	8	11/24/25	11/30/25
	9	12/1/25	12/7/25
	10	12/8/25	12/14/25
	11	12/15/25	12/21/25
	12	12/22/25	12/28/25
	13	12/29/25	1/4/26

2026			
Monitoring Quarter	Week #	*Monday* Start Date	*Sunday* End Date
1	1	1/5/26	1/11/26
	2	1/12/26	1/18/26
	3	1/19/26	1/25/26
	4	1/26/26	2/1/26
	5	2/2/26	2/8/26
	6	2/9/26	2/15/26
	7	2/16/26	2/22/26
	8	2/23/26	3/1/26
	9	3/2/26	3/8/26
	10	3/9/26	3/15/26
	11	3/16/26	3/22/26
	12	3/23/26	3/29/26
	13	3/30/26	4/5/26
2	1	4/6/26	4/12/26
	2	4/13/26	4/19/26
	3	4/20/26	4/26/26
	4	4/27/26	5/3/26
	5	5/4/26	5/10/26
	6	5/11/26	5/17/26
	7	5/18/26	5/24/26
	8	5/25/26	5/31/26
	9	6/1/26	6/7/26
	10	6/8/26	6/14/26
	11	6/15/26	6/21/26
	12	6/22/26	6/28/26
	13	6/29/26	7/5/26
3	1	7/6/26	7/12/26
	2	7/13/26	7/19/26
	3	7/20/26	7/26/26
	4	7/27/26	8/2/26
	5	8/3/26	8/9/26
	6	8/10/26	8/16/26
	7	8/17/26	8/23/26
	8	8/24/26	8/30/26
	9	8/31/26	9/6/26
	10	9/7/26	9/13/26
	11	9/14/26	9/20/26
	12	9/21/26	9/27/26
	13	9/28/26	10/4/26
4	1	10/5/26	10/11/26
	2	10/12/26	10/18/26
	3	10/19/26	10/25/26
	4	10/26/26	11/1/26
	5	11/2/26	11/8/26
	6	11/9/26	11/15/26
	7	11/16/26	11/22/26
	8	11/23/26	11/29/26
	9	11/30/26	12/6/26
	10	12/7/26	12/13/26
	11	12/14/26	12/20/26
	12	12/21/26	12/27/26
	13	12/28/26	1/3/27

2027			
Monitoring Quarter	Week #	*Monday* Start Date	*Sunday* End Date
1	1	1/4/27	1/10/27
	2	1/11/27	1/17/27
	3	1/18/27	1/24/27
	4	1/25/27	1/31/27
	5	2/1/27	2/7/27
	6	2/8/27	2/14/27
	7	2/15/27	2/21/27
	8	2/22/27	2/28/27
	9	3/1/27	3/7/27
	10	3/8/27	3/14/27
	11	3/15/27	3/21/27
	12	3/22/27	3/28/27
	13	3/29/27	4/4/27

Appendix B

Site Inspection Report Form

Site Inspection Report
Project Name: _____
NPDES ID Number: _____

Section A – General Information	
Inspector Information	
Inspector Name:	**Title:**
Company Name:	**Email:**
Address:	**Phone Number:**
Inspection Details	
Inspection Date:	**Inspection Location:**
Inspection Start Time:	**Inspection End Time:**
Current Phase of Construction:	**Weather Conditions During Inspection:**

Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.5? ☐ Yes ☐ No

If "Yes," provide the following information:

Location of unsafe conditions:

The conditions that prevented you inspecting this location:

Indicate the required inspection frequency:

Standard Frequency (CGP Part 4.2):

☐ At least once every 7 calendar days; or

☐ Once every 14 calendar days *and* within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inch or more of rain within a 24-hour period; or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

Increased Frequency (CGP Part 4.3.1) (If site discharges to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3):

☐ Once every 7 calendar days *and* within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inch or more of rain within a 24-hour period; or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

Site Inspection Report
Project Name: _____
NPDES ID Number: _____

Reduced Frequency (CGP Part 4.4):

☐ For stabilized areas: Twice during first month, no more than 14 calendar days apart; then once per month after first month until permit coverage is terminated

☐ For stabilized areas on "linear construction sites": Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inch or more of rain within a 24-hour period; or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

☐ For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought: Once per month and within 24 hours of the occurrence of either:

- A storm event that produces 0.25 inch or more of rain within a 24-hour period; or
- A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

☐ For frozen conditions where construction activities are being conducted: Once per month.

Was this inspection triggered by a storm event producing 0.25 inch or more of rain within a 24-hour period? ☐ Yes ☐ No

If "Yes," how did you determine whether the storm produced 0.25 inch or more of rain?

☐ On-site rain gauge

☐ Weather station representative of site.

Weather station location:

Total rainfall amount that triggered the inspection (inches):

Was this inspection triggered by a snowmelt discharge from a storm event producing 3.25 inches or more of snow within a 24-hour period? ☐ Yes ☐ No

If "Yes," how did you determine whether the storm produced 3.25 inches or more of snow?

☐ On-site rain gauge

☐ Weather station representative of site.

Weather station location:

Total snowfall amount that triggered the inspection (inches):

Site Inspection Report
Project Name: _____
NPDES ID Number: _____

Section B – Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.2) (Insert additional rows if needed)					
Type and Location of E&S Control	**Conditions Requiring Routine Maintenance?[1]**	**If "Yes," How Many Times (Including This Occurrence) Has This Condition Been Identified?**	**Conditions Requiring Corrective Action?[2, 3]**	**Date on Which Condition First Observed (If Applicable)?**	**Description of Conditions Observed**
1.	☐ Yes ☐ No		☐ Yes ☐ No		
2.	☐ Yes ☐ No		☐ Yes ☐ No		
3.	☐ Yes ☐ No		☐ Yes ☐ No		
4.	☐ Yes ☐ No		☐ Yes ☐ No		
5.	☐ Yes ☐ No		☐ Yes ☐ No		
If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:					

[1] Routine maintenance includes minor repairs or other upkeep performed to ensure that the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control. Routine maintenance is also required for specific conditions: (1) for perimeter controls, whenever sediment has accumulated to half or more the above-ground height of the control (CGP Part 2.2.3.c.i); (2) where sediment has been tracked out from the site onto paved roads, sidewalks, or other paved areas (CGP Part 2.2.4.d); (3) for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (CGP Part 2.2.10.b); and (4) for sediment basins, as necessary to maintain at least half of the design capacity of the basin (CGP Part 2.2.12.f).
[2] Corrective actions are triggered only for specific conditions (CGP Part 5.1):

1. A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4.c, you find it necessary to repeatedly (i.e., three [3] or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1.c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under 2.1.4); or
2. A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
3. Your discharges are not meeting applicable water quality standards; or
4. A prohibited discharge has occurred (see CGP Part 1.3); or
5. During the discharge from site dewatering activities:
   a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2.b); or
   b. You observe or you are informed by EPA, state, or local authorities of the presence of the conditions specified in Part 4.6.3.e.

[3] If a condition on your site requires a corrective action, you must also fill out a corrective action log found at: https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates. See CGP Part 5.4 for more information.

Site Inspection Report
Project Name: _____
NPDES ID Number: _____

Section C – Condition and Effectiveness of Pollution Prevention (P2) Practices and Controls (CGP Part 2.3) (Insert additional rows if needed)					
Type and Location of P2 Practices and Controls	**Conditions Requiring Routine Maintenance?[1]**	**If "Yes," How Many Times (Including This Occurrence) Has This Condition Been Identified?**	**Conditions Requiring Corrective Action?[2, 3]**	**Date on Which Condition First Observed (If Applicable)?**	**Description of Conditions Observed**
1.	☐ Yes ☐ No		☐ Yes ☐ No		
2.	☐ Yes ☐ No		☐ Yes ☐ No		
3.	☐ Yes ☐ No		☐ Yes ☐ No		
4.	☐ Yes ☐ No		☐ Yes ☐ No		
5.	☐ Yes ☐ No		☐ Yes ☐ No		
If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:					

Site Inspection Report
Project Name: _____
NPDES ID Number: _____

Section D – Stabilization of Exposed Soil (CGP Part 2.2.14) (Insert additional rows if needed)					
Specific Location That Has Been or Will Be Stabilized	**Stabilization Method and Applicable Deadline**	**Stabilization Initiated?**	**Final Stabilization Criteria Met?**	**Final Stabilization Photos Taken?**	**Notes**
1.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
2.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
3.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
4.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
5.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	

Section E – Description of Discharges (CGP Part 4.6.2) (Insert additional rows if needed)	
Was a discharge (not including dewatering) occurring from any part of your site at the time of the inspection?[4] ☐ Yes ☐ No **If "Yes," for each point of discharge, document the following:** • The visual quality of the discharge. • The characteristics of the discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants. • Signs of the above pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.	
Discharge Location	**Observations**
1.	
2.	
3.	
4.	
5.	

[4] If a dewatering discharge was occurring, you must conduct a dewatering inspection pursuant to CGP Part 4.3.2 and complete a separate dewatering inspection report.

Site Inspection Report
Project Name: _____
NPDES ID Number: _____

Section F – Signature and Certification (CGP Part 4.7.2)	
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."	
MANDATORY: Signature of Operator or "Duly Authorized Representative:"	
Signature:	**Date:**
Printed Name:	**Affiliation:**
OPTIONAL: Signature of Contractor or Subcontractor	
Signature:	**Date:**
Printed Name:	**Affiliation:**

General Tips for Using This Template

This Site Inspection Report template is provided to assist you in preparing site inspection reports for the U.S. Environmental Protection Agency's (EPA's) 2022 Construction General Permit (CGP). If you are covered under the 2022 CGP, you can use this template to create a Site Inspection Report form that is customized to the specific circumstances of your site and that complies with the minimum reporting requirements of Part 4.7 of the CGP. Note that the use of this form is optional; you may use your own site inspection report form provided it includes the minimum information required in Part 4.7 of the CGP.

This template does not address the CGP's inspection reporting requirements related to dewatering activities. A separate inspection template has been developed specifically for dewatering activities and is available at: https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates.

Keep in mind that this document is a template and not an "off-the-shelf" inspection report that is ready to use without some modification. You must first customize this form to include the specifics of your project in order for it to be useable for your inspection reports. Once you have entered all of your site-specific information into the blank fields, you may use this form to complete inspection reports.

The following tips for using this template will help you ensure that the minimum permit requirements are met:

- **Review the inspection requirements.** Before you start developing your inspection report form, read the CGP's Part 4 inspection requirements. This will ensure that you have a working understanding of the permit's underlying inspection requirements.
- **Complete all required blank fields.** Fill out all blank fields. Only by filling out all fields will the template be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the template form for your inspection, you may delete these or cross them off as you see fit. Or, if you need more space to document your findings, you may insert additional rows in the electronic version of this form or use the bottom of the page in the field version of this form.)
- **Use your site map to document inspection findings.** In several places in the template, you are directed to specify the location of certain features of your site, including where stormwater controls are installed and where you will be stabilizing exposed soil. You are also asked to fill in location information for unsafe conditions and the locations of any discharges occurring during your inspections. Where you are asked for location information, EPA encourages you to reference the point on your SWPPP site map that corresponds to the requested location on the inspection form. Using the site map as a tool in this way will help you conduct efficient inspections, will assist you in evaluating problems found, and will ensure proper documentation.

- **Complete the inspection report within 24 hours of completing a site inspection.** You must complete an inspection report in accordance with Part 4.7.1 of the CGP.
- **Include the inspection form with your Stormwater Pollution Prevention Plan (SWPPP).** Once your form is complete, make sure to include a copy of the inspection form in your SWPPP in accordance with Part 7.2.7.e of the CGP.
- **Retain copies of all inspection reports with your records.** You must also retain in your records copies of all inspection reports in accordance with the requirements in Part 4.7.3 of the CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated in accordance with the requirements in Part 4.7.4 of the CGP.

Instructions for Section A

Inspector Name

Enter the name of the person that conducted the inspection. Include the person's contact information (title, affiliated company name, address, email, and phone number).

Inspection Date and Time

Enter the date you performed the inspection and the time you started and ended the inspection.

Weather Conditions During Inspection

Enter the weather conditions occurring during the inspection, e.g., sunny, overcast, light rain, heavy rain, snowing, icy, windy.

Current Phase of Construction

If this project is being completed in more than one phase, indicate which phase it is currently in.

Inspection Location

If your project has multiple locations where you conduct separate inspections, specify the location where this inspection is being conducted. If only one inspection is conducted for your entire project, enter "Entire Site." If necessary, complete additional inspection report forms for each separate inspection location.

Unsafe Conditions for Inspection (CGP Part 4.5.7)

Inspections are not required where a portion of the site or the entire site is subject to unsafe conditions. These conditions should not regularly occur and should not be consistently present on a site. Generally, unsafe conditions are those that render the site (or a portion of

it) inaccessible or that would pose a significant probability of injury to applicable personnel. Examples could include severe storm or flood conditions, high winds, and downed electrical wires.

If your site, or a portion of it, is affected by unsafe conditions during the time of your inspection, provide a description of the conditions that prevented you from conducting the inspection and what parts of the site were affected. If the entire site was considered unsafe, specify the location as "Entire Site."

Inspection Frequency

Check all the inspection frequencies that apply to your project. Note that you may be subject to different inspection frequencies in different areas of your site.

Inspection Triggered by a Storm Event

If you were required to conduct this inspection because of a storm event that produced 0.25 inch or more of rain within a 24-hour period, indicate whether you relied on an on-site rain gauge or a nearby weather station (and where the weather station is located). Also, specify the total amount of rainfall for this specific storm event.

If you were required to conduct this inspection because of a snowmelt discharge from a storm event that produced 3.25 inches or more of snow within a 24-hour period, then indicate whether you relied on an on-site measurement or a nearby weather station (and where the weather station is located). Also, specify the total amount of snowfall for this specific storm event.

Instructions for Section B

Type and Location of Erosion and Sediment (E&S) Controls

Provide a list of all E&S controls that your SWPPP indicates will be installed and implemented at your site. This list must include at a minimum all E&S controls required by CGP Part 2.2. Include also any natural buffers established under CGP Part 2.2.1. Buffer requirements apply if your project's earth-disturbing activities will occur within 50 feet of a discharge to receiving water. You may group your E&S controls on your form if you have several of the same type of controls (e.g., you may group "Inlet Protection Measures," "Perimeter Controls," and "Stockpile Controls" together on one line), but if there are any problems with a specific control, you must separately identify the location of the control, whether routine maintenance or corrective action is necessary, and in the notes section you must describe the specifics about the problem you observed.

Conditions Requiring Routine Maintenance?

Answer "Yes" if the E&S control requires routine maintenance as defined in Footnote 1 of this template. Note that in many cases, "Yes" answers are expected and indicate a project with an active operation and maintenance program. You should also answer "Yes" if work to fix the problem is still ongoing from the previous inspection, though necessary work must be initiated immediately and completed by the end of the next business day or within seven calendar days if documented in accordance with CGP Part 2.1.4.b.

If "Yes," How Many Times (Including this Occurrence) Has This Condition Been Identified?

Indicate how many times the routine maintenance has been required for the same control at the same location.

Conditions Requiring Corrective Action?

Answer "Yes" if you found any of the conditions listed in Footnote 2 in this template to be present during your inspection (CGP Part 5.1). If you answer "Yes," you must take corrective action and complete a corrective action log, found at: https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates. You should also answer "Yes" if work to fix the problem from a previous inspection is still ongoing, though the operator must comply with the corrective action deadlines in CGP Part 5.2.

Date on Which Condition First Observed (If Applicable)?

Provide the date on which the condition that triggered the need for routine maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

Description of Conditions Observed

For each E&S control and the area immediately surrounding it, describe whether the control is properly installed and whether it appears to be working to minimize sediment discharge. Indicate also whether a new or modified control is necessary to comply with the permit. Describe any problem condition(s) you observed such as the following:

1. Failure to install or to properly install a required E&S control;
2. Damage or destruction to an E&S control caused by vehicles, equipment, or personnel, a storm event, or other event;
3. Mud or sediment deposits found downslope from E&S controls, including in receiving waters, or on nearby streets, curbs, or open conveyance channels;

4. Sediment tracked out onto paved areas by vehicles leaving construction site;
5. Noticeable erosion or sedimentation at discharge outlets or at adjacent streambanks or channels;
6. Erosion of the site's sloped areas (e.g., formation of rills or gullies);
7. E&S control is no longer working due to lack of maintenance; and
8. Other incidents of noncompliance.

Describe also why you think the problem condition(s) occurred as well as actions (e.g., routine maintenance or corrective action) you will take or have taken to fix the problem.

For buffer areas, make note of whether they are marked off as required; whether there are signs of construction disturbance within the buffer, which is prohibited under the CGP; and whether there are visible signs of erosion resulting from discharges through the area.

If routine maintenance or corrective action is required, briefly note the reason. If routine maintenance or corrective action has been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action log describing the condition and your work to fix the problem*.

Routine Maintenance Need Has Been Found to be Necessary Three (3) or More Times for the Same Control at the Same Location (Including this Occurrence)

If routine maintenance has been required three (3) or more times for the same control at the same location, the permit requires (CGP Part 2.1.4.c) you to fix the problem using the corrective action procedures in CGP Part 5 or to document why you believe the reoccurring problem can be addressed as a routine maintenance fix. If you believe the problem can continue to be fixed as routine maintenance, describe why you believe the specific condition should still be addressed as routine maintenance.

<u>Instructions for Section C</u>

Type and Location of Pollution Prevention (P2) Practices and Controls

Provide a list of all P2 practices and controls that are implemented at your site. This list must include all P2 practices and controls required by CGP Part 2.3 and those that are described in your SWPPP.

Conditions Requiring Routine Maintenance?

Answer "Yes" if the P2 practice or control requires routine maintenance as defined in Footnote 1 of this template. Note that in many cases, "Yes" answers are expected and indicate a project with an active operation and maintenance program. You should also answer "Yes" if work to fix the problem is still ongoing from the previous inspection, though necessary work must be initiated immediately and completed by the end of the next business day or within seven calendar days if documented in accordance with CGP Part 2.1.4.b.

If "Yes," How Many Times (Including this Occurrence) Has this Condition Been Identified?

Indicate how many times the routine maintenance has been required for the same practice or control at the same location.

Conditions Requiring Corrective Action?

Answer "Yes" if you found any of the conditions listed in Footnote 2 in this template to be present during your inspection (CGP Part 5.1). If you answer "Yes," you must take corrective action and complete a corrective action log, found at: https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates. You should also answer "Yes" if work to fix the problem from a previous inspection is still ongoing, though the operator must comply with the corrective action deadlines in CGP Part 5.2.

Date on Which Condition First Observed (If Applicable)?

Provide the date on which the condition that triggered the need for maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

Description of Conditions Observed

For each P2 control and the area immediately surrounding it, describe whether the control is properly installed and whether it appears to be working to minimize or eliminate pollutant discharges. Indicate also whether a new or modified control is necessary to comply with the permit. Describe any problem condition(s) you observed such as the following:

1. Failure to install or to properly install a required P2 control;
2. Damage or destruction to a P2 control caused by vehicles, equipment, or personnel, or a storm event;
3. Evidence of a spill, leak, or other type of pollutant discharge, or failure to have properly cleaned up a previous spill, leak, or other type of pollutant discharge;

4. Spill response supplies are absent, insufficient, or not where they are supposed to be located;
5. Improper storage, handling, or disposal of chemicals, building materials or products, fuels, or wastes;
6. P2 control is no longer working due to lack of maintenance; and
7. Other incidents of noncompliance.

Describe also why you think the problem condition(s) occurred as well as actions (e.g., routine maintenance or corrective action) you will take or have taken to fix the problem.

If routine maintenance or corrective action is required, briefly note the reason. If routine maintenance or corrective action has been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action log describing the condition and your work to fix the problem*.

Routine Maintenance Need Was Found to be Necessary Three (3) or More Times for the Same Control at the Same Location (Including this Occurrence)

If routine maintenance has been required three (3) or more times for the same control at the same location, the permit requires (CGP Part 2.1.4.c) you to fix the problem using the corrective action procedures in CGP Part 5 or to document why you believe the reoccurring problem can be addressed as a routine maintenance fix. If you believe the problem can continue to be fixed as routine maintenance, describe why you believe the specific condition should still be addressed as routine maintenance.

<u>Instructions for Section D</u>

Specific Location That Has Been or Will Be Stabilized

List all areas where soil stabilization is required to begin because construction work in that area has permanently stopped or temporarily stopped (i.e., work will stop for 14 or more days), and all areas where stabilization has been implemented (CGP Part 2.2.14).

Stabilization Method and Applicable Deadline

For each area, specify the method of stabilization (e.g., hydroseed, sod, planted vegetation, erosion control blanket, mulch, rock).

Specify also which of the following stabilization deadlines apply to this location:

1. 5 acres or less of land disturbance occurring at any one time at site: Complete no later than 14 calendar days after stabilization initiated.
2. More than 5 acres of land disturbance occurring at any one time at site: Complete no later than 7 calendar days after stabilization initiated.
3. Arid, semi-arid, and drought-stricken areas: See CGP Part 2.2.14.b.i.
4. Unforeseen circumstances: See CGP Part 2.2.14.b.ii.
5. Discharges to a sediment- or nutrient-impaired water or to a water identified as Tier 2, 2.5, or 3 for antidegradation purposes: Complete no later than 7 days after stabilization initiated.

Stabilization Initiated?
For each area, indicate whether stabilization has been initiated. If "Yes," then enter the date stabilization was initiated.

Final Stabilization Criteria Met?
For each area, indicate whether the final stabilization criteria in CGP Part 2.2.14.c have been met. If "Yes," then enter the date final stabilization criteria were met.

Final Stabilization Photos Taken?
Answer "Yes" if you have taken photos before and after meeting the stabilization criteria as required in CGP Part 8.2.1.a.

Notes
For each area where stabilization has been initiated, describe the progress that has been made and what additional actions are necessary to complete stabilization. Note the effectiveness of stabilization in preventing erosion. If stabilization has been initiated but not completed, make a note of the date it is to be completed. If stabilization has been completed, make a note of the date it was completed. If stabilization has not yet been initiated, make a note of the date it is to be initiated and the date it is to be completed.

Instructions for Section E

You are only required to complete this section if a discharge is occurring at the time of the inspection (CGP Part 4.6.2).

Was a discharge (not including dewatering) occurring from any part of your site at the time of the inspection?
During your inspection, examine all points of discharge from your site, and determine whether a discharge is occurring. If a dewatering discharge was occurring, you must conduct a dewatering inspection pursuant to CGP Part 4.3.2. If there is a discharge, answer "Yes" and complete the questions below regarding the specific discharge. If there is not a discharge, answer "No" and skip to the next page.

Discharge Location (Repeat as necessary if there are multiple points of discharge.)
Specify the location on your site where the discharge is occurring. The location may be an outlet from a stormwater control or constructed stormwater channel, a discharge into a storm sewer inlet, or a specific point on the site. Be as specific as possible; it is recommended that you refer to a precise point on your site map.

Observations
Document the visual quality of the discharge and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oily sheen; and other indicators of stormwater pollutants. Also, document signs of these same pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

Instructions for Section F
Each inspection report must be signed and certified to be considered complete (CGP Part 4.7.2).

Operator or "Duly Authorized Representative" – MANDATORY (CGP Appendix G Part G.11.2 and CGP Appendix H Section X)
At a minimum, the site inspection report must be signed by either: (1) the person who signed the Notice of Intent (NOI); or (2) a duly authorized representative of that person. The following requirements apply.

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation*: By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation

of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- *For a partnership or sole proprietorship*: By a general partner or the proprietor, respectively.
- *For a municipality, state, federal, or other public agency*: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency; or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Sign, date and print your name and affiliation.

Contractor or Subcontractor – OPTIONAL

Where you rely on a contractor or subcontractor to complete the site inspection report, you should consider requiring the individual(s) to sign and certify each report. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the site inspection report as well. If applicable, sign, date, and print your name and affiliation.

Note

While EPA has made every effort to ensure the accuracy of all instructions contained in this template, it is the permit, not this template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between this template and any corresponding provision of the CGP, you must abide by the requirements in the permit. EPA welcomes comments on this Site Inspection Report template at any time and will consider those comments in any future revision. You may contact EPA for CGP-related inquiries at: cgp@epa.gov.

Appendix C

Corrective Action Log

2022 CGP Corrective Action Log

Project Name: _____

NPDES ID Number: _____

Section A – Individual Completing This Log	
Name:	**Title:**
Company Name:	**Email:**
Address:	**Phone Number:**
Section B – Details of the Problem (CGP Part 5.4.1.a) Complete this section within 24 hours of discovering the condition that triggered corrective action.	
Date problem was first identified:	**Time problem was first identified:**
What site conditions triggered this corrective action? *(Check the box that applies. See instructions for a description of each triggering condition (1 through 6).)* ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5a ☐ 5b ☐ 6	
Specific location where problem identified:	
Provide a description of the specific condition that triggered the need for corrective action and the cause (if identifiable):	
Section C – Corrective Action Completion (CGP Part 5.4.1.b) Complete this section within 24 hours after completing the corrective action.	
For site conditions Nos. 1, 2, 3, 4, or 6 (those not related to a dewatering discharge) confirm that you met the following deadlines (CGP Part 5.2.1):	
☐ Immediately took all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events; **AND** ☐ Completed corrective action by the close of the next business day, unless a new or replacement control, or significant repair, was required; **OR** ☐ Completed corrective action within seven (7) calendar days from the time of discovery because a new or replacement control, or significant repair, was necessary to complete the installation of the new or modified control or complete the repair; **OR**	

2022 CGP Corrective Action Log

Project Name: _____

NPDES ID Number: _____

☐ It was infeasible to complete the installation or repair within 7 calendar days from the time of discovery. Provide the following additional information:

Explain why 7 calendar days was infeasible to complete the installation or repair:

Provide your schedule for installing the stormwater control and making it operational as soon as feasible after the 7 calendar days:

For site conditions Nos. 5a, 5b, or 6 (those related to a dewatering discharge), confirm that you met the following deadlines:

☐ Immediately took all reasonable steps to minimize or prevent the discharge of pollutants until a solution could be implemented, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition taking safety considerations into account.

☐ Determined whether the dewatering controls were operating effectively and whether they were causing the conditions.

☐ Made any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

Describe any modification(s) made as part of corrective action: (Insert additional rows below if applicable)	**Date of completion:**	**SWPPP update necessary?**	**If yes, date SWPPP was updated:**
1.		☐ Yes ☐ No	
2.		☐ Yes ☐ No	

2022 CGP Corrective Action Log

Project Name: _____

NPDES ID Number: _____

Section D – Signature and Certification (CGP Part 5.4.2)	
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."	
MANDATORY: Signature of Operator or "Duly Authorized Representative:"	
Signature:	**Date:**
Printed Name:	**Affiliation:**
OPTIONAL: Signature of Contractor or Subcontractor	
Signature:	**Date:**
Printed Name:	**Affiliation:**

General Instructions

This Corrective Action Log template is provided to assist you creating a Corrective Action Log that complies with the minimum reporting requirements of Part 5.4 of the U.S. Environmental Protection Agency's (EPA's) Construction General Permit (CGP). For each triggering condition on your site, you will need to fill out a separate corrective action log.

The entire form must be completed to be compliant with the requirements of the permit. (Note: In Section C, if you do not need the number of rows provided in the corrective action log, you may delete these or cross them off. Alternatively, if you need more space to describe any modifications, you may insert additional rows in the electronic version of this form or use the bottom of the page in the field version of this form.)

If you are covered under a state CGP, this template may be helpful in developing a log that can be used for that permit; however, you will likely need to modify this form to meet the specific requirements of any state-issued permit. If your permitting authority requires you to use a specific corrective action log, you should not use this template.

Instructions for Section A

Individual Completing This Log

Enter the name of the person completing this log. Include the person's contact information (title, affiliated company name, address, email, and phone number).

Instructions for Section B

You must complete Section B within 24 hours of discovering the condition that triggered corrective action (CGP Part 5.4).

When was the problem first discovered?

Specify the date and time when the triggering condition was first discovered.

What site conditions triggered this corrective action? (CGP Parts 5.1 and 5.3)

Check the box corresponding to the numbered triggering condition below that applies to your site.

1. A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with CGP Part 2.1.4c, you find it necessary to repeatedly (i.e., three or more times) conduct the same routine maintenance fix to the same control at the same

location (unless you document in your inspection report under CGP Part 4.7.1c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under CGP Part 2.1.4);

2. A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly;
3. Your discharges are not meeting applicable water quality standards;
4. A prohibited discharge has occurred (see CGP Part 1.3);
5. During discharge from site dewatering activities:
    a. The weekly average of your turbidity monitoring results exceeds the 50-nephelometric-turbidity-unit benchmark (or alternate benchmark if approved by EPA pursuant to Part CGP 3.3.2b); or
    b. You observe or you are informed by EPA, state, or local authorities of the presence of any of the following at the point of discharge to a receiving water flowing through or immediately adjacent to your site and/or to constructed or natural site drainage features or storm drain inlets:
        - Sediment plume
        - Suspended solids
        - Unusual color
        - Presence of odor
        - Decreased clarity
        - Presence of foam
        - Visible sheen on the water surface or visible oily deposits on the bottom or shoreline of the receiving water
6. EPA requires corrective action as a result of permit violations found during an inspection carried out under CGP Part 4.8.

Provide a description of the problem (CGP Part 5.4.1.a)

Provide a summary description of the condition you found that triggered corrective action, the cause of the problem (if identifiable), and the specific location where it was found. Be as specific as possible about the location; it is recommended that you refer to a precise point on your site map.

Instructions for Section C

You must complete Section C within 24 hours after completing the correction action. (CGP Part 5.4)

Deadlines for completing corrective action for conditions Nos. 1, 2, 3, 4, or 6 (if not relating to a dewatering discharge) (CGP Part 5.2.1)

Check the box to confirm that you met the deadlines that apply to each triggering condition. You are always required to check the first box (i.e., immediately took all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events). Only one of the next three boxes should be checked depending on the situation that applies to this corrective action.

Check the second box if the corrective action for this particular triggering condition does not require a new or replacement control or a significant repair. These actions must be completed by the close of the next business day from the time of discovery of the condition.

Check the third box if the corrective action for this particular triggering condition requires a new or replacement control or a significant repair. These actions must be completed by no later than 7 calendar days from the time of discover of the condition.

Check the fourth box if the corrective action for this particular triggering condition requires a new or replacement control or a significant repair and if it is infeasible to complete the work within 7 calendar days. Additionally, you will need to fill out the table below the checkbox that requires:

1. An explanation as to why it was infeasible to complete the installation or repair within seven calendar days of discovering the condition.
2. Provide the schedule you will adhere to for installing the stormwater control and making it operational as soon as feasible after the seventh day following discovery.

Note: Per CGP Part 5.2.1.c, where these actions result in changes to any of the stormwater controls or procedures documented in your Stormwater Pollution Prevention Plan(SWPPP), you must modify your SWPPP accordingly within 7 calendar days of completing this work.

Deadlines for completing corrective action for condition Nos. 5a, 5b, or 6 related to a dewatering discharge (CGP Part 5.2.2)
These deadlines apply to conditions relating to construction dewatering activities. Check the box to confirm that you met the deadlines that apply to each triggering condition. You are required to check all of the boxes in this section to indicate your compliance with the corrective action deadlines.

List of modification(s) to correct problem
Provide a list of modifications you completed to correct the problem.

Date of completion
Enter the date you completed the modification. The work must be completed by the deadline you indicated above.

SWPPP update necessary?
Check "Yes" or "No" to indicate if a SWPPP update is necessary consistent with CGP Part 7.4.1.a in order to reflect changes implemented at your site. If "Yes," then enter the date you updated your SWPPP. The SWPPP updates must be made within 7 calendar days of completing a corrective action. (CGP Part 5.2.1.c)

Instructions for Section D
Each corrective action log entry must be signed and certified following completion of Section D to be considered complete. (CGP Part 5.4.2)

Operator or "Duly Authorized Representative" – MANDATORY (CGP Appendix G Part G.11.2 and CGP Appendix H Section X)
At a minimum, the corrective action log must be signed by either (1) the person who signed the Notice of Intent (NOI); or (2) a duly authorized representative of that person. The following requirements apply.

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation*: By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and

initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- *For a partnership or sole proprietorship*: By a general partner or the proprietor, respectively.
- *For a municipality, state, federal, or other public agency*: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency; or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Sign, date and print your name and affiliation.

Contractor or Subcontractor – OPTIONAL

Where you rely on a contractor or subcontractor to complete this log and the associated corrective action, you should consider requiring the individual(s) to sign and certify each log entry. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the log as well. If applicable, sign, date, and print your name and affiliation.

Recordkeeping

Logs must be retained for at least 3 years from the date your permit coverage expires or is terminated. (CGP Part 5.4.4)

Keep copies of your signed corrective action log entries at the site or at an easily accessible location so that it can be made immediately available at the time of an on-site inspection or upon request by EPA. (CGP Part 5.4.3) Include a copy of the corrective action log in your SWPPP (CGP Part 7.2.7.e).

Note

While EPA has made every effort to ensure the accuracy of all instructions contained in this template, it is the permit, not this template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between this template and any corresponding provision of the CGP, you must abide by the requirements in the permit. EPA welcomes comments on this Corrective Action Log Template at any time and will consider those comments in any future revision. You may contact EPA for CGP-related inquiries at cgp@epa.gov.

Appendix D

SWPPP Amendment Log

Table D-1
SWPPP Amendment Log

Amendment No.	Description	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix E

Subcontractor Certifications and Agreements

Subcontractor Certification
Stormwater Pollution Prevention Plan

Project number:_____

Project title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above-named project:

Company: _____

Address: _____

Telephone number: _____

Type of construction service to be provided:_____

_____

_____

Signature: _____

Title: _____

Date: _____

Appendix F

Grading and Stabilization Activities Log

Table F-1
Grading/Stabilization Activity Log

Activity Start Date	Description of Activity	Description of Stabilization Measure	Activity End Date
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☒ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent
			☐ Temporary ☐ Permanent

Appendix G

Training Documentation

SWPPP Training Log

Project Name:

Project Location:

Instructor Name(s):

Instructor Title(s):

Course Location:

Course Date:

Course Length (hours):

Stormwater Training Topic:

☐ Sediment and Erosion Controls ☐ Stabilization Controls

☐ Emergency Procedures ☐ Pollution Prevention Measures

☐ Inspections and Corrective Actions ☐ Other:

Attendees

No.	Name	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Appendix H

Delegation of Authority

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit (CGP), at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans, and all other documents required by the permit.

_____ (name of person or position)

_____ (company)

_____ (address)

_____ (city, state, zip)

_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of the U.S. Environmental Protection Agency's CGP and that the designee above meets the definition of a "duly authorized representative."

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Appendix D
Wood Turtle Management Plan

Appendix D: Wood Turtle Management Plan

Housatonic Rest of River - Reach 5A Vernal Pool Pilot Study

Prepared for:

General Electric Company
Pittsfield, MA

Prepared by:

AECOM
250 Apollo Drive
Chelmsford, MA 01824

June 18, 2026

Table of Contents

1. Introduction 1
2. Methods and Responsibilities 2
3. Pre-Construction Activities 2
    3.1 Radio Telemetry 3
    3.2 Installation of Turtle Exclusion Barriers 3
    3.3 Requirements for Site Preparation 4
4. Construction Period Monitoring 4
5. Contractor Education 5
6. Qualifications and Training 5
7. Reporting 5
8. References 6

Exhibit A – Contractor and Construction Phase Education

Exhibit B – Rare Species Incident Reporting Form

1. Introduction

On behalf of the General Electric Company (GE), AECOM has prepared this Wood Turtle Management Plan for the vernal pool pilot study to be conducted in Reach 5A of the Housatonic River Rest of River (ROR) in Pittsfield, Massachusetts. This plan applies to pilot study activities involving vegetation clearing, temporary access-road development or improvement and use, staging and support area construction and use, excavation and backfilling operations, amendment placement, large-equipment operation, or other ground disturbance in the floodplain (collectively referred to herein as "pilot study site preparation and construction activities") within mapped or otherwise suitable wood turtle habitat. These activities may occur in vernal pool, floodplain, and associated upland habitats during the vernal pool pilot study construction activities.

Wood turtles are semi-aquatic turtles that rely on a seasonal mosaic of instream, riparian, floodplain, and upland habitats. In the Northeast, they overwinter in streams and are generally more aquatic during their spring emergence period and in autumn as they return to their overwintering areas. Wood turtles may spend weeks to months in adjacent floodplain and upland habitats during the summer active season. Females typically nest in June in open, well-drained sandy or gravelly settings along point bars, banks, floodplain openings, fields, or other nearby uplands (Compton et al., 2002; Jones & Willey, 2021).

The wood turtle is listed as a species of special concern under the Massachusetts Endangered Species Act (MESA). The Massachusetts Natural Heritage and Endangered Species Program (MNHESP) has mapped wood turtle (*Glyptemys insculpta*) species habitat throughout Reach 5A, including the mainstem river corridor and many adjacent floodplain and support areas.

In accordance with EPA requirements, GE previously prepared a Reach 5A Wood Turtle Standard Operating Procedure (SOP) and conducted reconnaissance and radio-telemetry surveys of this species in 2025 and to date in 2026. These surveys have resulted in the capture of a number of wood turtles that were subsequently fitted with radio-transmitters and were or are being tracked using telemetry equipment between April and November. Observations to date have shown spring and fall use to be primarily aquatic, summer use to extend into floodplain and upland habitats, and repeated use of large woody debris, root wads, undercut banks, soft-bottom areas, and point-bar or river-margin settings relevant to basking, refuge, nesting, and overwintering functions. These data, together with MNHESP Species Habitat Mapping, form the technical basis for this management plan.

This Wood Turtle Management Plan establishes procedures to avoid and minimize impacts on wood turtles prior to and during vernal pool pilot study site preparation and construction activities. GE's broader plan to mitigate unavoidable impacts to rare species, including wood turtles, in Reach 5A was provided in GE's Rare Species Conservation and Management Plan, submitted as an appendix to GE's Reach 5A Restoration Plan in April 2026, and is not restated in this Wood Turtle Management Plan.

This management plan includes the following elements:

- Responsibilities of participating parties, including a designated herpetologist (DH), GE, field biologists, and construction personnel;
- Pre-construction review, survey, telemetry, and work-area planning measures intended to reduce the likelihood of direct impacts to wood turtles during vernal pool pilot study excavation, access-road, staging, stockpile, and other ground-disturbing activities;
- Protocols for site preparation and related ground-disturbing work within mapped or otherwise suitable wood turtle habitat;
- Construction-period monitoring and encounter response; and
- Contractor education, qualifications and training, and reporting procedures.

2. Methods and Responsibilities

For implementation of this management plan, GE will designate a qualified professional as the DH. The DH will be responsible for wood turtle protection and management measures for the vernal pool pilot study work covered by this plan, including radio-telemetry tracking, data management, construction oversight related to wood turtles, and coordination with GE, EPA, and MNHESP, all subject to the overall supervision of GE and its Construction Manager. The DH will:

- Maintain or update project-specific standard operating procedures for wood turtle surveys, handling, processing, transmitter attachment and removal, relocation, release, and documentation;
- Coordinate with EPA and MNHESP regarding any approvals, reporting, or consultation needed for implementation of wood turtle protection measures in Reach 5A;
- Provide technical input to the design and construction teams regarding the spatial and temporal distribution of wood turtle use in relation to pilot study site preparation and construction activities;
- Direct pre-construction wood turtle surveys, telemetry tracking, clearance sweeps, and any targeted installation and inspection of turtle exclusion barriers for pilot pool work areas;
- Oversee contractor training regarding wood turtle identification, avoidance, encounter response, and reporting;
- Ensure that any capture, handling, transmitter deployment, or relocation of wood turtles is performed only by authorized personnel operating under the applicable approved protocol and any required agency authorizations; and
- Maintain records of all survey, telemetry, construction-period monitoring, and incident-response activities associated with the pilot study work and prepare summary documentation for regulatory review, including submission of appropriate observations to the MNHESP Heritage Hub online reporting system.

3. Pre-Construction Activities

The pre-construction activities described in this section are intended to reduce the likelihood that wood turtles are present within active work zones when pilot study site preparation and construction activities begin. Pre-construction tasks will include the following:

- Existing Reach 5A wood turtle survey and telemetry results will be reviewed in relation to the pilot study site preparation and construction activities and anticipated sequencing.
- Additional wood turtle surveys are being conducted in 2026 to further refine active-season use areas and improve targeting of species-protective measures for the pilot study work.
- Specific pre-construction visual encounter surveys and clearance sweeps will be conducted within and immediately adjacent to planned site preparation and construction areas in mapped or otherwise suitable wood turtle habitat.
- Radio-telemetry tracking of turtles tagged during prior survey efforts will be continued and transmitters will be deployed on additional turtles captured during pre-construction surveys, as appropriate and consistent with the approved protocol.
- Field delineation or marking will be performed of pilot pool work limits, restricted-access areas, and any site-specific features or habitats identified for special attention during construction planning.
- Wood turtle exclusion barriers will be installed on a case-by-case basis, if warranted, in discrete locations, such as staging or stockpile areas or other concentrated work zones, where continuous direct oversight is not feasible or where survey and telemetry data indicate elevated risk of turtle-construction interaction.
- Initial coordination meetings will be held among the DH, the Construction Manager, and the construction contractor to review pilot study work sequences, sensitive habitat areas, wood turtle protection procedures, and encounter-response protocols.

Any wood turtles encountered during pre-construction surveys within pilot pool work areas will be processed in accordance with the approved SOP, including photo-documentation and recording of basic morphometric information as appropriate, and will be released into suitable habitat outside planned work areas at locations selected by the DH. If an individual is fitted with a transmitter, processing and release locations will be selected to support continued monitoring and to minimize the likelihood of re-entry into active work zones.

3.1 Radio Telemetry

Radio telemetry will continue to serve as a primary tool for understanding wood turtle movements and habitat use in relation to pilot pool work areas and for informing pilot study construction planning. The surveys conducted to date have demonstrated the value of telemetry by documenting movements across riverine, riverbank, tributary, floodplain, and upland habitats..

Prior to initiation of pilot study site preparation and construction activities in mapped or suitable wood turtle habitat, the DH and team will:

- Continue to track turtles tagged during pre-construction surveys in 2025 and 2026 and fit additional captured turtles with radio transmitters as appropriate under the approved protocol;
- Map and review recent and historical telemetry locations relative to the pilot study site preparation and construction areas, with emphasis on identifying core use areas, travel corridors, and nesting areas.
- Provide written or mapped summaries of telemetry information to the pilot study design and construction teams; and
- Use telemetry information to identify locations where additional protection measures may be warranted, such as localized changes in sequencing, enhanced oversight, targeted barrier installation, or more focused surveys prior to disturbance.

3.2 Installation of Turtle Exclusion Barriers

Because the pilot pool work areas are dispersed throughout Reach 5A, and work at each discrete location will occur over a relatively short duration (i.e., several days to a few weeks), continuous exclusion fencing around the full extent of mapped wood turtle habitat is not practicable and would prevent turtles and other wildlife from moving freely across the landscape. Instead, turtle exclusion barriers will be used strategically, on a case-by-case basis, where they provide the greatest benefit and where their installation is feasible without creating additional unnecessary disturbance. Barrier use will be considered in:

- Staging and stockpile areas where large-equipment operation, material handling, or repeated vehicle movement will be concentrated;
- Discrete pilot pool excavation, backfilling, grading, or restoration work areas where ground-disturbing activities will occur without continuous direct oversight by the DH or trained biological inspectors;
- Staging areas and stockpile areas in wooded floodplain or other areas determined to be sensitive for wood turtles;
- Locations where telemetry or survey data identify repeatedly used travel corridors or high-use areas that coincide with high-intensity pilot study construction activities; and
- Areas where the DH determines that a temporary physical barrier would meaningfully reduce the likelihood of turtle entry into a high-risk workspace, such as extended-duration staging activities, repeated vehicle movements, or constrained access points.

The locations of any necessary turtle exclusion barriers will be identified in the field by the DH in coordination with GE, the Construction Manager, and the construction contractor and, if necessary, EPA or MNHESP. Modifications to those barrier locations may be made as work progresses and turtle movements relative to construction activities are further refined through radio-telemetry tracking and other observational information.

Where barriers are installed, they will consist of silt fence or equivalent material installed along the perimeter of the designated area. The bottom of the barrier will either be toed into the ground or be secured using coir rolls

or silt socks so that turtles cannot pass underneath. Stakes or other supports will be installed at appropriate intervals to maintain the barrier in an upright position. Where erosion and sediment controls such as straw bales are needed, they will be placed on the work side of the barrier to reduce the likelihood that turtles could climb over barrier components.

Gate openings or other access points will be designed to provide equivalent protection and will be kept closed when not in active use during the wood turtle active season. The DH or qualified staff will inspect newly installed barriers before the associated area is brought into active use and will identify any deficiencies requiring repair. If a turtle encounter occurs within a fenced area, the DH will evaluate potential entry pathways and may require additional barrier inspections, repairs, or localized changes in work practices.

3.3 Requirements for Site Preparation

The vernal pool pilot study site preparation and construction activities are anticipated to be conducted in July through October 2026, which are part of the wood turtles' active season (April 1 through October 31), During the first part of that period, vegetation clearing and other site preparation activities in mapped or suitable wood turtle habitats will be conducted under direct oversight of the DH or trained biological inspectors. This oversight approach is intended to reduce the likelihood of direct impacts to turtles during site preparation activities.

Prior to initiating mowing, grubbing, or ground disturbance within a new work segment, the DH or trained staff will conduct focused visual surveys along proposed work limits and access routes to locate any wood turtles present.

If barrier fencing is to be installed around a staging or other discrete area, surveys will be conducted immediately prior to installation to remove any turtles from the footprint. Where tagged turtles are known from telemetry to be within or near a planned work area, the DH may recommend adjusting the timing of work, conduct more intensive surveys, or temporarily relocate the turtle to suitable nearby habitat outside the work zone, consistent with the approved protocol and any required authorizations.

If a turtle is observed within an active work area and is determined to be within harm's way, work in the immediate vicinity will be temporarily stopped until the turtle can be protected through avoidance, controlled movement away from equipment, or capture and relocation by authorized personnel. Any wood turtles encountered during site preparation will be captured and relocated only by qualified authorized personnel following approved handling procedures. If a turtle is observed outside work areas and access roads and is not within harm's way, it will not be handled unless directed by the DH, to minimize unnecessary disturbance.

4. Construction Period Monitoring

Following site preparation, pilot study construction activities will be conducted in the late summer and fall of 2026. During this construction period:

- The DH and/or trained biological inspectors will provide oversight and turtle clearing activities during key phases of the construction work within mapped or suitable wood turtle habitat, including initial ground disturbance at a new pilot pool work area or access route, periods of intense activity along access roads or within staging areas, and work in proximity to known turtle use areas based on telemetry or surveys. Oversight will also include daily sweeps of access roads and planned construction areas.
- For any area where barrier fencing has been installed, the DH or qualified staff will inspect the barrier at least weekly during the active season and after major storm events, document its condition, and arrange for repairs as needed.
- If a wood turtle is observed within an active work area, work in the immediate vicinity will be temporarily halted and the DH, in coordination with the Construction Manager, will assess appropriate response measures, which may include capture and relocation by authorized personnel, modification of work practices, enhanced monitoring, or adjustment of barrier coverage. (Any observation of an injured or dead wood turtle will be handled as described in Section 7 below.)

Exclusion barriers associated with a given staging area or work segment will be removed in consultation with the DH once construction is complete and the area has been stabilized and restored.

5. Contractor Education

To further ensure the protection of wood turtles, field and construction personnel engaged in pilot study construction activities will be trained to recognize wood turtles and to understand the conservation practices necessary to avoid or minimize direct impacts during those activities. Training will emphasize that only authorized personnel may capture, handle, relocate, or otherwise process wood turtles except under the circumstances described in **Exhibit A**.

Training will be provided before the start of pilot study work in wood turtle habitat and before installation of any barrier fence associated with a new work area. Additional training will be provided for new construction contractor personnel or crews that begin work within wood turtle habitat after the initial briefing. Topics will include wood turtle identification; expected habitats and seasonal use patterns in Reach 5A; speed, scanning, and stopping protocols along pilot study access roads; work-area limits and barrier requirements; encounter-response procedures; communication and stop-work expectations; and reporting requirements.

A field handout describing wood turtle identification, photographs of representative habitats and turtles, and step-by-step response procedures for turtle encounters will be provided to site supervisors and construction crews performing the pilot study work and is included in this attachment as **Exhibit A**. (The names and contact information for three qualified biologists will be added to this document before it is distributed.) Tailgate reminders may also be used when work is shifting into new pilot pool work areas or into areas with recent telemetry observations.

6. Qualifications and Training

The DH will have, at a minimum, a graduate degree in biology, wildlife ecology, herpetology, or a related natural-resources discipline, or equivalent specialized professional experience, together with at least five years of experience working with state-listed turtle species and implementing field surveys and construction oversight for such species. The DH will be familiar with wood turtle handling, transmitter attachment and tracking, habitat-use interpretation, and encounter-response procedures, and will operate under any applicable approved protocol or MNHESP authorization.

Biologists assisting the DH with surveys, telemetry, exclusion-barrier inspection, and construction-period monitoring will have, at a minimum, a bachelor’s degree in biology or a related natural-resources discipline or demonstrated experience working with state-listed turtle species, and documented training by the DH in wood turtle identification, proper handling and care, telemetry protocols, encounter response, and data collection procedures. Any person directly handling or processing wood turtles must be specifically authorized to do so.

7. Reporting

The DH or qualified staff will maintain standardized field forms and/or digital records for all pre-construction surveys, telemetry tracking events, barrier inspections, and construction-period monitoring visits. These records will include, as applicable, dates and times of surveys, personnel present, survey locations and coverage, turtle observations and locations, transmitter deployment and status, barrier conditions, incidents, corrective actions, and communications with construction management or agencies.

During construction, internal oversight records will be prepared when work is occurring within mapped or suitable wood turtle habitat. Matters requiring immediate attention, such as turtle encounters in active workspace, barrier breaches, or deviations from protection measures, will be communicated promptly to the Construction Manager and documented together with the corrective action taken.

The DH will immediately report any observation of an injured or dead wood turtle to the MNHESP State Herpetologist and EPA following the incident. Within 72 hours, a follow-up written notification will be sent via email to MNHESP and EPA describing the event and any response action taken, using the form attached as **Exhibit B**. Injured individuals will be transferred to an appropriate wildlife rehabilitation facility, such as Tufts Wildlife Clinic (50 Willard Street, North Grafton, MA; phone: 508-839-7918) or another MNHESP-approved facility, as directed by MNHESP.

At the conclusion of the pilot study construction activities, a summary will be prepared by the DH. That summary will describe, for the subject period, any pre-construction survey and telemetry activities, construction-period monitoring and turtle encounters, telemetry-derived information relevant to the pilot pool work areas, any injuries or mortalities and associated corrective measures, and recommendations for refining wood turtle protection measures in later phases of the ROR remediation. The summary will be included in the Vernal Pool Pilot Study Construction Completion Report, to be submitted within 120 days after the post-construction pre-certification inspection with EPA.

8. References

Compton, B. W., Rhymer, J. M., & McCollough, M. (2002). Habitat selection by wood turtles (*Glyptemys insculpta*): An application of paired logistic regression. Ecology, 83(3), 833-843. https://doi.org/10.1890/0012-9658(2002)083[0833:HSBWT]2.0.CO;2

Jones, M. T., & Willey, L. L. (Eds.). (2021). Biology and conservation of the wood turtle. Northeast Association of Fish and Wildlife Agencies.

Exhibit A – Contractor and Construction Phase Education

Purpose

The wood turtle (*Glyptemys insculpta*) is a Massachusetts state-listed species of Special Concern, and is therefore protected against direct harm to the individual, and against destruction or disturbance of its habitat. The purpose of this document is to provide construction personnel with important information that will help reduce the potential for direct harm to individual wood turtles should they be encountered during construction activities. This includes a basic understanding of wood turtle habitat use, instructions on proper turtle handling and temporary detainment and relocation techniques, contact information of at least three qualified biologists, and representative photographs of the wood turtle to assist in proper identification.

General Overview of Wood Turtle Activity and Habitat Use

Wood turtles in the Northeast use a variety of habitats over the course of the year based on life cycle requirements (e.g., nesting and hibernating) and body temperature regulation. A generalized breakdown of this seasonal habitat use is provided below to give contractors an idea of where chance encounters are most likely to occur given the time of year construction activities are occurring;

- *April and May*. Wood turtles are just emerging from hibernation and are typically found within the river or on the adjacent riverbanks and floodplains, usually near the river (i.e., typically within 100 feet). They would be found basking on logs, in dense woody shrub cover, or meandering on the floodplain.
- *June through September*. Wood turtles are typically observed feeding in successional fields, hayfields and forests. They can also be seen in riparian wetlands such as wet meadows, bogs, and beaver ponds. The majority of wood turtle nesting activity occurs in June in areas which provide sandy and/or gravelly substrate (including point bars, cutbanks, sand and gravel bars, and open sand and gravel pits).
- *October through March*. Wood turtles typically spend winters hibernating in flowing rivers and perennial streams. In October, the turtles start to make their way back to the rivers and streams with full-time submersion in the water starting in November. Overwintering occurs in muddy banks, stream bottoms, deep pools, in-stream woody debris, and abandoned mammalian bank-burrows.

Methods

Below is a step-by-step process that shall be followed in the event of a wood turtle observation.

1) If a turtle is observed, first determine if the individual is within harm's way. If the individual is observed outside of the work areas and access roads, then the turtles should not be handled to minimize disturbance and prevent altering their behavior.
2) When a turtle is determined to be within harm's way, or does not already have a radio-transmitter glued to its shell, it should be captured and temporarily detained until the designated herpetologist has been notified and can perform standard data collection and turtle relocation.
3) When handling a turtle, grasp it firmly by the sides of the carapace (top shell). Wood turtles are typically shy and will typically retract into their shell. If the turtle does not retreat into its shell, be cautious of the turtle's head, mouth and feet. Although wood turtles typically do not bite, they certainly are capable of doing so. In addition, they have very sharp claws and powerful legs for digging, which can scratch the skin.
4) Captured turtles may be placed into a small tub or cooler if necessary. Turtles can easily die from overheating. Therefore, this tub **MUST** be placed in a cool shaded area out of direct sunlight, indoors or out. Outdoor shaded areas must be persistent, that is, make sure that the tub is not in an area that will BECOME sunny later in the day. In addition, fresh vegetation (e.g., leaves, tall grass cuttings) and water **SHALL** be placed into the tub for cover and hydration.
5) Within one hour of capturing a wood turtle, one of the three qualified biologists listed below **SHALL** be notified.

Contact Information for Qualified Biologists

Name _____	Name _____	Name _____
Work No. _____	Work No. _____	Work No. _____
Cell No. _____	Cell No. _____	Cell No. _____
Email _____	Email _____	Email _____









Exhibit B – Rare Species Incident Reporting Form

Rare Species Observed

Common Name: _____ Scientific Name: _____

State Status: _____ Federal Status: _____

Town: _____ Site Name: _____

Location Information

Directions to the Observation Location: _____

_____

Site Coordinates: Coord. Projection (circle one): UTM / Lat-Long / Mass. State Plane / Other ( )

Source of Coordinates: (circle one) GPS / Google Earth / Other GIS System ( )

Location Coordinates: X (Easting): _____ Y (Northing): _____

Incident Description

Was the incident project-related (Yes/No): _____

Date: _____ Time: _____ Notifications made: _____

_____

Describe the incident: _____

_____

_____

_____

_____

If project-related, response taken or proposed to address incident and/or avoid reoccurrence: _____

_____

_____

_____

_____

Photographs

Description:	Description:

Appendix E
Water Quality and Second Dry Cycle Data Summary

54 Genesee Street, Suite 100A
Camillus, New York 130311
315.453.9009

June 19, 2026

Housatonic Vernal Pools – Water Quality and Second Dry-Cycle Data Summary

Introduction

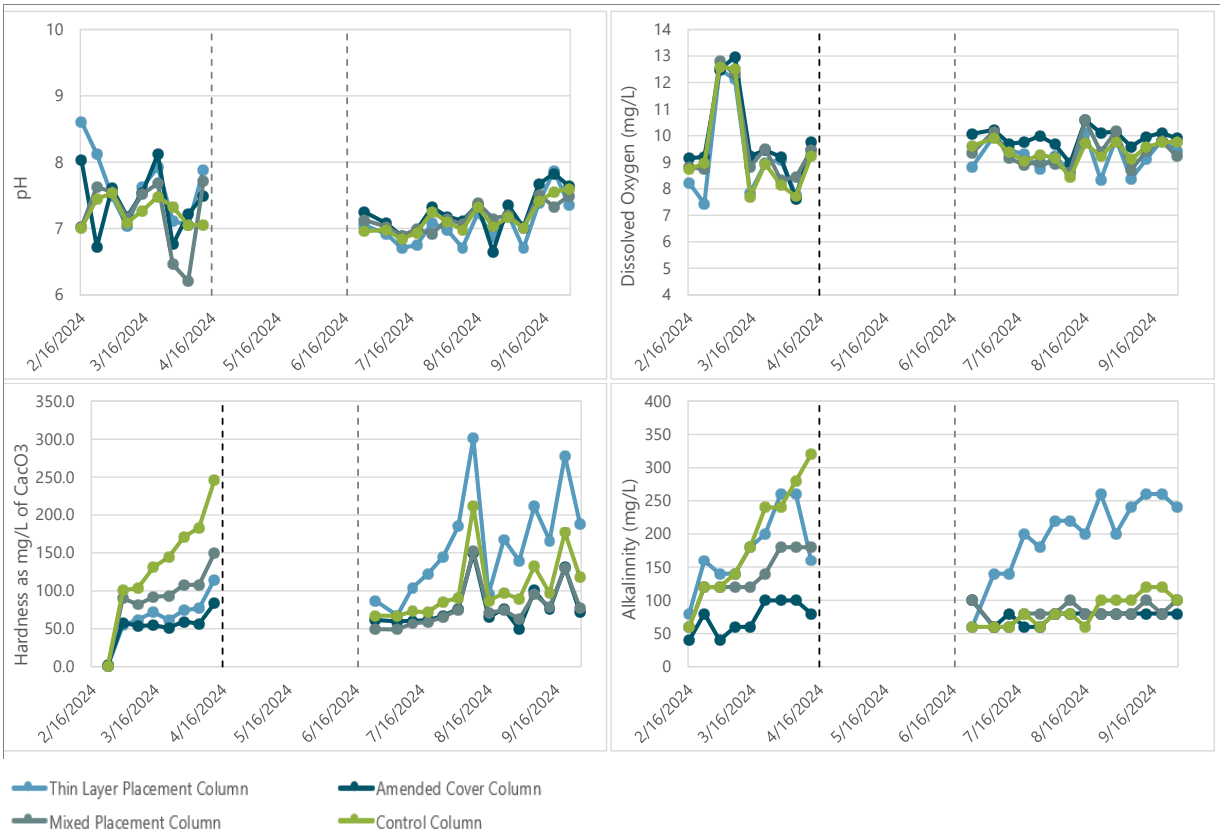
As requested in Condition 7 of the U.S. Environmental Protection Agency's (EPA's) Conditional Approval Letter (dated December 22, 2025) for the *Final Revised Vernal Pool Pilot Study Work Plan* (Final Pilot Work Plan; Anchor QEA and AECOM 2025), this memorandum provides an interpretation of the results of the bench-scale column water quality data and second drained cycle solid-phase microextraction (SPME) column data.

Water Quality Data Summary

Figures 1 and 2 show the water quality trends for the measured water quality parameters (i.e., pH, Dissolved Oxygen, Hardness, and Alkalinity) for each of the four test columns for Vernal Pool (VP) 12 and VP81, respectively, over the duration of the experiment. Temperature was also measured but not graphed since temperatures did not fluctuate significantly throughout the duration of the experiment or between columns. The bench-scale column testing included four column types: one control column with no amendment, and three columns with different amendment placement methods (thin-layer placement, thin-layer placement that was mixed into the top six-inches of soil, and a clean sand and amendment cover). The overlying water in each of the columns was measured weekly for the parameters shown on Figures 1 and 2. No measurements were taken during the drained periods when there was no overlying water; the drained cycle is shown on Figures 1 and 2 as gaps in the data between the grey dashed lines. The goal of the water quality measurements was to evaluate any potential impacts from activated carbon application compared to the control columns.

For the first wet cycle (the first few months following column construction), there is some variability in the water quality measurements of amended versus control columns. This variability is slight and not consistent between soil types (VP12 and VP81), with the potential exception of alkalinity that shows higher alkalinity values for the control column and the thin-layer placement amendment than the mixed placement and amended sand cover placement columns. However, after the first drained cycle the water quality measurements have a much tighter spread, suggesting that any differences in water quality characteristics are short-lived and insignificant. In addition, these results indicate the addition of new water had an attenuating effect on the water quality parameters. Therefore, it is unlikely that the activated carbon application will have a significant impact on the water quality of the vernal pools and any minor impacts would be mitigated by the frequent inputs of water to the vernal pools from precipitation and groundwater upwelling.

Figure 1
VP12 Water Quality Data



Notes:
Grey dashed lines signify the start (water drained from columns) and end (water added back into the columns) of the dry season. Water quality measurements were not collected during the dry season so there is no data to report for this period.

Figure 2
VP81 Water Quality Data



Notes:
Grey dashed lines signify the start (water drained from columns) and end (water added back into the columns) of the dry season.
Water quality measurements were not collected during the dry season so there is no data to report for this period.

Second Drained-Cycle Data Summary

As described in the Final Pilot Work Plan, GE opted to perform SPME sampling for the column testing soils during a second drained cycle. The results from the second drained cycle were not yet available at the time of submittal of the Final Pilot Work Plan. The results of all SPME sampling events are provided in Table 1. There was no identifiable trend between wet and drained cycle data, considering column porewater concentrations both increased and decreased between cycles. Overall, the control columns remained above the 40 nanograms per liter (ng/L) porewater performance criteria, and the amended test columns all stayed below the 40 ng/L porewater performance criteria during the second drained cycle. Based on these results, the conclusions and recommendations presented in the Final Pilot Work Plan regarding amendment application remain unchanged after incorporation of the second drained cycle data.

Table 1
Vernal Pool Column Testing PCB Congener Results

Column Testing Results						
Vernal Pool	Amendment Type	Total PCB Congeners (ng/L, U=0) Remediation Target = 40 ng/L				
		Baseline	Wet Cycle 1	Drained Cycle 1	Wet Cycle 2	Drained Cycle 2
VP12	None	--	289	206	391	220
	Amended Sand	--	0.0850	0.0230	0.0493	0.102
	Amendment Mixed into Top 15 cm	--	0.681	8.38	2.73	4.33
	Thin-Layer Placement	--	6.00	40.1	21.6	26.1
VP81	None	206	163	189	380	180
	Amended Sand	158	0.140	0.0300	0.459	0.0723
	Amendment Mixed into Top 15 cm	164	0.454	6.16	4.30	2.88
	Thin-Layer Placement	165	9.69	8.01	13.1	24.8

Notes:
Cells highlighted in green exceed the 40 ng/L porewater performance criteria established in the Revised Vernal Pool Pilot Study Work Plan.

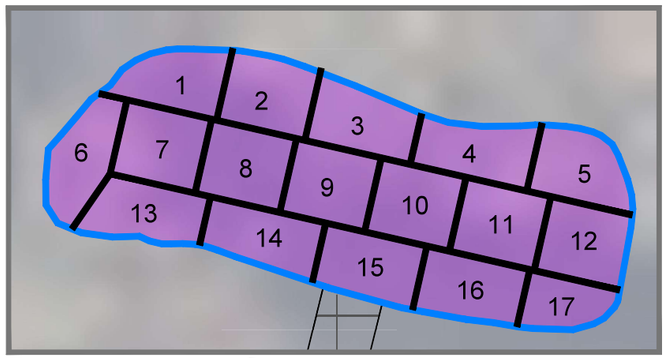
References

Anchor QEA and AECOM, 2025. *Final Revised Vernal Pool Pilot Study Work Plan*. Prepared for General Electric Company. June 2025.

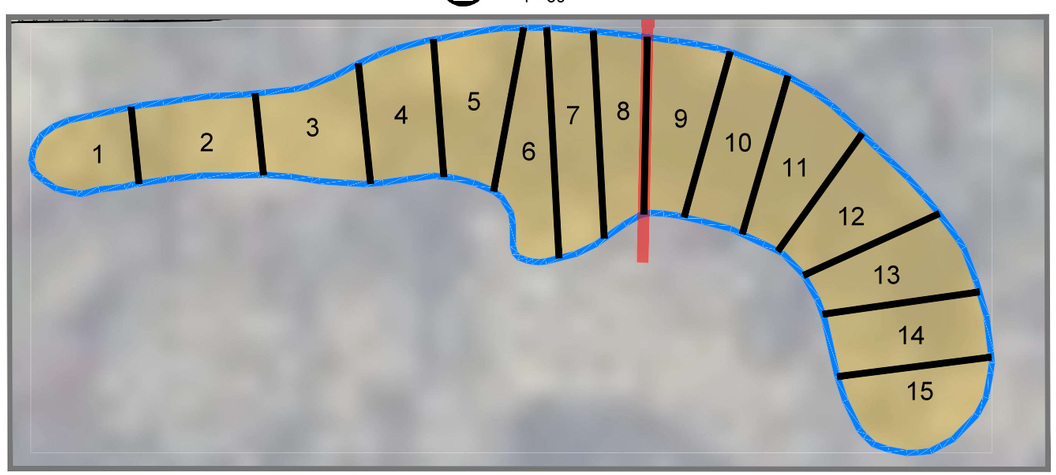
Appendix F
Treatment-Based Vernal Pool Amendment Certification Units



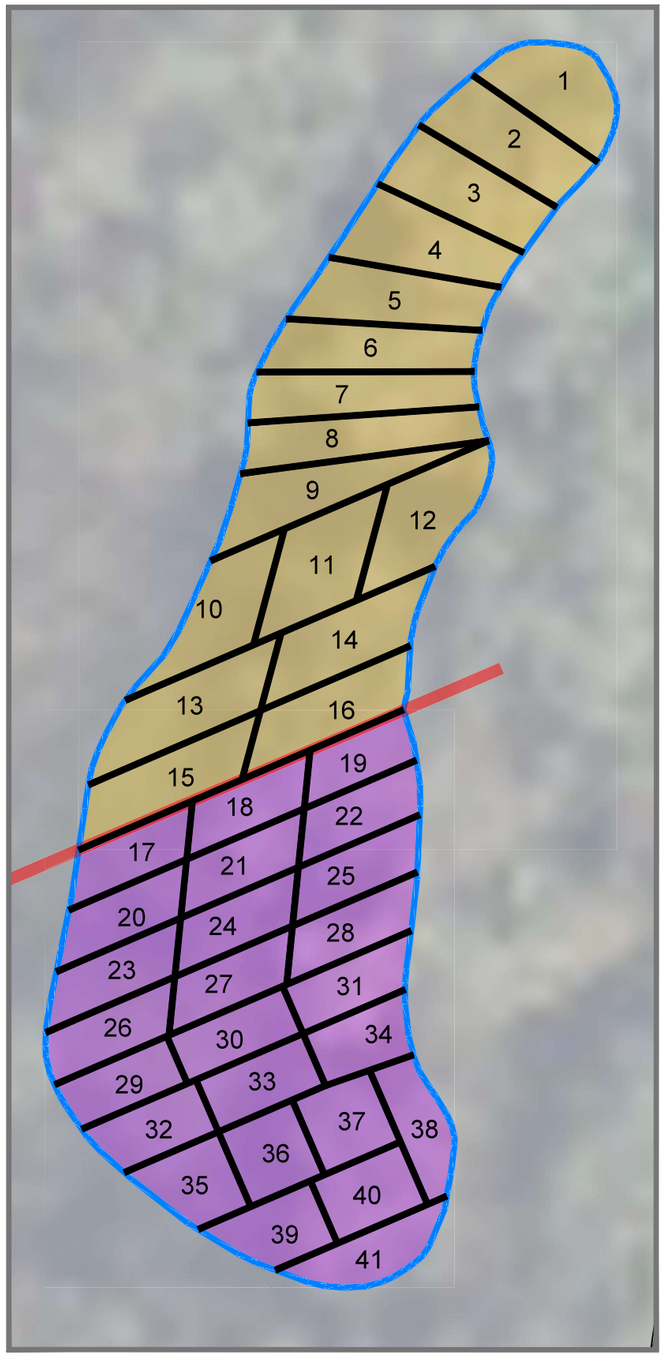
5A-VP-9
1"=50'



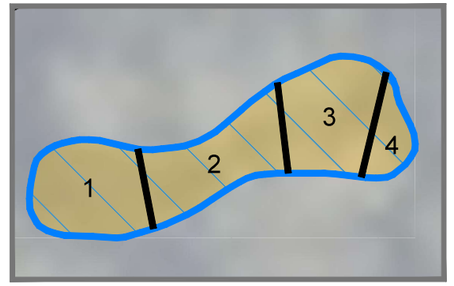
5A-VP-12
1"=50'



5A-VP-15
1"=50'



5A-VP-22
1"=50'



5A-VP-27
1"=50'

LEGEND

AMENDMENT AREA / LIMITS

PROPOSED GRAVEL ROAD

AMENDMENT CERTIFICATION UNIT (ACU)

ID # 3 — ACU LIMITS (SEE NOTE 1)

ADMENDMENT MATERIALS

SAND P.A.C. (≈1,100 SF)

PELLETIZED P.A.C. (≈718 SF)

NOTES:

1. ADMENDMENT CERTIFICATION UNITS (ACU) LAYOUT BASED ON ADMENDMENT MATERIAL REQUIRED. SHOWN AT APPROX 718 SF AND 1,100 SF RESPECTIVELY, LAYOUT MAY BE SUBJECT TO CHANGES.
2. VERNAL POOL 5A-VP-9 AMENDMENT APPROACH TO BE DETERMINED BY THE RESULTS OF VERNAL POOL 5A-VP-15.

AMENDMENT CERTIFICATION UNITS

GENERAL ELECTRIC COMPANY
HOUSATONIC RIVER
VERNAL POOL PILOT STUDY
PITTSFIELD, MA

SEVENSON ENVIRONMENTAL SERVICES, INC.

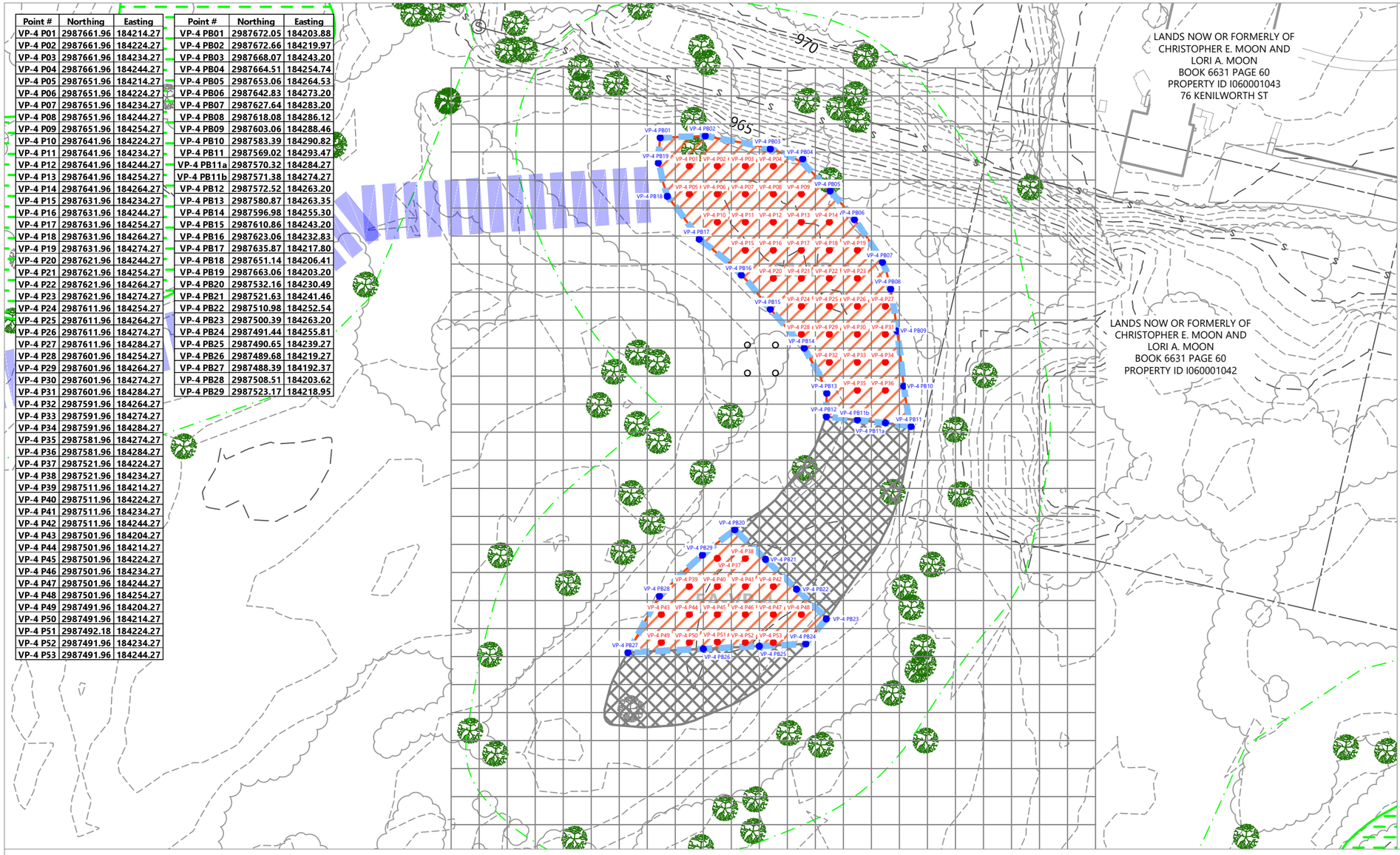
DRAWING 1

DATE:	6/10/2026
DRAWN BY:	J. CHIODO
CHECKED BY:	M. WELCH
CAD FILE:	AMENDMENT CELLS.DWG
SCALE:	AS SHOWN

Appendix G
Excavation-Based Vernal Pool Survey Points

Point #	Northing	Easting
VP-4 P01	2987661.96	184214.27
VP-4 P02	2987661.96	184224.27
VP-4 P03	2987661.96	184234.27
VP-4 P04	2987661.96	184244.27
VP-4 P05	2987651.96	184214.27
VP-4 P06	2987651.96	184224.27
VP-4 P07	2987651.96	184234.27
VP-4 P08	2987651.96	184244.27
VP-4 P09	2987651.96	184254.27
VP-4 P10	2987641.96	184224.27
VP-4 P11	2987641.96	184234.27
VP-4 P12	2987641.96	184244.27
VP-4 P13	2987641.96	184254.27
VP-4 P14	2987641.96	184264.27
VP-4 P15	2987631.96	184234.27
VP-4 P16	2987631.96	184244.27
VP-4 P17	2987631.96	184254.27
VP-4 P18	2987631.96	184264.27
VP-4 P19	2987631.96	184274.27
VP-4 P20	2987621.96	184244.27
VP-4 P21	2987621.96	184254.27
VP-4 P22	2987621.96	184264.27
VP-4 P23	2987621.96	184274.27
VP-4 P24	2987611.96	184254.27
VP-4 P25	2987611.96	184264.27
VP-4 P26	2987611.96	184274.27
VP-4 P27	2987611.96	184284.27
VP-4 P28	2987601.96	184254.27
VP-4 P29	2987601.96	184264.27
VP-4 P30	2987601.96	184274.27
VP-4 P31	2987601.96	184284.27
VP-4 P32	2987591.96	184264.27
VP-4 P33	2987591.96	184274.27
VP-4 P34	2987591.96	184284.27
VP-4 P35	2987581.96	184274.27
VP-4 P36	2987581.96	184284.27
VP-4 P37	2987521.96	184224.27
VP-4 P38	2987521.96	184234.27
VP-4 P39	2987511.96	184214.27
VP-4 P40	2987511.96	184224.27
VP-4 P41	2987511.96	184234.27
VP-4 P42	2987511.96	184244.27
VP-4 P43	2987501.96	184204.27
VP-4 P44	2987501.96	184214.27
VP-4 P45	2987501.96	184224.27
VP-4 P46	2987501.96	184234.27
VP-4 P47	2987501.96	184244.27
VP-4 P48	2987501.96	184254.27
VP-4 P49	2987491.96	184204.27
VP-4 P50	2987491.96	184214.27
VP-4 P51	2987492.18	184224.27
VP-4 P52	2987491.96	184234.27
VP-4 P53	2987491.96	184244.27

Point #	Northing	Easting
VP-4 PB01	2987672.05	184203.88
VP-4 PB02	2987672.66	184219.97
VP-4 PB03	2987668.07	184243.20
VP-4 PB04	2987664.51	184254.74
VP-4 PB05	2987653.06	184264.53
VP-4 PB06	2987642.83	184273.20
VP-4 PB07	2987627.64	184283.20
VP-4 PB08	2987618.08	184286.12
VP-4 PB09	2987603.06	184288.46
VP-4 PB10	2987583.39	184290.82
VP-4 PB11	2987569.02	184293.47
VP-4 PB11a	2987570.32	184284.27
VP-4 PB11b	2987571.38	184274.27
VP-4 PB12	2987572.52	184263.20
VP-4 PB13	2987580.87	184263.35
VP-4 PB14	2987596.98	184255.30
VP-4 PB15	2987610.86	184243.20
VP-4 PB16	2987623.06	184232.83
VP-4 PB17	2987635.87	184217.80
VP-4 PB18	2987651.14	184206.41
VP-4 PB19	2987663.06	184203.20
VP-4 PB20	2987532.16	184230.49
VP-4 PB21	2987521.63	184241.46
VP-4 PB22	2987510.98	184252.54
VP-4 PB23	2987500.39	184263.20
VP-4 PB24	2987491.44	184255.81
VP-4 PB25	2987490.65	184239.27
VP-4 PB26	2987489.68	184219.27
VP-4 PB27	2987488.39	184192.37
VP-4 PB28	2987508.51	184203.62
VP-4 PB29	2987523.17	184218.95



LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- INTERIOR SURVEY POINT
- PERIMETER SURVEY POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION, EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED WOOD TURTLE EXCLUSION FENCE, LOCATION APPROXIMATE
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

HORIZONTAL DATUM: Massachusetts State Plane, Mainland Zone, NAD83, U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1998, NAVD88, U.S. Survey Feet

0 40
Feet

Publish Date: 2026/06/17 1:59 PM | User: cyard
Filepath: K:\Projects\0469-General Electric\Housatonic - Vernal Pools - Reach 5A\0469-RP-001 (Survey Grid and Control Points).dwg | Figure 1

ANCHOR QEA

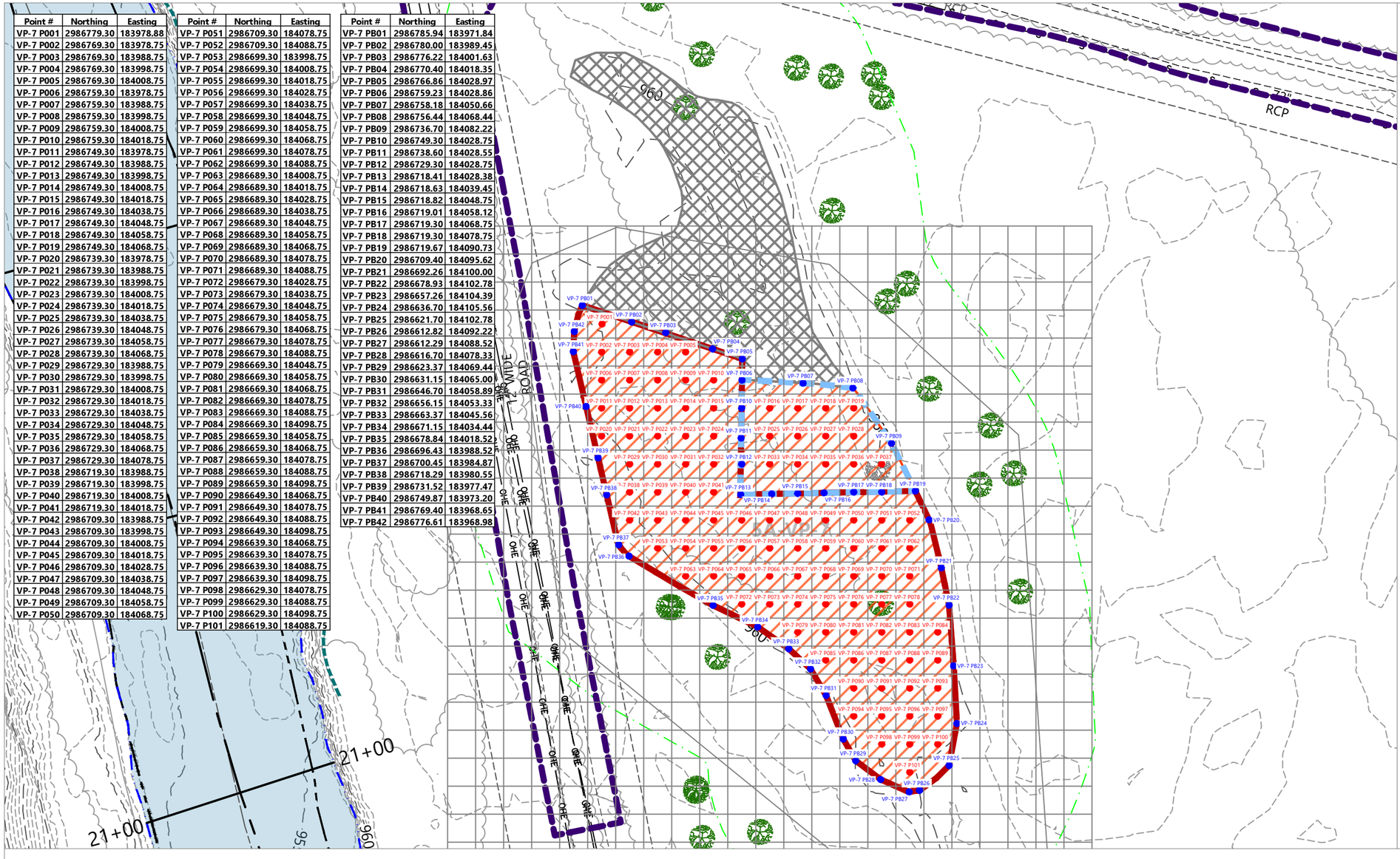
Figure 1
5A-VP-4 - Excavation and Backfill Survey Points

Housatonic River - Vernal Pool Pilot Study
General Electric Company
Pittsfield, Massachusetts

Point #	Northing	Easting
VP-7 P001	2986779.30	183978.88
VP-7 P002	2986769.30	183978.75
VP-7 P003	2986769.30	183988.75
VP-7 P004	2986769.30	183998.75
VP-7 P005	2986769.30	184008.75
VP-7 P006	2986759.30	183978.75
VP-7 P007	2986759.30	183988.75
VP-7 P008	2986759.30	183998.75
VP-7 P009	2986759.30	184008.75
VP-7 P010	2986759.30	184018.75
VP-7 P011	2986749.30	183978.75
VP-7 P012	2986749.30	183988.75
VP-7 P013	2986749.30	183998.75
VP-7 P014	2986749.30	184008.75
VP-7 P015	2986749.30	184018.75
VP-7 P016	2986749.30	184038.75
VP-7 P017	2986749.30	184048.75
VP-7 P018	2986749.30	184058.75
VP-7 P019	2986749.30	184068.75
VP-7 P020	2986739.30	183978.75
VP-7 P021	2986739.30	183988.75
VP-7 P022	2986739.30	183998.75
VP-7 P023	2986739.30	184008.75
VP-7 P024	2986739.30	184018.75
VP-7 P025	2986739.30	184038.75
VP-7 P026	2986739.30	184048.75
VP-7 P027	2986739.30	184058.75
VP-7 P028	2986739.30	184068.75
VP-7 P029	2986729.30	183988.75
VP-7 P030	2986729.30	183998.75
VP-7 P031	2986729.30	184008.75
VP-7 P032	2986729.30	184018.75
VP-7 P033	2986729.30	184038.75
VP-7 P034	2986729.30	184048.75
VP-7 P035	2986729.30	184058.75
VP-7 P036	2986729.30	184068.75
VP-7 P037	2986729.30	184078.75
VP-7 P038	2986719.30	183988.75
VP-7 P039	2986719.30	183998.75
VP-7 P040	2986719.30	184008.75
VP-7 P041	2986719.30	184018.75
VP-7 P042	2986709.30	183988.75
VP-7 P043	2986709.30	183998.75
VP-7 P044	2986709.30	184008.75
VP-7 P045	2986709.30	184018.75
VP-7 P046	2986709.30	184028.75
VP-7 P047	2986709.30	184038.75
VP-7 P048	2986709.30	184048.75
VP-7 P049	2986709.30	184058.75
VP-7 P050	2986709.30	184068.75

Point #	Northing	Easting
VP-7 P051	2986709.30	184078.75
VP-7 P052	2986709.30	184088.75
VP-7 P053	2986699.30	183998.75
VP-7 P054	2986699.30	184008.75
VP-7 P055	2986699.30	184018.75
VP-7 P056	2986699.30	184028.75
VP-7 P057	2986699.30	184038.75
VP-7 P058	2986699.30	184048.75
VP-7 P059	2986699.30	184058.75
VP-7 P060	2986699.30	184068.75
VP-7 P061	2986699.30	184078.75
VP-7 P062	2986699.30	184088.75
VP-7 P063	2986689.30	184008.75
VP-7 P064	2986689.30	184018.75
VP-7 P065	2986689.30	184028.75
VP-7 P066	2986689.30	184038.75
VP-7 P067	2986689.30	184048.75
VP-7 P068	2986689.30	184058.75
VP-7 P069	2986689.30	184068.75
VP-7 P070	2986689.30	184078.75
VP-7 P071	2986689.30	184088.75
VP-7 P072	2986679.30	184028.75
VP-7 P073	2986679.30	184038.75
VP-7 P074	2986679.30	184048.75
VP-7 P075	2986679.30	184058.75
VP-7 P076	2986679.30	184068.75
VP-7 P077	2986679.30	184078.75
VP-7 P078	2986679.30	184088.75
VP-7 P079	2986669.30	184048.75
VP-7 P080	2986669.30	184058.75
VP-7 P081	2986669.30	184068.75
VP-7 P082	2986669.30	184078.75
VP-7 P083	2986669.30	184088.75
VP-7 P084	2986669.30	184098.75
VP-7 P085	2986659.30	184058.75
VP-7 P086	2986659.30	184068.75
VP-7 P087	2986659.30	184078.75
VP-7 P088	2986659.30	184088.75
VP-7 P089	2986659.30	184098.75
VP-7 P090	2986649.30	184068.75
VP-7 P091	2986649.30	184078.75
VP-7 P092	2986649.30	184088.75
VP-7 P093	2986649.30	184098.75
VP-7 P094	2986639.30	184068.75
VP-7 P095	2986639.30	184078.75
VP-7 P096	2986639.30	184088.75
VP-7 P097	2986639.30	184098.75
VP-7 P098	2986629.30	184078.75
VP-7 P099	2986629.30	184088.75
VP-7 P100	2986629.30	184098.75
VP-7 P101	2986619.30	184088.75

Point #	Northing	Easting
VP-7 PB01	2986785.94	183971.84
VP-7 PB02	2986780.00	183989.45
VP-7 PB03	2986776.22	184001.63
VP-7 PB04	2986770.40	184018.35
VP-7 PB05	2986766.86	184028.97
VP-7 PB06	2986759.23	184028.86
VP-7 PB07	2986758.18	184050.66
VP-7 PB08	2986756.44	184068.44
VP-7 PB09	2986736.70	184082.22
VP-7 PB10	2986749.30	184028.75
VP-7 PB11	2986738.60	184028.55
VP-7 PB12	2986729.30	184028.75
VP-7 PB13	2986718.41	184028.38
VP-7 PB14	2986718.63	184039.45
VP-7 PB15	2986718.82	184048.75
VP-7 PB16	2986719.01	184058.12
VP-7 PB17	2986719.30	184068.75
VP-7 PB18	2986719.30	184078.75
VP-7 PB19	2986719.67	184090.73
VP-7 PB20	2986709.40	184095.62
VP-7 PB21	2986692.26	184100.00
VP-7 PB22	2986678.93	184102.78
VP-7 PB23	2986657.26	184104.39
VP-7 PB24	2986636.70	184105.56
VP-7 PB25	2986621.70	184102.78
VP-7 PB26	2986612.82	184092.22
VP-7 PB27	2986612.29	184088.52
VP-7 PB28	2986616.70	184078.33
VP-7 PB29	2986623.37	184069.44
VP-7 PB30	2986631.15	184065.00
VP-7 PB31	2986646.70	184058.89
VP-7 PB32	2986656.15	184053.33
VP-7 PB33	2986663.37	184045.56
VP-7 PB34	2986671.15	184034.44
VP-7 PB35	2986678.84	184018.52
VP-7 PB36	2986696.43	183988.52
VP-7 PB37	2986700.45	183984.87
VP-7 PB38	2986718.29	183980.55
VP-7 PB39	2986731.52	183977.47
VP-7 PB40	2986749.87	183973.20
VP-7 PB41	2986769.40	183968.65
VP-7 PB42	2986776.61	183968.98



LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX ● CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION, EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED WOOD TURTLE EXCLUSION FENCE, LOCATION APPROXIMATE
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

HORIZONTAL DATUM: Massachusetts State Plane, Mainland Zone, NAD83, U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1998, NAVD88, U.S. Survey Feet

0 40
Feet

Publish Date: 2026/06/17 1:03 PM | User: cyard
Filepath: K:\Projects\0469-General Electric\Housatonic - Vernal Pools - Reach 5A\0469-RP-001 (Survey Grid and Control Points).dwg | Figure 2

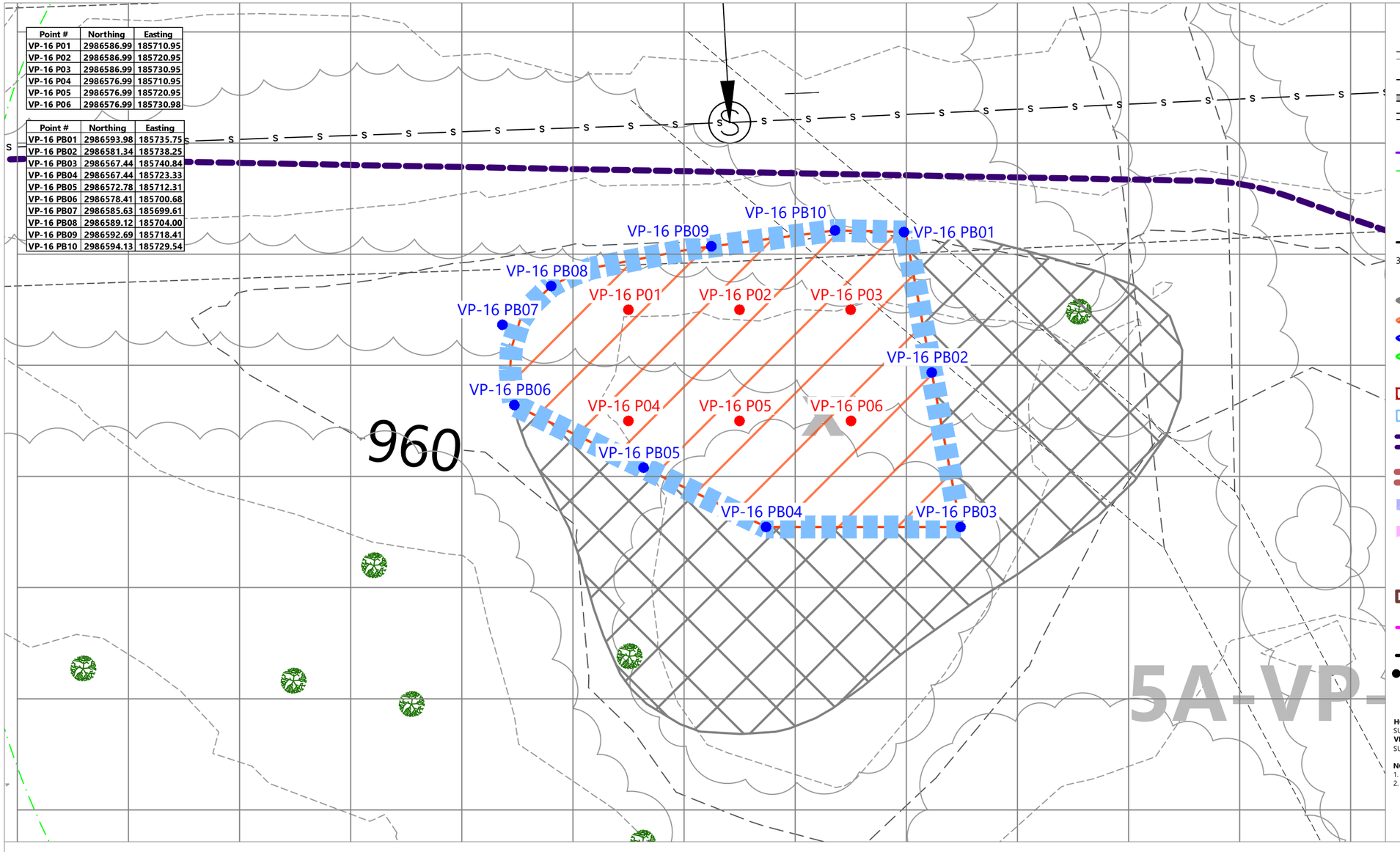
ANCHOR QEA

Figure 2
5A-VP-7 - Excavation and Backfill Survey Points

Housatonic River - Vernal Pool Pilot Study
General Electric Company
Pittsfield, Massachusetts

Point #	Northing	Easting
VP-16 P01	2986586.99	185710.95
VP-16 P02	2986586.99	185720.95
VP-16 P03	2986586.99	185730.95
VP-16 P04	2986576.99	185710.95
VP-16 P05	2986576.99	185720.95
VP-16 P06	2986576.99	185730.98

Point #	Northing	Easting
VP-16 PB01	2986593.98	185735.75
VP-16 PB02	2986581.34	185738.25
VP-16 PB03	2986567.44	185740.84
VP-16 PB04	2986567.44	185723.33
VP-16 PB05	2986572.78	185712.31
VP-16 PB06	2986578.41	185700.68
VP-16 PB07	2986585.63	185699.61
VP-16 PB08	2986589.12	185704.00
VP-16 PB09	2986592.69	185718.41
VP-16 PB10	2986594.13	185729.54



LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION, EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED WOOD TURTLE EXCLUSION FENCE, LOCATION APPROXIMATE
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

HORIZONTAL DATUM: Massachusetts State Plane, Mainland Zone, NAD83, U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1998, NAVD88, U.S. Survey Feet

0 10
Feet

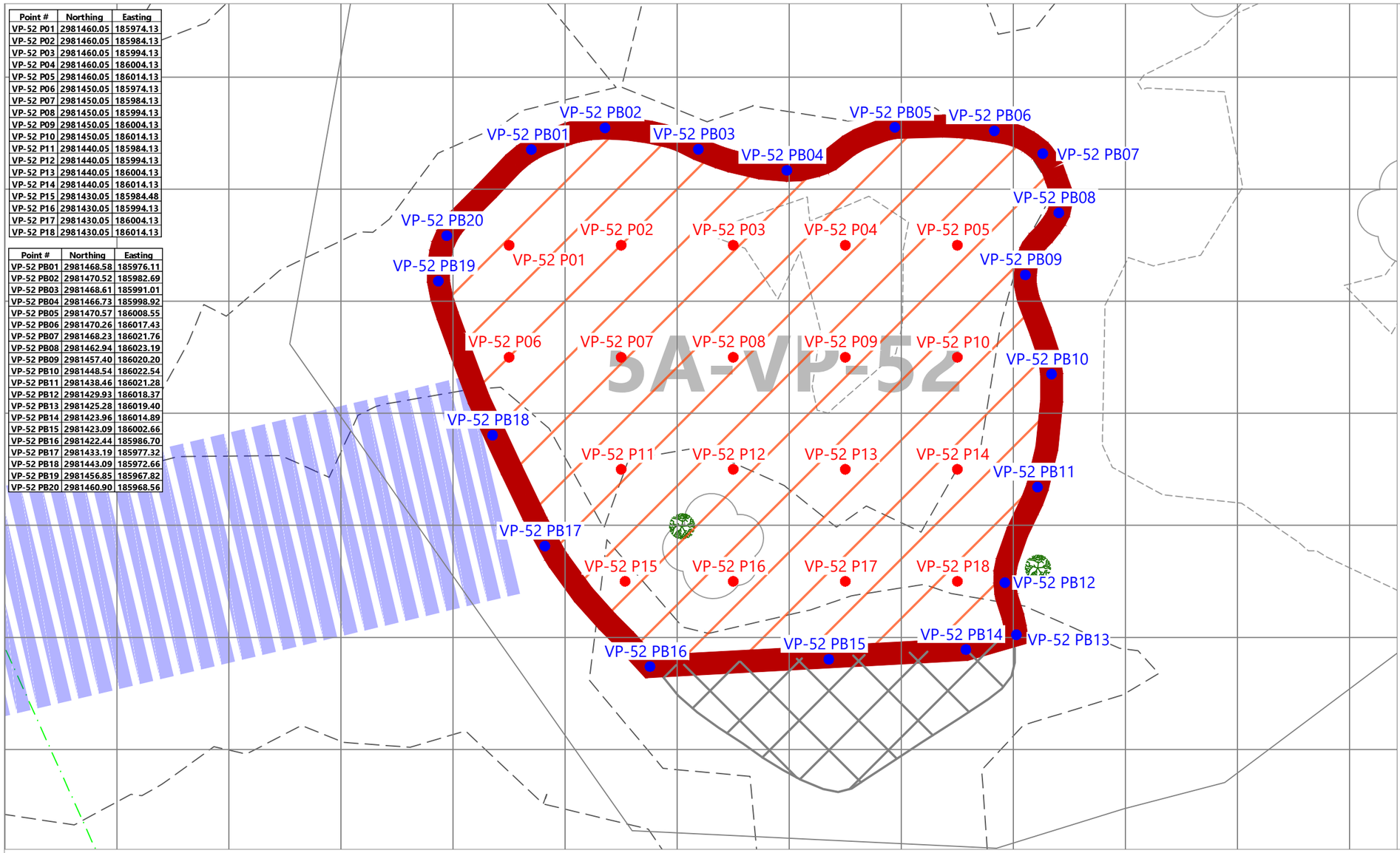
Publish Date: 2026/06/17 1:06 PM | User: cyard
Filepath: K:\Projects\0469-General Electric\Housatonic - Vernal Pools - Reach 5A\0469-RP-001 (Survey Grid and Control Points).dwg | Figure 3

ANCHOR QEA

Figure 3
5A-VP-16 - Excavation and Backfill Survey Points
Housatonic River - Vernal Pool Pilot Study
General Electric Company
Pittsfield, Massachusetts

Point #	Northing	Easting
VP-52 P01	2981460.05	185974.13
VP-52 P02	2981460.05	185984.13
VP-52 P03	2981460.05	185994.13
VP-52 P04	2981460.05	186004.13
VP-52 P05	2981460.05	186014.13
VP-52 P06	2981450.05	185974.13
VP-52 P07	2981450.05	185984.13
VP-52 P08	2981450.05	185994.13
VP-52 P09	2981450.05	186004.13
VP-52 P10	2981450.05	186014.13
VP-52 P11	2981440.05	185984.13
VP-52 P12	2981440.05	185994.13
VP-52 P13	2981440.05	186004.13
VP-52 P14	2981440.05	186014.13
VP-52 P15	2981430.05	185984.48
VP-52 P16	2981430.05	185994.13
VP-52 P17	2981430.05	186004.13
VP-52 P18	2981430.05	186014.13

Point #	Northing	Easting
VP-52 PB01	2981468.58	185976.11
VP-52 PB02	2981470.52	185982.69
VP-52 PB03	2981468.61	185991.01
VP-52 PB04	2981466.73	185998.92
VP-52 PB05	2981470.57	186008.55
VP-52 PB06	2981470.26	186017.43
VP-52 PB07	2981468.23	186021.76
VP-52 PB08	2981462.94	186023.19
VP-52 PB09	2981457.40	186020.20
VP-52 PB10	2981448.54	186022.54
VP-52 PB11	2981438.46	186021.28
VP-52 PB12	2981429.93	186018.37
VP-52 PB13	2981425.28	186019.40
VP-52 PB14	2981423.96	186014.89
VP-52 PB15	2981423.09	186002.66
VP-52 PB16	2981422.44	185986.70
VP-52 PB17	2981433.19	185977.32
VP-52 PB18	2981443.09	185972.66
VP-52 PB19	2981456.85	185967.82
VP-52 PB20	2981460.90	185968.56



LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION, EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED WOOD TURTLE EXCLUSION FENCE, LOCATION APPROXIMATE
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

HORIZONTAL DATUM: Massachusetts State Plane, Mainland Zone, NAD83, U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1998, NAVD88, U.S. Survey Feet

0 10
Feet

Publish Date: 2026/06/17 1:08 PM | User: cyard
Filepath: K:\Projects\0469-General Electric\Housatonic - Vernal Pools - Reach 5A\0469-RP-001 (Survey Grid and Control Points).dwg | Figure 4

ANCHOR QEA

Figure 4
5A-VP-52 - Excavation and Backfill Survey Points
Housatonic River - Vernal Pool Pilot Study
General Electric Company
Pittsfield, Massachusetts

Point #	Northing	Easting
VP-57 P001	2981045.32	185931.19
VP-57 P002	2981035.32	185891.19
VP-57 P003	2981035.32	185901.19
VP-57 P004	2981035.32	185911.19
VP-57 P005	2981035.32	185921.19
VP-57 P006	2981035.32	185931.19
VP-57 P007	2981035.32	185941.19
VP-57 P008	2981035.32	185951.19
VP-57 P009	2981025.32	185891.19
VP-57 P010	2981025.32	185901.19
VP-57 P011	2981025.32	185911.19
VP-57 P012	2981025.32	185921.19
VP-57 P013	2981025.32	185931.19
VP-57 P014	2981025.32	185941.19
VP-57 P015	2981025.32	185951.19
VP-57 P016	2981025.32	185961.19
VP-57 P017	2981015.32	185881.19
VP-57 P018	2981015.32	185891.19
VP-57 P019	2981015.32	185901.19
VP-57 P020	2981015.32	185911.19
VP-57 P021	2981015.32	185921.19
VP-57 P022	2981015.32	185931.19
VP-57 P023	2981015.32	185941.19
VP-57 P024	2981015.32	185951.19
VP-57 P025	2981015.32	185961.19
VP-57 P026	2981005.32	185881.19
VP-57 P027	2981005.32	185891.19
VP-57 P028	2981005.32	185901.19
VP-57 P029	2981005.32	185911.19
VP-57 P030	2981005.32	185921.19
VP-57 P031	2981005.32	185931.19
VP-57 P032	2981005.32	185941.19
VP-57 P033	2981005.32	185951.19
VP-57 P034	2980995.32	185871.19
VP-57 P035	2980995.32	185881.19
VP-57 P036	2980995.32	185891.19
VP-57 P037	2980995.32	185901.19
VP-57 P038	2980995.32	185911.19
VP-57 P039	2980995.32	185921.19
VP-57 P040	2980995.32	185931.19
VP-57 P041	2980995.32	185941.19
VP-57 P042	2980995.32	185951.19
VP-57 P043	2980985.32	185861.19
VP-57 P044	2980985.32	185871.19
VP-57 P045	2980985.32	185891.19
VP-57 P046	2980985.32	185901.19
VP-57 P047	2980985.32	185911.19
VP-57 P048	2980985.32	185921.19
VP-57 P049	2980985.32	185931.19
VP-57 P050	2980985.32	185941.19

Point #	Northing	Easting
VP-57 P051	2980985.32	185951.19
VP-57 P052	2980975.32	185861.19
VP-57 P053	2980975.32	185871.19
VP-57 P054	2980975.32	185891.19
VP-57 P055	2980975.32	185901.19
VP-57 P056	2980975.32	185911.19
VP-57 P057	2980975.32	185921.19
VP-57 P058	2980975.32	185931.19
VP-57 P059	2980975.32	185941.19
VP-57 P060	2980965.32	185861.19
VP-57 P061	2980965.32	185871.19
VP-57 P062	2980965.32	185881.19
VP-57 P063	2980965.32	185901.19
VP-57 P064	2980965.32	185911.19
VP-57 P065	2980965.32	185921.19
VP-57 P066	2980965.32	185931.19
VP-57 P067	2980965.32	185941.19
VP-57 P068	2980955.32	185851.19
VP-57 P069	2980955.32	185861.19
VP-57 P070	2980955.32	185871.19
VP-57 P071	2980955.32	185881.19
VP-57 P072	2980955.32	185891.19
VP-57 P073	2980955.32	185901.19
VP-57 P074	2980955.32	185911.19
VP-57 P075	2980955.32	185921.19
VP-57 P076	2980955.32	185931.19
VP-57 P077	2980955.32	185941.19
VP-57 P078	2980945.32	185841.19
VP-57 P079	2980945.32	185851.19
VP-57 P080	2980945.32	185861.19
VP-57 P081	2980945.32	185871.19
VP-57 P082	2980945.32	185881.19
VP-57 P083	2980945.32	185891.19
VP-57 P084	2980945.32	185941.19
VP-57 P085	2980935.32	185841.19
VP-57 P086	2980935.32	185851.19
VP-57 P087	2980935.32	185861.19
VP-57 P088	2980935.32	185871.19
VP-57 P089	2980935.32	185881.19
VP-57 P090	2980935.32	185891.19
VP-57 P091	2980935.32	185901.19
VP-57 P092	2980935.32	185911.19
VP-57 P093	2980935.32	185921.19
VP-57 P094	2980935.32	185931.19
VP-57 P095	2980935.32	185941.19
VP-57 P096	2980925.32	185841.19
VP-57 P097	2980925.32	185851.19
VP-57 P098	2980925.32	185861.19
VP-57 P099	2980925.32	185871.19
VP-57 P100	2980925.32	185881.19

Point #	Northing	Easting
VP-57 P101	2980925.32	185891.19
VP-57 P102	2980925.30	185901.19
VP-57 P103	2980925.30	185911.19
VP-57 P104	2980925.30	185921.19
VP-57 P105	2980925.30	185931.19
VP-57 P106	2980925.28	185941.19
VP-57 P107	2980915.32	185851.19
VP-57 P108	2980915.32	185861.19
VP-57 P109	2980915.32	185871.19
VP-57 P110	2980915.32	185881.19
VP-57 P111	2980915.32	185891.19
VP-57 P112	2980915.32	185901.19
VP-57 P113	2980915.32	185911.19
VP-57 P114	2980915.32	185921.19
VP-57 P115	2980915.32	185931.19
VP-57 P116	2980915.32	185941.19
VP-57 P117	2980905.32	185911.19
VP-57 P118	2980905.32	185921.19
VP-57 P119	2980905.32	185931.19
VP-57 P120	2980905.32	185941.19
VP-57 P121	2980895.32	185911.19
VP-57 P122	2980895.32	185921.19
VP-57 P123	2980895.32	185931.19

Point #	Northing	Easting
VP-57 PB01	2980993.58	185860.41
VP-57 PB02	2980985.41	185878.72
VP-57 PB03	2980973.58	185885.13
VP-57 PB04	2980965.62	185889.46
VP-57 PB05	2980953.58	185895.98
VP-57 PB06	2980945.68	185900.27
VP-57 PB07	2980946.67	185911.44
VP-57 PB08	2980947.50	185920.85
VP-57 PB09	2980948.45	185931.66
VP-57 PB10	2980950.05	185949.84
VP-57 PB11	2980941.11	185953.09
VP-57 PB12	2980934.39	185954.64
VP-57 PB13	2980920.86	185952.22
VP-57 PB14	2980908.73	185946.93
VP-57 PB15	2980894.96	185941.16
VP-57 PB16	2980888.52	185938.78
VP-57 PB17	2980889.90	185922.45
VP-57 PB18	2980891.48	185903.73
VP-57 PB19	2980903.49	185899.24
VP-57 PB20	2980911.29	185890.35
VP-57 PB21	2980912.20	185873.71
VP-57 PB22	2980911.51	185853.06
VP-57 PB23	2980916.05	185840.61
VP-57 PB24	2980923.58	185835.12
VP-57 PB25	2980933.58	185832.80
VP-57 PB26	2980943.58	185834.08
VP-57 PB27	2980953.23	185838.45
VP-57 PB28	2980963.58	185847.05
VP-57 PB29	2980973.58	185851.96
VP-57 PB30	2980983.58	185854.36
VP-57 PB31	2981003.60	185868.78
VP-57 PB32	2981023.58	185880.10
VP-57 PB33	2981033.58	185881.87
VP-57 PB34	2981047.44	185881.01
VP-57 PB35	2981044.19	185896.19
VP-57 PB36	2981041.33	185909.55
VP-57 PB37	2981046.21	185919.55
VP-57 PB38	2981051.19	185929.06
VP-57 PB39	2981046.36	185938.78
VP-57 PB40	2981041.39	185948.78
VP-57 PB41	2981032.77	185966.14
VP-57 PB42	2981017.06	185963.60
VP-57 PB43	2981006.65	185962.55
VP-57 PB44	2980993.58	185960.22
VP-57 PB45	2980983.58	185956.99
VP-57 PB46	2980973.58	185953.50
VP-57 PB47	2980963.58	185950.00
VP-57 PB48	2980958.54	185949.01

LEGEND:

- 950 — EXISTING CONTOURS (FEET NAVD88) (1-FOOT INTERVAL)
- PROPERTY BOUNDARY/RIGHT OF WAY/EASEMENT BOUNDARY
- PUBLIC ROADWAY
- EXISTING FOOT PATH
- RIVER SHORELINE BOUNDARY
- OTHER WATERBODY BOUNDARY
- EXTENT OF 2024 FORESIGHT VERNAL POOL TOPOGRAPHIC AND TREE SURVEY
- LOCATION OF TREES GREATER THAN 8" TO 10" WITHIN VERNAL POOL TREE SURVEY AREA (DEFINED ABOVE) BASED ON PRELIMINARY TREE SURVEY. CONTRACTOR TO IDENTIFY AND PRESERVE TO EXTENT PRACTICABLE TREES WITH A DIAMETER GREATER THAN 8"
- RIVER CENTERLINE
- 3+00 — 3+00 RIVER STATIONING

VERNAL POOLS

- NOT PART OF PILOT TEST
- EXCAVATION/RESTORATION
- AMENDMENT
- CONTROL
- XX ● CONTROL POINT

TSCA AREAS

NON-TSCA AREAS

- BOUNDS OF REACH 5A FULL-SCALE REMEDIATION TEMPORARY ACCESS ROADS, VERNAL POOL ACCESS ROADS TO BE CONSTRUCTED WITHIN THESE BOUNDS
- UNIMPROVED ACCESS ROAD, CONSTRUCTION MATS TO BE USED AS NEEDED TO MINIMIZE RUTTING. LOCATION APPROXIMATE
- PLANNED ROUTE FOR SECONDARY CONSTRUCTION MAT ACCESS ROADS TO BE DEVELOPED BY CONTRACTOR, LOCATION APPROXIMATE
- EXISTING GRAVEL ACCESS ROAD ASSOCIATED WITH MISS HALL'S SCHOOL
- PLANNED TIRE CLEANING STATION, EXACT LOCATION AND DESIGN TO BE DETERMINED BY CONTRACTOR
- PRELIMINARY AREA IDENTIFIED FOR TEMPORARY STAGING AREA, TO BE CONFIRMED BY CONTRACTOR UNDER OVERSIGHT BY THE CONSTRUCTION MANAGER
- PLANNED WOOD TURTLE EXCLUSION FENCE, LOCATION APPROXIMATE
- PLANNED SILT FENCE, LOCATION APPROXIMATE
- PLANNED SWING GATE
- EXISTING PIEZOMETER INSTALLED IN 2026

HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE MAINLAND, (NAD83), U.S. SURVEY FEET
VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET

NOTES:
1. SEE SHEET G001 FOR GENERAL NOTES AND LEGEND.
2. LOCATIONS ARE APPROXIMATE FOR ALL UTILITIES.

HORIZONTAL DATUM: Massachusetts State Plane, Mainland Zone, NAD83, U.S. Survey Feet
VERTICAL DATUM: North American Vertical Datum of 1998, NAVD88, U.S. Survey Feet

0 30 Feet

Publish Date: 2026/06/17 1:10 PM | User: cyard
Filepath: K:\Projects\0469-General Electric\Housatonic - Vernal Pools - Reach 5A\0469-RP-001 (Survey Grid and Control Points).dwg | Figure 5

ANCHOR QEA

Figure 5
5A-VP-57 - Excavation and Backfill Survey Points
Housatonic River - Vernal Pool Pilot Study
General Electric Company
Pittsfield, Massachusetts

Appendix H
Cultural Resources Unanticipated Discovery Plan

June 2025
Housatonic River – Rest of River

Cultural Resources Unanticipated Discoveries Plan

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067

Cultural Resources Unanticipated Discovery Plan

Archaeological surveys were conducted in 2024 on behalf of the General Electric Company (GE) in portions of Reach 5A of the Housatonic Rest of River area that will be affected by remediation or support activities and contain or have a high potential to contain cultural resources, and such surveys will continue in 2025 in certain additional areas in Reach 5A. These surveys were and are undertaken to determine whether the remediation and support activities could adversely affect any potentially significant cultural resources. The results of the 2024 surveys were provided in a *Revised Phase IB Cultural Resources Survey Report for Reach 5A*, submitted in June 2025 (AECOM 2025), and the results of the additional 2025 surveys will be provided in an addendum to that report. The surveys to date have identified a total of five archaeological sites within the subject portions of Reach 5A, four of which do not meet the eligibility criteria for listing on the National Register of Historic Places (NRHP) and the fifth will require either avoidance or a Phase II investigation.

On a separate track, GE has developed and is submitting a *Final Revised Vernal Pool Pilot Study Work Plan*, which describes the remediation activities to be conducted as a pilot study in 10 selected vernal pools (as well as seven control vernal pools) in the Rest of River floodplain. The archaeological surveys completed to date have not identified any cultural resources that would be encountered during or affected by implementation of the vernal pool pilot study.

This Unanticipated Discoveries Plan (UDP) has been prepared to address the handling of any human remains or other cultural resources that were not previously identified and that are encountered during the on-site remediation or support activities in Reach 5A, including the vernal pool pilot study. This UDP has been developed to protect any such resources, taking into account the applicable federal regulations embodied in "Protection of Historic Properties" (36 C.F.R. §§ 800.2 through 800.7, 800.12, and 800.13). This plan will be implemented by GE if previously undiscovered archaeological resources and/or human remains are identified. A list of contacts is provided at the end of this plan.

In the case of an unanticipated discovery, GE will follow all relevant state and federal laws and regulations regarding treatment of human remains and other items of cultural patrimony. Potentially relevant laws include the following:

- Native American Graves Repatriation Act (Public Law 101-601; 25 U.S.C. 3001-3031);
- Massachusetts General Laws (M.G.L.) Chapter 38, §6, as amended, Discovery of Unmarked Skeletal Remains;
- M.G.L. Chapter 9, §26A – State Archaeologist's duties;
- M.G.L. Chapter 9, §27C – Cessation of Activities;

- M.G.L. Chapter 7, §38A – Preservation, Excavation, and Analysis of Native American Human Remains;
- M.G.L. Chapter 114, §17 – Preservation of Ancient Burial Places;
- M.G.L. Chapter 272, §71 – Crimes and Punishment: Disinterring Bodies;
- M.G.L. Chapter 272, §73, as amended – Crimes and Punishment: Injuring or Removal of Burial Markers; and
- M.G.L. Chapter 91, §63 – Salvage, Recovery, etc. of Underwater Archaeological Resources; Permits.

1. Human Remains

In the case of an unanticipated discovery of human remains during remediation activities (including the vernal pool pilot study), GE will follow all relevant state and federal laws and recommendations regarding treatment of human remains. GE and AECOM recognize the importance of providing careful and respectful treatment for human remains recovered as an unanticipated discovery or as part of remediation activities. In the event of an unanticipated discovery of human remains, the following protocols will be followed:

(1) Should human remains or evidence of possible burials be encountered, work in the general area of the discovery will stop immediately and the location will be secured and protected from damage and disturbance.

(2) Human remains and associated artifacts will be left in place and not disturbed. No skeletal remains or materials associated with the remains will be collected or removed until appropriate consultation has taken place and a plan of action has been developed.

(3) The county coroner/medical examiner, local law enforcement, the Massachusetts Historical Commission (MHC), and the appropriate federally recognized Native American tribes (or nations) will be notified immediately. The coroner and local law enforcement will make the official ruling on the nature of the remains, being either forensic or archaeological.

(4) If human remains are determined to be Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated. AECOM will consult with the MHC and appropriate federally recognized Native American tribes (or nations) to develop a plan of action that is consistent with the Preservation, Excavation, and Analysis of Native American Human Remains (M.G.L. Chapter 7, §38A), the Native American Graves Protection and Repatriation Act (25 U.S.C. Ch. 32), and regulations thereunder (43 CFR Part 10).

(5) If human remains are determined to be non-Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated in accordance with MHC's "Policy and Guidelines for Non-Native Human Remains

Which are Over 100 Years Old or Older" and in a manner consistent with the Advisory Council on Historic Preservation (ACHP) Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects (ACHP 2007). Consultation with the MHC and other appropriate parties will be required to determine a plan of action.

In addition to these steps, in the event that there is an inadvertent discovery of human remains that are identified as potentially part of the Stockbridge-Munsee Band of Mohican Indians, the procedures outlined in the *Stockbridge Munsee Community Treatment and Disposition Of Human Remains and Cultural Items/Inadvertent Discovery Protocol*[1] (Stockbridge Munsee Community Band of Mohican Indians 2020) will be followed.

2. Other Archaeological Resources

The following steps will be taken in the event that any archaeological resources other than human remains are encountered by a GE employee, a contractor, or subcontractor during remediation activities, including the vernal pool pilot study. These resources may include, but are not limited to, foundations, walls, stone piles, timber structures, sunken vessels, pits, shafts, and artifact clusters.

(1) Halt Work. Remediation activities within the immediate area of the archaeological resource will be halted ("immediate area" is a context-specific measure, but roughly 50 feet away from the find is generally adequate, although the need for an extension of this area beyond this buffer zone should be considered), and the discovery will be protected from further disturbance. GE's on-site representative will have the authority and responsibility to halt construction in the immediate area of the find.

(2) Notify Project Manager and Cultural Resources Contractor. GE's on-site representative will notify the GE Project Manager at the time when the discovery is made (currently Kevin Mooney, cell: 413-553-6610) and the AECOM cultural resource professional (currently Elisabeth LaVigne, cell: 609-331-1703)

(3) Notify U.S. Environmental Protection Agency (EPA). The GE Project Manager will notify EPA.

(4) Protect the Site. The GE Project Manager and GE's on-site representative will arrange for protection of the find from further disturbance or vandalism.

(5) Notify EPA Archaeologist. The AECOM cultural resource professional will notify the archaeologist serving as EPA's archaeologist of the discovery.

(6) Engage in Consultation. GE, through its cultural resources consultant, will engage in consultation with EPA's archaeologist to determine whether the find could potentially meet the

[1] smc-inadvertent-discovery-policy.pdf

criteria for listing on the NRHP. Sufficient archaeological work will be performed at the unanticipated discovery location to stabilize deposits, protect deposits from scavengers or looters, and collect readily available samples (e.g., radiocarbon dating) that may help pinpoint the age of deposits. If the find is determined to be potentially eligible for listing on the NRHP, additional data recovery work will be performed as required by EPA or determined by GE with EPA approval. Further, if the find is determined to be Indigenous, GE or AECOM will advise with the Stockbridge-Munsee Band of Mohican Indians. Remediation activities will remain halted until EPA advises GE to proceed in the area of the specific unanticipated discovery.

(7) Report. The unanticipated discovery and the actions taken to address it will be documented in a written report that will be submitted to EPA. The report format will be determined by the level of effort required.

3. Implementation and Training

GE will implement the measures outlined in this plan following EPA approval

GE will conduct a short archaeological resource identification training program for remediation field activity staff, including pilot study field staff, in advance of the work. This training program will be presented by the project's cultural resource professional and is intended to help remediation staff identify unanticipated discoveries in the field and report them to GE's on-site representative.

4. References

ACHP (Advisory Council on Historic Preservation), 2007. *Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects*. February 23, 2007.

AECOM, 2025. *Revised Phase IB Cultural Resources Survey Report for Reach 5A*. Prepared for General Electric Company, Pittsfield, Massachusetts. June 2025.

Stockbridge Munsee Community Band of Mohican Indians, 2020. *Treatment and Disposition Of Human Remains and Cultural Items/Inadvertent Discovery Protocol*.

Contact List: Cultural Resources Unanticipated Discovery Plan

EPA Representative
Scott Campbell
Taconic Ridge Environmental, Inc.
30 Sunset Drive
Williamstown, Massachusetts 01267
Office: 413-449-1065
Cell: 413-464-1328
scampbell@taconicridgeenviro.com

GE Project Manager
Kevin Mooney
Senior Project Manager
GE Aerospace
1 Plastics Avenue
Pittsfield, Massachusetts 01201
Office: 413-553-6610
Cell: 413-441-4619
Kevin.mooney@ge.com

EPA Archaeologist
TBD (formerly John Campbell)
HDR
235 Promenade Street, Suite 104
Providence, Rhode Island 02908-5762
Office: 401-474-7586

AECOM Cultural Resources Professional
Elisabeth LaVigne
AECOM Technical Services
437 High Street
Burlington, New Jersey 08016
Cell: 609-331-1703
Liz.lavigne@aecom.com

AECOM Staff Forensic Anthropologist
Thomas Crist, PhD
FAAFS Professor
Utica College
1600 Burrstone Road
Utica, New York 13502
Phone: 315-792-3390

State Office of the Chief Medical Examiner
Dr. James Pokines, Forensic Anthropologist
702 Albany Street
Boston, Massachusetts 02118
Phone: 617-267-6767
James.pokines@state.ma.us

Pittsfield Police Department
39 Allen Street
Pittsfield, Massachusetts 01201
Phone: 413-448-9700

Sort	Pool_ID	Treatment	Date	Arrival Time	Air Temp	Previous 5-Days Precip	Day of precip	Surface Water Inflow	Surface Water Outflow	Water Depth (in)	Fairy Shrimp #Observed	Wood Frog Egg Mass Count (new/cumulative)	Salamander Egg Mass Count (new/cumulative)	# Wood Frog Larvae	Gosner Stage	# Salamander Larvae	Hurney Stage	# Wood Frog emigrating	# Spotted Salamander emigrating	Other Observations	Notes
1	5A-VP-03	Control	03/19/24	10:00	36	0.17	0	N	N	12	0	11	0	0	NA	0	NA	0	0		
2	5A-VP-03	Control	05/06/24	10:50	67	0.42	0.74	N	N	2	0	0	0	0	NA	0	NA	0	0		
3	5A-VP-03	Control	05/30/24	9:30	63	0.85	0.41	N	N	0	0	0	0	0	NA	0	NA	0	0		
4	5A-VP-03	Control	06/12/24	10:40	70	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
5	5A-VP-04	Excavate/Restore	03/19/24	11:00	37	0.17	0	N	N	25	0	26	0	0	NA	0	NA	0	0		
6	5A-VP-04	Excavate/Restore	05/06/24	10:00	70	0.42	0.74	N	N	5	0	0	0	100's	26-35	0	NA	0	0		
7	5A-VP-04	Excavate/Restore	05/30/24	9:30	63	0.85	0.41	N	N	2	0	0	0	0	NA	0	NA	0	0		5'x8' flooded area
8	5A-VP-04	Excavate/Restore	06/12/24	10:00	70	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
9	5A-VP-05	Control	03/19/24	11:30	37	0.17	0	N	Y	34	0	125	0	0	NA	0	NA	0	0	GF Larvae	
10	5A-VP-05	Control	05/06/24	10:30	70	0.42	0.74	N	N	25	0	0	0	100's	26-35	0	NA	0	0	GF Larvae	
11	5A-VP-05	Control	05/30/24	10:00	63	0.85	0.41	N	N	14	0	0	0	100's	36-39	0	NA	0	0	GF Larvae	
12	5A-VP-05	Control	06/12/24	10:30	65	0.9	0	N	N	9	0	0	0	0	NA	0	NA	0	0		
13	5A-VP-07	Excavate/Restore	03/19/24	14:30	35	0.17	0	Y	Y	26	0	17	0	0	NA	0	NA	0	0		
14	5A-VP-07	Excavate/Restore	05/06/24	13:30	66	0.42	0.74	N	N	9	0	0	5	20-40	26-35	0	NA	0	0	GF Chorus	
15	5A-VP-07	Excavate/Restore	05/30/24	13:50	63	0.85	0.41	N	N	2	0	0	0	0	NA	0	NA	0	0		10'x25' flooded area
16	5A-VP-07	Excavate/Restore	06/12/24	13:00	70	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
17	5A-VP-09	Amendment	03/19/24	13:30	35	0.17	0	Y	Y	24	0	0	0	0	NA	0	NA	0	0		
18	5A-VP-09	Amendment	05/06/24	11:30	70	0.42	0.74	N	N	7	0	0	0	0	NA	0	NA	0	0		
19	5A-VP-09	Amendment	05/30/24	11:00	63	0.85	0.41	N	N	0	0	0	0	0	NA	0	NA	0	0		
20	5A-VP-09	Amendment	06/12/24	14:30	70	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
21	5A-VP-10	Control	03/19/24	12:00	34	0.17	0	Y	Y	12	0	54	0	0	NA	0	NA	0	0		
22	5A-VP-10	Control	05/06/24	11:10	61	0.42	0.74	N	N	3	0	0	0	100's	26-35	0	NA	0	0		
23	5A-VP-10	Control	05/30/24	10:45	58	0.85	0.41	N	N	2	0	0	0	0	NA	0	NA	0	0		Pool may have dried in between 5/6 & 5/30
24	5A-VP-10	Control	06/12/24	10:50	65	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
25	5A-VP-12	Amendment	03/28/24	14:10	40	2.35	0.68	N	Y	31	0	0	0	0	NA	0	NA	0	0		
26	5A-VP-12	Amendment	05/08/24	9:30	54	0.84	0.14	N	N	17	0	0	1	100's	26-35	0	NA	0	0	SP Larvae (2), GRFG Larvae (many)	
27	5A-VP-12	Amendment	05/30/24	12:30	64	0.85	0.41	N	N	8	0	0	0	30-40	36-39	0	NA	0	0		
28	5A-VP-12	Amendment	06/12/24	12:00	67	0.9	0	N	N	4	0	0	0	25	36-39	0	NA	8 (GS 42-45)	0		
29	5A-VP-15	Amendment	03/19/24	12:30	34	0.17	0	N	N	20	0	105	0	0	NA	0	NA	0	0		
30	5A-VP-15	Amendment	05/06/24	12:10	61	0.42	0.74	N	N	16	0	0	0	100's	26-35	0	NA	0	0	GRFG Adult	
31	5A-VP-15	Amendment	05/30/24	12:10	64	0.85	0.41	N	N	6	0	0	0	100's	26-35/36-39	0	NA	0	0	GRFG Larvae	Two size classes of WF larvae
32	5A-VP-15	Amendment	06/12/24	11:20	65	0.9	0	N	N	0	0	0	0	0	NA	0	NA	30 (GS 42-45)	0	GRFG Metamorphs	
33	5A-VP-16	Excavate/Restore	03/19/24	13:00	34	0.17	0	N	N	21	0	4	0	0	NA	0	NA	0	0		
34	5A-VP-16	Excavate/Restore	05/06/24	12:50	65	0.42	0.74	N	N	16	0	0	0	100's	25-26	0	NA	0	0	GRFG Larvae & Adults	
35	5A-VP-16	Excavate/Restore	05/30/24	12:20	64	0.85	0.41	N	N	6	0	0	0	25	26-30	0	NA	0	0		
36	5A-VP-16	Excavate/Restore	06/12/24	9:30	65	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
37	5A-VP-21	Control	03/28/24	11:10	41	2.35	0.68	N	N	36	0	0	0	0	NA	0	NA	0	0		
38	5A-VP-21	Control	05/07/24	15:00	73	0.84	0	N	N	26	0	0	1	0	NA	0	NA	0	0	GRFG Larvae & Adults	
39	5A-VP-21	Control	05/29/24	14:30	72	0.84	0.02	N	N	21	0	0	0	0	NA	0	NA	0	0	GRFG Larvae	
40	5A-VP-21	Control	06/12/24	12:30	67	0.9	0	N	N	13	0	0	0	0	NA	0	NA	0	0	GRFG Larvae & Adults	Dead carp
41	5A-VP-22	Amendment	03/28/24	10:30	41	2.35	0.68	N	N	41	0	30	0	0	NA	0	NA	0	0		
42	5A-VP-22	Amendment	05/07/24	14:00	72	0.84	0	N	N	24	0	0	0	50-60	25-30	0	NA	0	0	GRFG Adult	
43	5A-VP-22	Amendment	05/29/24	13:40	71	0.84	0.02	N	N	13	0	0	0	30	36-39	0	NA	0	0	GRFG Larvae and metamorphs	red-fin pickerel
44	5A-VP-22	Amendment	06/12/24	13:30	67	0.9	0	N	N	0	0	0	0	0	NA	0	NA	0	0	GRFG Larvae (dead)	
45	5A-VP-26	Control	03/28/24	12:30	39	2.35	0.68	Y	Y	32	0	2	0	0	NA	0	NA	0	0		
46	5A-VP-26	Control	05/07/24	13:30	72	0.84	0	N	N	16	0	0	0	0	NA	0	NA	0	0	GRFG Larvae	
47	5A-VP-26	Control	05/29/24	13:20	71	0.84	0.02	N	N	12	0	0	0	0	NA	0	NA	0	0	GRFG Larvae	
48	5A-VP-26	Control	06/13/24	8:40	70	0.67	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
49	5A-VP-27	Amendment	03/22/24	10:00	30	0.09	0	N	N	10	10-50	0	0	0	NA	0	NA	0	0		
50	5A-VP-27	Amendment	05/07/24	13:30	72	0.84	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
51	5A-VP-27	Amendment	05/29/24	13:00	71	0.84	0.02	N	N	0	0	0	0	0	NA	0	NA	0	0		
52	5A-VP-27	Amendment	06/13/24	9:00	70	0.67	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
53	5A-VP-52	Excavate/Restore	03/28/24	13:20	41	2.35	0.68	Y	Y	28	0	0	0	0	NA	0	NA	0	0		Entire floodplain under water, pool connected to VP55 and VP57
54	5A-VP-52	Excavate/Restore	05/07/24	12:30	72	0.84	0	N	N	16	0	0	0	0	NA	0	NA	0	0	GRFG Larvae & Adult	
55	5A-VP-52	Excavate/Restore	05/29/24	12:00	71	0.84	0.02	N	N	13	0	0	0	0	NA	0	NA	0	0	GRFG Adult	
56	5A-VP-52	Excavate/Restore	06/13/24	11:00	76	0.67	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
57	5A-VP-55	Control	03/28/24	13:00	39	2.35	0.68	Y	Y	40	0	0	0	0	NA	0	NA	0	0		Water depth > 40 inches. Entire floodplain under water, pool connected to VP52 and VP57
58	5A-VP-55	Control	05/07/24	11:30	73	0.84	0	N	Y	20	0	0	0	0	NA	0	NA	0	0	SP Larvae, GRFG Larvae	
59	5A-VP-55	Control	05/29/24	12:00	72	0.84	0.02	N	Y	15	0	0	0	0	NA	0	NA	0	0	GRFG Larvae	
60	5A-VP-55	Control	06/13/24	10:20	81	0.67	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
61	5A-VP-57	Excavate/Restore	03/28/24	12:40	44	2.35	0.68	Y	Y	40	0	0	0	0	NA	0	NA	0	0		Water depth > 40 inches. Entire floodplain under water, pool connected to VP52 and VP55
62	5A-VP-57	Excavate/Restore	05/07/24	11:00	73	0.84	0	N	N	10	0	0	0	0	NA	0	NA	0	0		
63	5A-VP-57	Excavate/Restore	05/29/24	11:00	72	0.84	0.02	N	N	0	0	0	0	0	NA	0	NA	0	0		
64	5A-VP-57	Excavate/Restore	06/13/24	10:00	79	0.67	0	N	N	0	0	0	0	0	NA	0	NA	0	0		
65	5A-VP-61	Control	03/29/24	12:30	42	2.58	0.02	N	Y	34	0	120	0	0	NA	0	NA	0	0		
66	5A-VP-61	Control	05/07/24	10:00	71	0.84	0	N	N	17	0	0	0	100's	36-39	0	NA	0	0	GRFG Larvae & Adult	
67	5A-VP-61	Control	05/29/24	10:30	70	0.84	0.02	N	N	9	0	0	0	1000's	26-35/36-39	0	NA	0	0		Two size classes of WF larvae
68	5A-VP-61	Control	06/13/24	10:20	79	0.67	0	N	N	0	0	0	0	0	NA	0	NA	0	0		

Date	Pool	Treatment	Scientific Name	Common Name
5/8/2024	5AVP12	Amendment	Amphipoda	Amphipods
5/30/2024	5AVP12	Amendment	Amphipoda	Amphipods
5/30/2024	5AVP12	Amendment	Notonecta glauca	Common backswimmer
5/30/2024	5AVP12	Amendment	Zygoptera	Damselfly
5/8/2024	5AVP12	Amendment	Anisoptera	Dragonfly larvae
5/8/2024	5AVP12	Amendment	Ephemeroptera	Mayfly
5/30/2024	5AVP15	Amendment	Amphipoda	Amphipods
5/30/2024	5AVP15	Amendment	Zygoptera	Damselfly
5/6/2024	5AVP15	Amendment	Anisoptera	Dragonfly
5/30/2024	5AVP15	Amendment	Gastropoda	Amphibious Snails
5/30/2024	5AVP15	Amendment	Lethocerus americanus	Toe biter
5/30/2024	5AVP15	Amendment	Corixidae	Water boatman
5/7/2024	5AVP22	Amendment	Amphipoda	Amphipods
5/7/2024	5AVP22	Amendment	Trichoptera	Caddisfly
5/29/2024	5AVP22	Amendment	Zygoptera	Damselfly
5/29/2024	5AVP22	Amendment	Anisoptera	Dragonfly larvae
5/7/2024	5AVP22	Amendment	Coleoptera Dytiscidae	Dytiscidae beetle
5/29/2024	5AVP22	Amendment	Coleoptera Dytiscidae	Dytiscidae beetle
5/7/2024	5AVP22	Amendment	Coleoptera Dytiscidae	Dytiscidae beetle larvae
5/7/2024	5AVP22	Amendment	Ephemeroptera	Mayfly
5/7/2024	5AVP22	Amendment	Gastropoda	Amphibious Snails
5/29/2024	5AVP22	Amendment	Corixidae	Water boatman
5/7/2024	5AVP22	Amendment	Daphnia	Water fleas
3/22/2024	5AVP27	Amendment	Branchinecta lynchi	Fairy Shrimp
5/6/2024	5AVP9	Amendment	Ephemeroptera	Mayfly
5/6/2024	5AVP10	Control	Amphipoda	Amphipods
5/6/2024	5AVP10	Control	Trichoptera	Caddisfly
5/6/2024	5AVP10	Control	Ephemeroptera	Mayfly
5/7/2024	5AVP21	Control	Amphipoda	Amphipods
5/7/2024	5AVP21	Control	Trichoptera	Caddisfly
5/29/2024	5AVP21	Control	Notonecta glauca	Common backswimmer
5/29/2024	5AVP21	Control	Zygoptera	Damselfly
5/7/2024	5AVP21	Control	Pisidium moitessierianum	Fingernail clam
5/29/2024	5AVP21	Control	Gastropoda	Amphibious Snails
5/29/2024	5AVP21	Control	Lethocerus americanus	Toe biter
5/29/2024	5AVP21	Control	Corixidae	Water boatman
5/7/2024	5AVP21	Control	Gerridae	Water strider
5/7/2024	5AVP21	Control	Gyrinidae	Whirligig beetle
5/7/2024	5AVP26	Control	Trichoptera	Caddisfly
5/7/2024	5AVP26	Control	Notonecta glauca	Common backswimmer
3/19/2024	5AVP3	Control	Pisidium moitessierianum	Fingernail clam
5/6/2024	5AVP3	Control	Pisidium moitessierianum	Fingernail clam
5/6/2024	5AVP5	Control	Amphipoda	Amphipods

5/30/2024	5AVP5	Control	Zygoptera	Damselfly
5/6/2024	5AVP5	Control	Pisidium moitessierianum	Fingernail clam
5/30/2024	5AVP5	Control	Pisidium moitessierianum	Fingernail clam
5/6/2024	5AVP5	Control	Ephemeroptera	Mayfly
5/6/2024	5AVP5	Control	Gastropoda	Amphibious Snails
5/30/2024	5AVP5	Control	Gastropoda	Amphibious Snails
6/12/2024	5AVP5	Control	Lethocerus americanus	Toe biter
5/30/2024	5AVP5	Control	Corixidae	Water boatman
5/29/2024	5AVP55	Control	Amphipoda	Amphipods
5/7/2024	5AVP55	Control	Trichoptera	Caddisfly
5/7/2024	5AVP55	Control	Zygoptera	Damselfly
5/29/2024	5AVP55	Control	Zygoptera	Damselfly
5/29/2024	5AVP55	Control	Anisoptera	Dragonfly larvae
5/29/2024	5AVP55	Control	Pisidium moitessierianum	Fingernail clam
5/7/2024	5AVP55	Control	Ephemeroptera	Mayfly
5/29/2024	5AVP55	Control	Ephemeroptera	Mayfly
5/29/2024	5AVP55	Control	Gastropoda	Amphibious Snails
5/29/2024	5AVP55	Control	Lethocerus americanus	Toe biter
5/7/2024	5AVP61	Control	Amphipoda	Amphipods
5/7/2024	5AVP61	Control	Trichoptera	Caddisfly
5/7/2024	5AVP61	Control	Chironomidae	Chironomids
5/7/2024	5AVP61	Control	Ephemeroptera	Mayfly
5/6/2024	5AVP16	Excavate/Restore	Coleoptera Dytiscidae	Dytiscidae beetle larvae
5/6/2024	5AVP16	Excavate/Restore	Ephemeroptera	Mayfly
5/6/2024	5AVP4	Excavate/Restore	Amphipoda	Amphipods
5/30/2024	5AVP4	Excavate/Restore	Pisidium moitessierianum	Fingernail clam
5/6/2024	5AVP4	Excavate/Restore	Pisidium moitessierianum	Fingernail clam
5/6/2024	5AVP4	Excavate/Restore	Ephemeroptera	Mayfly
5/30/2024	5AVP4	Excavate/Restore	Gastropoda	Amphibious Snails
5/30/2024	5AVP4	Excavate/Restore	Araneae	Spiders
5/29/2024	5AVP52	Excavate/Restore	Amphipoda	Amphipods
5/29/2024	5AVP52	Excavate/Restore	Zygoptera	Damselfly
5/29/2024	5AVP52	Excavate/Restore	Pisidium moitessierianum	Fingernail clam
5/7/2024	5AVP52	Excavate/Restore	Ephemeroptera	Mayfly
5/29/2024	5AVP52	Excavate/Restore	Ephemeroptera	Mayfly
5/29/2024	5AVP52	Excavate/Restore	Gastropoda	Amphibious Snails
5/7/2024	5AVP7	Excavate/Restore	Coleoptera Dytiscidae	Dytiscidae beetle larvae
5/7/2024	5AVP7	Excavate/Restore	Ephemeroptera	Mayfly

Aquatic Insects Identified in Vernal Pool Dip Net Sweeps in 2024

Class	Order	Family	Common Name	Vernal Pool ID																
				Amendment					Excavate/Restore					Control						
				5A-VP-9	5A-VP-12	5A-VP-15	5A-VP-22	5A-VP-27	5A-VP-4	5A-VP-7	5A-VP-16	5A-VP-52	5A-VP-57	5A-VP-3	5A-VP-5	5A-VP-10	5A-VP-21	5A-VP-26	5A-VP-55	5A-VP-61
Gastropoda			Amphibious Snails			✓	✓		✓			✓			✓		✓		✓	
Malacostraca	Amphipoda		Amphipods		✓	✓	✓		✓			✓			✓	✓	✓		✓	✓
Insecta	Trichoptera	Limnephilidae	Caddisfly				✓									✓	✓	✓	✓	✓
Insecta	Diptera	Chironomidae	Chironomids																	✓
Insecta	Hemiptera	Notonectidae	Common backswimmer		✓												✓	✓		
Insecta	Odonata		Damselfly		✓	✓	✓					✓			✓		✓		✓	
Insecta	Odonata		Dragonfly		✓	✓	✓												✓	
Bivalvia	Sphaeriida	Sphaeriidae	Fingernail clam						✓			✓		✓	✓		✓		✓	
Insecta	Ephemeroptera		Mayfly	✓	✓		✓		✓	✓	✓	✓			✓	✓			✓	✓
Insecta	Coleoptera	Dytiscidae	Predaceous diving beetle				✓			✓	✓									
Arachnida	Araneae		Spiders																	
Insecta	Hemiptera	Belostomatidae	Toe biter			✓									✓		✓		✓	
Insecta	Hemiptera	Corixidae	Water boatman			✓	✓								✓		✓			
Branchiopoda	Anomopoda	Daphniidae	Water fleas				✓													
Insecta	Hemiptera	Gerridae	Water strider														✓			
Insecta	Coleoptera	Gyrinidae	Whirligig beetle														✓			

Pilot Study Pool Vegetation

			Pilot Pool																				
	Scientific Name	Common Name	5A-VP-3	5A-VP-4	5A-VP-5	5A-VP-7	5A-VP-9	5A-VP-10	5A-VP-12	5A-VP-15	5A-VP-16	5A-VP-21	5A-VP-22	5A-VP-26	5A-VP-27	5A-VP-52	5A-VP-55	5A-VP-57	5A-VP-61	CoC [1]	Wetland Indicator Status [2]	Invasive Status [3]
1	*Acer negundo*	Box Elder	✓	✓		✓		✓	✓			✓				✓	✓			2	FAC	
2	*Acer rubrum*	Red Maple	✓	✓	✓			✓		✓		✓		✓				✓	✓	3	FAC	
3	*Acer saccharinum*	Silver Maple	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	6	FACW	
4	*Acer saccharum*	Sugar Maple										✓							✓	5	FACU	
5	*Acorus calamus*	Single-Vein Sweetflag										✓								6	OBL	
6	*Aegopodium podagraria*	Bishop's Goutweed																✓		0	FAC	X, I
7	*Agrimonia gryposepala*	Tall Hairy Groovebur																✓		4	FACU	
8	*Alisma subcordatum*	American Water-Plantain			✓				✓	✓		✓	✓	✓		✓	✓		✓	4	OBL	
9	*Alisma triviale*	Northern Water-Plantain							✓			✓					✓			4	OBL	
10	*Alliaria petiolata*	Garlic Mustard	✓																	0	FACU	X, I
11	*Alnus incana*	Speckled Alder			✓															4	FACW	
12	*Arisaema triphyllum*	Jack-in-the-Pulpit																✓		5	FAC	
13	*Betula populifolia*	Gray Birch			✓															3	FAC	
14	*Bidens cernua*	Nodding Bur-Marigold										✓								4	OBL	
15	*Bidens frondosa*	Devil's-Pitchfork							✓	✓			✓					✓	✓	2	FACW	
16	*Boehmeria cylindrica*	Small-Spike False Nettle	✓	✓												✓				6	OBL	
17	*Calamagrostis canadensis*	Bluejoint											✓				✓			4	OBL	
18	*Cardamine pensylvanica*	Quaker Bittercress																	✓	4	FACW	
19	*Cardamine pratensis*	Cuckoo Flower															✓			4	NL	
20	*Carex bromoides*	Brome-Like Sedge		✓				✓											✓	5	FACW	
21	*Carex crinita*	Fringed Sedge		✓									✓						✓	4	OBL	
22	*Carex intumescens*	Greater Bladder Sedge		✓	✓				✓										✓	5	FACW	
23	*Carex lacustris*	Lakebank Sedge																	✓	5	OBL	
24	*Carex lupulina*	Hop Sedge				✓			✓	✓		✓	✓					✓	✓	6	OBL	
25	*Carex prasina*	Drooping Sedge		✓	✓	✓		✓											✓	6	OBL	
26	*Carex radiata*	Eastern Star Sedge													✓					6	FAC	
27	*Carex retrorsa*	Retrorse Sedge	✓	✓				✓		✓			✓				✓		✓	5	OBL	
28	*Carpinus caroliniana*	American Hornbeam			✓				✓								✓	✓	✓	5	FAC	
29	*Carya cordiformis*	Bitternut Hickory																	✓	6	FAC	
30	*Celastrus orbiculatus*	Asian Bittersweet												✓						0	FACU	X, I
31	*Cephalanthus occidentalis*	Common Buttonbush										✓	✓						✓	6	OBL	
32	*Cicuta bulbifera*	Bulblet-Bearing Water-Hemlock									✓	✓							✓	5	OBL	
33	*Cinna arundinacea*	Sweet Wood-Reed																✓	✓	6	FACW	
34	*Cinna latifolia*	Slender Wood-Reed											✓					✓	✓	5	FACW	
35	*Cirsium arvense*	Canada Thistle								✓										0	FACU	
36	*Clematis virginiana*	Virginia Virgin's-Bower															✓			3	FAC	
37	*Crataegus crus-galli*	Cockspur Hawthorn				✓				✓				✓						3	FAC	
38	*Cryptotaenia canadensis*	Canada Honewort																✓		6	FAC	
39	*Cuscuta gronovii*	Common Dodder																✓		3	NA	
40	*Echinocystis lobata*	Wild Cucumber							✓							✓		✓		3	FACW	
41	*Eleocharis acicularis*	Needle Spike-Rush			✓				✓	✓		✓								4	OBL	
42	*Eleocharis palustris*	Common Spike-Rush								✓										5	OBL	
43	*Equisetum fluviatile*	Water Horsetail										✓					✓			5	OBL	
44	*Equisetum hyemale*	Tall Scouring-Rush										✓								2	FAC	
45	*Erechtites hieraciifolius*	American Burnweed										✓	✓							1	FACU	
46	*Euonymus alatus*	Winged Euonymus		✓	✓															0	NL	X, I
47	*Fagus grandifolia*	American Beech										✓								5	FACU	
48	*Fallopia japonica*	Japanese Knotweed																✓		0	FACU	X, I
49	*Frangula alnus*	Glossy Buckthorn	✓		✓															0	FAC	X, I

Pilot Study Pool Vegetation

	Scientific Name	Common Name	Pilot Pool																	CoC [1]	Wetland Indicator Status [2]	Invasive Status [3]
			5A-VP-3	5A-VP-4	5A-VP-5	5A-VP-7	5A-VP-9	5A-VP-10	5A-VP-12	5A-VP-15	5A-VP-16	5A-VP-21	5A-VP-22	5A-VP-26	5A-VP-27	5A-VP-52	5A-VP-55	5A-VP-57	5A-VP-61			
50	*Fraxinus americana*	White Ash																✓	✓	3	FACU	
51	*Fraxinus pennsylvanica*	Green Ash			✓							✓								4	FACW	
52	*Galium aparine*	Cleavers														✓				2	FACU	
53	*Galium asprellum*	Rough Bedstraw			✓	✓		✓	✓		✓	✓	✓			✓	✓		✓	4	OBL	
54	*Galium palustre*	Common Marsh Bedstraw		✓	✓			✓	✓											4	OBL	
55	*Galium tinctorium*	Stiff Marsh Bedstraw		✓									✓		✓			✓		4	OBL	
56	*Geum canadense*	White Avens			✓													✓		4	FAC	
57	*Geum laciniatum*	Rough Avens			✓			✓										✓		4	FACW	
58	*Glechoma hederacea*	Ground-Ivy																✓		0	FACU	
59	*Glyceria grandis*	American Manna Grass										✓								4	OBL	
60	*Glyceria striata*	Fowl Manna Grass			✓			✓												4	OBL	
61	*Hamamelis virginiana*	American Witch-Hazel																	✓	5	FACU	
62	*Ilex verticillata*	Common Winterberry										✓							✓	5	FACW	
63	*Impatiens capensis*	Jewelweed	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓	✓	3	FACW	
64	*Iris pseudacorus*	Pale-Yellow Iris	✓			✓			✓	✓		✓	✓			✓	✓	✓	✓	0	OBL	X, I
65	*Iris versicolor*	Harlequin Blueflag							✓	✓		✓	✓					✓	✓	4	OBL	
66	*Juglans cinerea*	Butternut								✓										6	FACU	
67	*Juncus effusus*	Soft Rush			✓															2	OBL	
68	*Laportea canadensis*	Canada Wood-Nettle														✓	✓	✓		7	FACW	
69	*Leersia oryzoides*	Rice Cut Grass							✓	✓		✓								5	OBL	
70	*Leersia virginica*	White Grass							✓											5	FACW	
71	*Lemna minor*	Common Duckweed			✓							✓	✓	✓					✓	3	OBL	
72	*Ligustrum vulgare*	European Privet	✓																	0	FACU	
73	*Lonicera morrowii*	Morrow's Honeysuckle	✓	✓	✓	✓									✓	✓	✓			0	FACU	X, I
74	*Ludwigia palustris*	Water-Purslane										✓					✓			5	OBL	
75	*Lycopus uniflorus*	Northern Bugleweed							✓	✓		✓		✓		✓		✓		4	OBL	
76	*Lycopus virginicus*	Virginia Bugleweed																✓		5	OBL	
77	*Lysimachia ciliata*	Fringed Yellow-Loosestrife	✓	✓		✓				✓	✓					✓		✓		4	FACW	
78	*Lysimachia nummularia*	Creeping Jenny	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	FACW	X, I
79	*Lysimachia terrestris*	Swamp Candles				✓				✓		✓	✓	✓				✓	✓	4	OBL	
80	*Lythrum salicaria*	Purple Loosestrife			✓	✓			✓	✓	✓	✓	✓	✓		✓	✓			0	OBL	X, I
81	*Matteuccia struthiopteris*	Ostrich Fern				✓											✓	✓		6	FAC	
82	*Morus alba*	White Mulberry	✓																	0	FACU	
83	*Myosotis scorpioides*	True Forget-Me-Not		✓					✓	✓	✓	✓				✓	✓	✓		0	OBL	X, L
84	*Onoclea sensibilis*	Sensitive Fern	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	2	FACW	
85	*Osmunda regalis*	Royal Fern		✓																5	OBL	
86	*Osmundastrum cinnamomeum*	Cinnamon Fern		✓	✓				✓			✓							✓	5	FACW	
87	*Pachysandra terminalis*	Japanese Mountain-Spurge													✓					0	NL	
88	*Parthenocissus quinquefolia*	Virginia Creeper	✓																	3	FACU	
89	*Peltandra virginica*	Arrow-Arum															✓			7	OBL	
90	*Penthorum sedoides*	Ditch Stonecrop		✓	✓				✓	✓				✓		✓	✓	✓		4	OBL	
91	*Persicaria amphibia*	Water Smartweed										✓								4	OBL	
92	*Persicaria hydropiper*	Mild Water-Pepper											✓			✓				4	OBL	
93	*Persicaria hydropiperoides*	Swamp Smartweed			✓												✓			6	OBL	
94	*Persicaria pensylvanica*	Pinkweed		✓	✓				✓	✓		✓	✓				✓			2	FACW	
95	*Persicaria sagittata*	Arrow-Leaf Tearthumb								✓		✓	✓			✓				4	OBL	
96	*Persicaria virginiana*	Jumpseed	✓	✓							✓	✓	✓		✓	✓		✓	✓	5	FAC	
97	*Phalaris arundinacea*	Reed Canary Grass										✓	✓			✓	✓			1	FACW	X, I
98	*Pilea pumila*	Canada Clearweed	✓								✓						✓	✓		4	FACW	

Pilot Study Pool Vegetation

			Pilot Pool																			
	Scientific Name	Common Name	5A-VP-3	5A-VP-4	5A-VP-5	5A-VP-7	5A-VP-9	5A-VP-10	5A-VP-12	5A-VP-15	5A-VP-16	5A-VP-21	5A-VP-22	5A-VP-26	5A-VP-27	5A-VP-52	5A-VP-55	5A-VP-57	5A-VP-61	CoC [1]	Wetland Indicator Status [2]	Invasive Status [3]
99	*Populus deltoides*	Eastern Cottonwood	✓			✓		✓					✓							4	FAC	
100	*Prunus serotina*	Black Cherry																	✓	3	FACU	
101	*Quercus rubra*	Northern Red Oak										✓								4	FACU	
102	*Ranunculus caricetorum*	Swamp Buttercup														✓		✓		7	FAC	
103	*Rhamnus cathartica*	European Buckthorn		✓	✓	✓						✓	✓	✓	✓		✓		✓	0	FAC	X, I
104	*Ribes americanum*	Wild Black Currant	✓									✓								6	FACW	
105	*Rosa multiflora*	Multiflora Rose	✓	✓	✓	✓				✓				✓	✓					0	FACU	X, I
106	*Rudbeckia laciniata*	Green-Head Coneflower															✓			6	FACW	
107	*Rumex britannica*	Greater Water Dock														✓				6	OBL	
108	*Rumex obtusifolius*	Bitter Dock			✓															0	FAC	
109	*Sagittaria latifolia*	Duck-Potato										✓								4	OBL	
110	*Salix alba*	White Willow	✓									✓					✓	✓		0	FACW	
111	*Salix bebbiana*	Bebb's Willow															✓			3	FACW	
112	*Salix nigra*	Black Willow			✓							✓								5	OBL	
113	*Salix petiolaris*	Meadow Willow										✓					✓			4	FACW	
114	*Sambucus nigra*	Black Elder														✓				4	FACW	
115	*Schoenoplectus tabernaemontani*	Softstem Bulrush											✓							5	OBL	
116	*Scirpus cyperinus*	Woolgrass				✓							✓				✓			3	OBL	
117	*Scutellaria galericulata*	Hooded Skullcap										✓		✓						5	OBL	
118	*Scutellaria lateriflora*	Mad-Dog Skullcap				✓					✓		✓					✓	✓	6	OBL	
119	*Sicyos angulatus*	One-Seed Bur-Cucumber																✓		5	FACW	
120	*Sium suave*	Hemlock Water-Parsnip										✓	✓				✓	✓	✓	5	OBL	
121	*Solanum carolinense*	Carolina Horse-Nettle			✓															2	FACU	
122	*Solanum dulcamara*	Climbing Nightshade			✓							✓								0	FAC	
123	*Solidago canadensis*	Canada Goldenrod																✓		2	FACU	
124	*Solidago gigantea*	Late Goldenrod																✓		3	FACW	
125	*Sparganium americanum*	American Bur-Reed										✓								4	OBL	
126	*Sparganium eurycarpum*	Broad-Fruit Bur-Reed								✓		✓	✓				✓			5	OBL	
127	*Spiraea alba*	White Meadowsweet						✓				✓								3	FACW	
128	*Swida amomum*	Silky Dogwood	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	FACW	
129	*Swida sericea*	Red Osier										✓								4	FACW	
130	*Symplocarpus foetidus*	Skunk Cabbage			✓			✓				✓				✓	✓	✓		6	OBL	
131	*Thelypteris palustris*	Marsh Fern			✓							✓			✓				✓	4	FACW	
132	*Toxicodendron radicans*	Eastern Poison Ivy																	✓	3	FAC	
133	*Typha latifolia*	Broad-Leaf Cattail	✓																	2	OBL	
134	*Ulmus americana*	American Elm	✓	✓	✓			✓		✓		✓							✓	3	FACW	
135	*Veronica scutellata*	Grass-Leaf Speedwell			✓															5	OBL	
136	*Viburnum dentatum*	Southern Arrow-Wood			✓	✓														4	FAC	
137	*Viburnum lentago*	Nanny-Berry										✓								4	FAC	
138	*Vitis riparia*	River-Bank Grape	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓		✓	3	FAC	

Footnotes 1 - 3: See Next Page

Table 1B

Legend

[1] **Coefficient of Conservatism (C Value)**
0 - Non-native with a wide range of ecological tolerances. Often these are opportunistic of intact undisturbed habitats.
1 to 2 - Native invasive or widespread native that is not typical of (or only marginally typical of) a particular plant community; tolerant of anthropogenic disturbance.
3 to 5 - Native with an intermediate range of ecological tolerances and may typify a stable native community, but may also persist under some anthropogenic disturbance.
6 to 8 - Native with a narrow range of ecological tolerances and typically associated with a stable community.
9 to 10 - Native with a narrow range of ecological tolerances, high fidelity to particular habitat conditions, and sensitive to anthropogenic disturbance.
C Value Source: Faber-Langendoen, D. 2018. Northeast Regional Floristic Quality Assessment Tools for Wetland Assessments. NatureServe, Arlington VA. Contributing authors: Don Cameron, Arthur V. Gilman, Kenneth J. Metzler, Richard M. Ring, Michele Bottiaux, Kristin Snow, Lesley Sneddon

[2] **Wetland Indicator Status**
Obligate Wetland Plants (OBL): Almost always occur in wetlands.
Facultative Wetland Plants (FACW): Usually occur in wetlands, but may occur in non-wetlands.
Facultative Wetland Plants (FAC): Occur in wetlands and non-wetlands.
Facultative Upland Plants (FACU): Usually occur in non-wetlands, but may occur in wetlands.
Upland Plants (UPL): Almost never occur in wetlands.
Not Listed (NL): Unofficial Indicator Status used in this table that is applied to species that are not found on the National Wetland Plant List - Northcentral and Northeast Region, or an adjacent region.
Source: Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. US Army Corps of Engineers, Engineer Research and Development Center. ERDC/CRREL TN-12-1.
Current Species Ratings: U.S. Army Corps of Engineers 2020. National Wetland Plant List, version 3.5 U.S. Army Corps of Engineers. Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH.

[3] **Invasive Species Status**
X= Prohibited for sale, import, trade, purchase, distribution, propagation, and related activities within Massachusetts.
I = Invasive Species
L = Likely Invasive
P = Potentially Invasive Species
Massachusetts Invasive Plants Advisory Group. 2021. Annotated Species Lists. URL: https://www.massnrc.org/MIPAG

OBJECTID	Length_FT	DIA_IN	DIA_FT	CWD Area_SF	Date	Pool_ID	X_COOR	Y_COOR
50	8	4	0.3	2.7	4/3/2025	5A-VP-10	-73.24639204060	42.43078179930
51	30	7	0.6	17.5	4/3/2025	5A-VP-10	-73.24637524030	42.43078180190
52	40	7	0.6	23.3	4/3/2025	5A-VP-10	-73.24625892640	42.43079778320
53	10	5	0.4	4.2	4/3/2025	5A-VP-10	-73.24614180050	42.43075013180
54	20	5	0.4	8.3	4/3/2025	5A-VP-10	-73.24612607640	42.43075378320
55	5	8	0.7	3.3	4/3/2025	5A-VP-10	-73.24610268960	42.43076990370
56	40	12	1.0	40.0	4/3/2025	5A-VP-10	-73.24608142650	42.43081697560
57	45	9	0.8	33.8	4/3/2025	5A-VP-10	-73.24602307910	42.43069941650
246	5	8	0.7	3.3	4/3/2025	5A-VP-10	-73.24609767880	42.43076037720
97	12	7	0.6	7.0	4/10/2025	5A-VP-12	-73.24651263850	42.42959257900
98	5	8	0.7	3.3	4/10/2025	5A-VP-12	-73.24646822760	42.42960496880
110	7	8	0.7	4.7	4/10/2025	5A-VP-12	-73.24599974360	42.42944977120
111	12	5	0.4	5.0	4/10/2025	5A-VP-12	-73.24600779430	42.42944126950
112	8	3	0.3	2.0	4/10/2025	5A-VP-12	-73.24603720150	42.42945332190
113	50	12	1.0	50.0	4/10/2025	5A-VP-12	-73.24601827040	42.42949173060
114	20	12	1.0	20.0	4/10/2025	5A-VP-12	-73.24600382100	42.42947031530
115	13	3	0.3	3.3	4/10/2025	5A-VP-12	-73.24603424610	42.42941758650
116	6	24	2.0	12.0	4/10/2025	5A-VP-12	-73.24605154040	42.42938482960
117	6	6	0.5	3.0	4/10/2025	5A-VP-12	-73.24607207140	42.42940726410
118	15	7	0.6	8.8	4/10/2025	5A-VP-12	-73.24608210110	42.42944782850
119	8	4	0.3	2.7	4/10/2025	5A-VP-12	-73.24611525080	42.42943465220
120	6	6	0.5	3.0	4/10/2025	5A-VP-12	-73.24611668360	42.42946639730
121	14	4	0.3	4.7	4/10/2025	5A-VP-12	-73.24617905810	42.42945312100
122	3	5	0.4	1.3	4/10/2025	5A-VP-12	-73.24620188340	42.42942585020
123	24	14	1.2	28.0	4/10/2025	5A-VP-12	-73.24614462120	42.42945290940
124	12	3	0.3	3.0	4/10/2025	5A-VP-12	-73.24622153400	42.42943424510
125	4	3	0.3	1.0	4/10/2025	5A-VP-12	-73.24619604880	42.42943073820
126	30	12	1.0	30.0	4/10/2025	5A-VP-12	-73.24626349340	42.42940469870
127	15	3	0.3	3.8	4/10/2025	5A-VP-12	-73.24626253940	42.42949212970
128	8	10	0.8	6.7	4/10/2025	5A-VP-12	-73.24623698870	42.42950064340
129	7	12	1.0	7.0	4/10/2025	5A-VP-12	-73.24623394160	42.42951102010
130	12	6	0.5	6.0	4/10/2025	5A-VP-12	-73.24622113250	42.42950811730
131	4	12	1.0	4.0	4/10/2025	5A-VP-12	-73.24616829810	42.42948968840
132	14	9	0.8	10.5	4/10/2025	5A-VP-12	-73.24624599880	42.42950381210
133	7	4	0.3	2.3	4/10/2025	5A-VP-12	-73.24625856890	42.42950413500
58	15	7	0.6	8.8	4/4/2025	5A-VP-15	-73.24350064750	42.43001006350
59	15	6	0.5	7.5	4/4/2025	5A-VP-15	-73.24350855990	42.43000249020
60	18	6	0.5	9.0	4/4/2025	5A-VP-15	-73.24322893500	42.42989212830
61	25	6	0.5	12.5	4/4/2025	5A-VP-15	-73.24321214190	42.42988116480
76	8	9	0.8	6.0	4/4/2025	5A-VP-15	-73.24345499960	42.43007666670
77	3	10	0.8	2.5	4/4/2025	5A-VP-15	-73.24350499990	42.42997166640
78	8	4	0.3	2.7	4/4/2025	5A-VP-15	-73.24361833310	42.43012333330
255	25	15	1.3	31.3	4/4/2025	5A-VP-15	-73.24344281740	42.43006431930
256	5	4	0.3	1.7	4/4/2025	5A-VP-15	-73.24360300970	42.43010700790
73	9	7	0.6	5.3	4/4/2025	5A-VP-16	-73.24255581570	42.43013598350
74	15	7	0.6	8.8	4/4/2025	5A-VP-16	-73.24267496010	42.43008002700
75	8	4	0.3	2.7	4/4/2025	5A-VP-16	-73.24268666700	42.43008833370
253	4	7	0.6	2.3	4/4/2025	5A-VP-16	-73.24255284840	42.43015106670
254	3	6	0.5	1.5	4/4/2025	5A-VP-16	-73.24254887920	42.43012982260
64	20	7	0.6	11.7	4/4/2025	5A-VP-21	-73.24008109360	42.42718013240
65	15	6	0.5	7.5	4/4/2025	5A-VP-21	-73.24052225450	42.42706961570
66	15	3	0.3	3.8	4/4/2025	5A-VP-21	-73.24032632290	42.42698483170
67	15	15	1.3	18.8	4/4/2025	5A-VP-21	-73.23985547990	42.42655275380
84	22	8	0.7	14.7	4/4/2025	5A-VP-21	-73.23959166630	42.42652666670
85	38	14	1.2	44.3	4/4/2025	5A-VP-21	-73.23970666680	42.42666999970
86	15	13	1.1	16.3	4/4/2025	5A-VP-21	-73.23986666670	42.42686000010
87	12	6	0.5	6.0	4/4/2025	5A-VP-21	-73.24000833370	42.42719333360
88	10	11	0.9	9.2	4/4/2025	5A-VP-21	-73.24017499990	42.42728833340
89	18	10	0.8	15.0	4/4/2025	5A-VP-21	-73.24060166640	42.42701333350
90	15	7	0.6	8.8	4/4/2025	5A-VP-21	-73.24039666640	42.42691833330
91	25	12	1.0	25.0	4/4/2025	5A-VP-21	-73.24030166690	42.42686833300
92	20	4	0.3	6.7	4/4/2025	5A-VP-21	-73.24022528130	42.42671448060
93	15	10	0.8	12.5	4/4/2025	5A-VP-21	-73.24012453530	42.42671592880
248	20	7	0.6	11.7	4/4/2025	5A-VP-21	-73.24007640050	42.42719398840
249	15	3	0.3	3.8	4/4/2025	5A-VP-21	-73.24032590890	42.42696979970
250	7	12	1.0	7.0	4/4/2025	5A-VP-21	-73.23984844060	42.42654283470
266	4	6	0.5	2.0	4/4/2025	5A-VP-21	-73.23960388160	42.42654026710
267	3	8	0.7	2.0	4/4/2025	5A-VP-21	-73.23969621130	42.42665887900
268	15	10	0.8	12.5	4/4/2025	5A-VP-21	-73.23985638360	42.42685514270
269	15	5	0.4	6.3	4/4/2025	5A-VP-21	-73.23984937870	42.42684647630
270	12	8	0.7	8.0	4/4/2025	5A-VP-21	-73.23986180110	42.42686759270
271	5	14	1.2	5.8	4/4/2025	5A-VP-21	-73.23986711510	42.42687628470
272	5	6	0.5	2.5	4/4/2025	5A-VP-21	-73.24000305410	42.42718589430
273	5	8	0.7	3.3	4/4/2025	5A-VP-21	-73.24000502100	42.42719589010
274	8	10	0.8	6.7	4/4/2025	5A-VP-21	-73.24017355410	42.42729610390
275	10	16	1.3	13.3	4/4/2025	5A-VP-21	-73.24016458230	42.42727744170
276	12	9	0.8	9.0	4/4/2025	5A-VP-21	-73.24059185190	42.42700655980
277	20	5	0.4	8.3	4/4/2025	5A-VP-21	-73.24039984110	42.42691076620
278	12	4	0.3	4.0	4/4/2025	5A-VP-21	-73.24038320860	42.42692104320
279	10	5	0.4	4.2	4/4/2025	5A-VP-21	-73.24021496370	42.42670837070
280	15	13	1.1	16.3	4/4/2025	5A-VP-21	-73.24012943530	42.42670958880
281	6	14	1.2	7.0	4/4/2025	5A-VP-21	-73.24012412130	42.42670089680
62	18	7	0.6	10.5	4/4/2025	5A-VP-22	-73.23851935000	42.42668449200
63	20	3	0.3	5.0	4/4/2025	5A-VP-22	-73.23856626100	42.42663243530
79	20	9	0.8	15.0	4/4/2025	5A-VP-22	-73.23879986880	42.42652499640
80	5	7	0.6	2.9	4/4/2025	5A-VP-22	-73.23874499970	42.42636166630
81	7	3	0.3	1.8	4/4/2025	5A-VP-22	-73.23875666700	42.42622166660
82	10	3	0.3	2.5	4/4/2025	5A-VP-22	-73.23888166660	42.42612666660
83	25	6	0.5	12.5	4/4/2025	5A-VP-22	-73.23887273020	42.42607773850
247	20	3	0.3	5.0	4/4/2025	5A-VP-22	-73.23857005630	42.42664741620
257	12	6	0.5	6.0	4/4/2025	5A-VP-22	-73.23878465120	42.42652522620
258	10	4	0.3	3.3	4/4/2025	5A-VP-22	-73.23876912340	42.42651418210
259	3	4	0.3	1.0	4/4/2025	5A-VP-22	-73.23880849530	42.42653113200
260	6	3	0.3	1.5	4/4/2025	5A-VP-22	-73.23882347160	42.42652213350
261	14	12	1.0	14.0	4/4/2025	5A-VP-22	-73.23873457890	42.42635179820
262	6	3	0.3	1.5	4/4/2025	5A-VP-22	-73.23874803660	42.42634908860
263	4	6	0.5	2.0	4/4/2025	5A-VP-22	-73.23874700070	42.42637291480
264	7	5	0.4	2.9	4/4/2025	5A-VP-22	-73.23876073430	42.42638022650
265	5	6	0.5	2.5	4/4/2025	5A-VP-22	-73.23873947900	42.42634545830
68	5	3	0.3	1.3	4/4/2025	5A-VP-27	-73.23893082160	42.42414211520
69	15	3	0.3	3.8	4/4/2025	5A-VP-27	-73.23880636180	42.42414785580
70	15	5	0.4	6.3	4/4/2025	5A-VP-27	-73.23897764270	42.42413817700
71	10	4	0.3	3.3	4/4/2025	5A-VP-27	-73.23904631440	42.42412722770
72	5	15	1.3	6.3	4/4/2025	5A-VP-27	-73.23916668950	42.42408790130
251	5	15	1.3	6.3	4/4/2025	5A-VP-27	-73.23915323230	42.42409061100
252	5	15	1.3	6.3	4/4/2025	5A-VP-27	-73.23913943020	42.42408079400
22	15	7	0.6	8.8	4/3/2025	5A-VP-3	-73.24905730070	42.43325644120
23	30	7	0.6	17.5	4/3/2025	5A-VP-3	-73.24897812320	42.43323604620
24	25	5	0.4	10.4	4/3/2025	5A-VP-3	-73.24888957260	42.43322473520
25	8	12	1.0	8.0	4/3/2025	5A-VP-3	-73.24887508460	42.43321909300
26	12	6	0.5	6.0	4/3/2025	5A-VP-3	-73.24887755950	42.43320404320
27	10	6	0.5	5.0	4/3/2025	5A-VP-3	-73.24887759540	42.43318601910
28	35	7	0.6	20.4	4/3/2025	5A-VP-3	-73.24888203400	42.43311187950
29	12	6	0.5	6.0	4/3/2025	5A-VP-3	-73.24887407490	42.43309454620
30	35	16	1.3	46.7	4/3/2025	5A-VP-3	-73.24903384930	42.43294064620
1	35	6	0.5	17.5	4/3/2025	5A-VP-4	-73.24854833320	42.43301666640
2	10	8	0.7	6.7	4/3/2025	5A-VP-4	-73.24848500020	42.43301666640
3	15	12	1.0	15.0	4/3/2025	5A-VP-4	-73.24841666620	42.43300499990
4	10	9	0.8	7.5	4/3/2025	5A-VP-4	-73.24844000000	42.43297833340
5	15	4	0.3	5.0	4/3/2025	5A-VP-4	-73.24848500020	42.43295666670
6	20	6	0.5	10.0	4/3/2025	5A-VP-4	-73.24841666620	42.43297333360
7	35	12	1.0	35.0	4/3/2025	5A-VP-4	-73.24842666630	42.43299166670

sort	treatment	pool_id	CWD_SF	Pool Area A	Pool Area S	CWD % Total Area
1	Amendment	5A-VP-9	215.92	0.6	26136	0.8%
2	Amendment	5A-VP-12	232.83	0.27	11761.2	2.0%
3	Amendment	5A-VP-15	81.83	0.37	16117.2	0.5%
4	Amendment	5A-VP-22	89.92	0.82	35719.2	0.3%
5	Amendment	5A-VP-27	0.00	0.08	3484.8	0.0%
6	Control	5A-VP-3	128.75	0.39	16988.4	0.8%
7	Control	5A-VP-5	60.33	0.33	14374.8	0.4%
8	Control	5A-VP-10	136.42	0.17	7405.2	1.8%
9	Control	5A-VP-21	333.58	1.65	71874	0.5%
10	Control	5A-VP-26	33.33	0.08	3484.8	1.0%
11	Control	5A-VP-55	67.83	0.25	10890	0.6%
12	Control	5A-VP-61	319.92	0.26	11325.6	2.8%
13	Excavate/Restore	5A-VP-4	504.58	0.23	10018.8	5.0%
14	Excavate/Restore	5A-VP-7	175.33	0.41	17859.6	1.0%
15	Excavate/Restore	5A-VP-16	20.50	0.04	1742.4	1.2%
16	Excavate/Restore	5A-VP-52	0.00	0.06	2613.6	0.0%
17	Excavate/Restore	5A-VP-57	171.42	0.49	21344.4	0.8%

sort	treatment	Pool_ID	FWD
1	Amendment	5A-VP-9	10.5
2	Amendment	5A-VP-12	3
3	Amendment	5A-VP-15	3
4	Amendment	5A-VP-22	3
5	Amendment	5A-VP-27	3
6	Excavate / Restore	5A-VP-4	20.5
7	Excavate / Restore	5A-VP-7	10.5
8	Excavate / Restore	5A-VP-16	20.5
9	Excavate / Restore	5A-VP-52	3
10	Excavate / Restore	5A-VP-57	20.5
11	Control	5A-VP-3	10.5
12	Control	5A-VP-5	3
13	Control	5A-VP-10	20.5
14	Control	5A-VP-21	10.5
15	Control	5A-VP-26	3
16	Control	5A-VP-55	3
17	Control	5A-VP-61	20.5

8	16	4	0.3	5.3	4/3/2025	5A-VP-4	-73.24837833330	42.43296333330
9	30	7	0.6	17.5	4/3/2025	5A-VP-4	-73.24825500000	42.43294666640
10	35	10	0.8	29.2	4/3/2025	5A-VP-4	-73.24814166680	42.43295499980
11	40	11	0.9	36.7	4/3/2025	5A-VP-4	-73.24812500030	42.43291000020
12	30	8	0.7	20.0	4/3/2025	5A-VP-4	-73.24806500010	42.43278833300
13	6	6	0.5	3.0	4/3/2025	5A-VP-4	-73.24814000040	42.43277499970
31	30	5	0.4	12.5	4/3/2025	5A-VP-4	-73.24840972140	42.43251537280
32	25	4	0.3	8.3	4/3/2025	5A-VP-4	-73.24837580190	42.43252814860
33	35	9	0.8	26.3	4/3/2025	5A-VP-4	-73.24829779310	42.43252634380
34	35	6	0.5	17.5	4/3/2025	5A-VP-4	-73.24822685400	42.43254266680
35	40	5	0.4	16.7	4/3/2025	5A-VP-4	-73.24821841260	42.43266229430
36	20	6	0.5	10.0	4/3/2025	5A-VP-4	-73.24823907650	42.43265827310
37	6	3	0.3	1.5	4/3/2025	5A-VP-4	-73.24819696710	42.43266105110
38	16	5	0.4	6.7	4/3/2025	5A-VP-4	-73.24824849350	42.43269196910
39	22	5	0.4	9.2	4/3/2025	5A-VP-4	-73.24810266460	42.43272182020
224	8	14	1.2	9.3	4/3/2025	5A-VP-4	-73.24842535830	42.43299676470
225	20	7	0.6	11.7	4/3/2025	5A-VP-4	-73.24842357550	42.43298464120
226	40	12	1.0	40.0	4/3/2025	5A-VP-4	-73.24812212420	42.43292160880
227	40	12	1.0	40.0	4/3/2025	5A-VP-4	-73.24811464600	42.43293029920
228	40	10	0.8	33.3	4/3/2025	5A-VP-4	-73.24811231130	42.43293891140
229	15	6	0.5	7.5	4/3/2025	5A-VP-4	-73.24806347930	42.43279387370
230	30	9	0.8	22.5	4/3/2025	5A-VP-4	-73.24805631520	42.43279648400
231	25	4	0.3	8.3	4/3/2025	5A-VP-4	-73.24805451480	42.43280115720
241	25	4	0.3	8.3	4/3/2025	5A-VP-4	-73.24836700020	42.43251575040
242	16	5	0.4	6.7	4/3/2025	5A-VP-4	-73.24824473020	42.43267824120
94	7	4	0.3	2.3	4/9/2025	5A-VP-5	-73.24739307370	42.43232816170
95	10	5	0.4	4.2	4/9/2025	5A-VP-5	-73.24737450370	42.43234013120
96	25	6	0.5	12.5	4/9/2025	5A-VP-5	-73.24734436260	42.43236594010
101	7	6	0.5	3.5	4/9/2025	5A-VP-5	-73.24706206520	42.43225372400
102	12	6	0.5	6.0	4/9/2025	5A-VP-5	-73.24713089590	42.43226022560
103	5	6	0.5	2.5	4/9/2025	5A-VP-5	-73.24715775460	42.43227730440
104	4	4	0.3	1.3	4/9/2025	5A-VP-5	-73.24699308800	42.43228929120
105	10	4	0.3	3.3	4/9/2025	5A-VP-5	-73.24701309800	42.43230516070
106	20	10	0.8	16.7	4/9/2025	5A-VP-5	-73.24688673560	42.43230505330
107	3	6	0.5	1.5	4/9/2025	5A-VP-5	-73.24693797730	42.43234018030
108	12	4	0.3	4.0	4/9/2025	5A-VP-5	-73.24696866640	42.43237640130
109	10	3	0.3	2.5	4/9/2025	5A-VP-5	-73.24693574950	42.43236336230
99	10	8	0.7	6.7	4/10/2025	5A-VP-55	-73.24159820260	42.41545893370
100	25	8	0.7	16.7	4/10/2025	5A-VP-55	-73.24132055130	42.41533760870
175	15	14	1.2	17.5	4/10/2025	5A-VP-55	-73.24152049830	42.41541660220
176	4	12	1.0	4.0	4/10/2025	5A-VP-55	-73.24153985700	42.41539446980
177	6	12	1.0	6.0	4/10/2025	5A-VP-55	-73.24152466650	42.41539506600
178	12	4	0.3	4.0	4/10/2025	5A-VP-55	-73.24151720960	42.41541191130
179	15	4	0.3	5.0	4/10/2025	5A-VP-55	-73.24152215390	42.41539805500
180	8	6	0.5	4.0	4/10/2025	5A-VP-55	-73.24143194870	42.41540246270
181	8	6	0.5	4.0	4/10/2025	5A-VP-55	-73.24137006290	42.41535596480
182	12	3	0.3	3.0	4/10/2025	5A-VP-57	-73.24132511480	42.41515963380
183	4	3	0.3	1.0	4/10/2025	5A-VP-57	-73.24144106300	42.41518559030
184	3	3	0.3	0.8	4/10/2025	5A-VP-57	-73.24141636020	42.41519867070
185	6	6	0.5	3.0	4/10/2025	5A-VP-57	-73.24141302480	42.41518795130
186	2	6	0.5	1.0	4/10/2025	5A-VP-57	-73.24143028680	42.41514558710
187	2	8	0.7	1.3	4/10/2025	5A-VP-57	-73.24139151640	42.41513621600
188	2	4	0.3	0.7	4/10/2025	5A-VP-57	-73.24137004940	42.41516588720
189	2	7	0.6	1.2	4/10/2025	5A-VP-57	-73.24137302640	42.41513630290
190	7	4	0.3	2.3	4/10/2025	5A-VP-57	-73.24139847840	42.41512987050
191	4	4	0.3	1.3	4/10/2025	5A-VP-57	-73.24139431200	42.41511445160
192	15	12	1.0	15.0	4/10/2025	5A-VP-57	-73.24139070170	42.41504588530
193	10	3	0.3	2.5	4/10/2025	5A-VP-57	-73.24140000550	42.41503348600
194	10	3	0.3	2.5	4/10/2025	5A-VP-57	-73.24144010180	42.41502813990
195	15	5	0.4	6.3	4/10/2025	5A-VP-57	-73.24151843940	42.41502098720
196	8	4	0.3	2.7	4/10/2025	5A-VP-57	-73.24150322460	42.41500113350
197	6	3	0.3	1.5	4/10/2025	5A-VP-57	-73.24152694200	42.41499444770
198	6	6	0.5	3.0	4/10/2025	5A-VP-57	-73.24151541570	42.41500224170
199	8	6	0.5	4.0	4/10/2025	5A-VP-57	-73.24150663280	42.41499131870
200	2	6	0.5	1.0	4/10/2025	5A-VP-57	-73.24148620690	42.41497133560
201	6	3	0.3	1.5	4/10/2025	5A-VP-57	-73.24146981720	42.41496996400
202	10	3	0.3	2.5	4/10/2025	5A-VP-57	-73.24146280040	42.41499301650
203	15	6	0.5	7.5	4/10/2025	5A-VP-57	-73.24141759540	42.41498669940
204	12	3	0.3	3.0	4/10/2025	5A-VP-57	-73.24143758740	42.41491951780
205	12	7	0.6	7.0	4/10/2025	5A-VP-57	-73.24144357290	42.41491284200
206	6	6	0.5	3.0	4/10/2025	5A-VP-57	-73.24143883880	42.41491963920
207	5	3	0.3	1.3	4/10/2025	5A-VP-57	-73.24145465090	42.41494166700
208	2	4	0.3	0.7	4/10/2025	5A-VP-57	-73.24144006410	42.41491095580
209	3	3	0.3	0.8	4/10/2025	5A-VP-57	-73.24144068840	42.41488455480
210	40	12	1.0	40.0	4/10/2025	5A-VP-57	-73.24136358600	42.41483945070
211	3	4	0.3	1.0	4/10/2025	5A-VP-57	-73.24140824040	42.41475784670
212	30	8	0.7	20.0	4/10/2025	5A-VP-57	-73.24140851350	42.41478583150
213	12	4	0.3	4.0	4/10/2025	5A-VP-57	-73.24141280110	42.41477410730
214	12	8	0.7	8.0	4/10/2025	5A-VP-57	-73.24143406690	42.41476069590
215	6	7	0.6	3.5	4/10/2025	5A-VP-57	-73.24153755910	42.41475692090
216	12	6	0.5	6.0	4/10/2025	5A-VP-57	-73.24162285780	42.41476866440
217	3	3	0.3	0.8	4/10/2025	5A-VP-57	-73.24155235080	42.41463075380
218	10	6	0.5	5.0	4/10/2025	5A-VP-57	-73.24146269350	42.41469299670
219	3	8	0.7	2.0	4/10/2025	5A-VP-57	-73.24147947050	42.41465819410
134	8	3	0.3	2.0	4/10/2025	5A-VP-61	-73.23567015180	42.41513986630
135	15	3	0.3	3.8	4/10/2025	5A-VP-61	-73.23565345030	42.41515238760
136	50	8	0.7	33.3	4/10/2025	5A-VP-61	-73.23563370890	42.41513713650
137	4	4	0.3	1.3	4/10/2025	5A-VP-61	-73.23568729880	42.41504821520
138	12	3	0.3	3.0	4/10/2025	5A-VP-61	-73.23567531440	42.41510251320
139	3	5	0.4	1.3	4/10/2025	5A-VP-61	-73.23567563600	42.41507837450
140	7	4	0.3	2.3	4/10/2025	5A-VP-61	-73.23564728970	42.41509482530
141	5	3	0.3	1.3	4/10/2025	5A-VP-61	-73.23560672800	42.41508135430
142	20	4	0.3	6.7	4/10/2025	5A-VP-61	-73.23546021010	42.41488880400
143	12	3	0.3	3.0	4/10/2025	5A-VP-61	-73.23544459470	42.41489998970
144	14	4	0.3	4.7	4/10/2025	5A-VP-61	-73.23546515980	42.41489044340
145	20	7	0.6	11.7	4/10/2025	5A-VP-61	-73.23547016250	42.41493009530
146	2	6	0.5	1.0	4/10/2025	5A-VP-61	-73.23546071140	42.41495210590
147	10	4	0.3	3.3	4/10/2025	5A-VP-61	-73.23539730380	42.41490259340
148	8	4	0.3	2.7	4/10/2025	5A-VP-61	-73.23542107230	42.41489385230
149	8	3	0.3	2.0	4/10/2025	5A-VP-61	-73.23549625950	42.41485096060
150	50	12	1.0	50.0	4/10/2025	5A-VP-61	-73.23549382780	42.41486379370
151	50	12	1.0	50.0	4/10/2025	5A-VP-61	-73.23543774230	42.41480984040
152	15	6	0.5	7.5	4/10/2025	5A-VP-61	-73.23540697230	42.41479953410
153	8	5	0.4	3.3	4/10/2025	5A-VP-61	-73.23542425410	42.41481416250
154	15	12	1.0	15.0	4/10/2025	5A-VP-61	-73.23537891170	42.41483855600
155	12	8	0.7	8.0	4/10/2025	5A-VP-61	-73.23544319960	42.41482249570
156	25	7	0.6	14.6	4/10/2025	5A-VP-61	-73.23541585400	42.41484944390
157	6	4	0.3	2.0	4/10/2025	5A-VP-61	-73.23535499850	42.41482313040
158	15	12	1.0	15.0	4/10/2025	5A-VP-61	-73.23532370120	42.41480961090
159	10	4	0.3	3.3	4/10/2025	5A-VP-61	-73.23529991020	42.41475075970
160	8	3	0.3	2.0	4/10/2025	5A-VP-61	-73.23525022800	42.41476324920
161	12	3	0.3	3.0	4/10/2025	5A-VP-61	-73.23525527030	42.41476574160
162	6	4	0.3	2.0	4/10/2025	5A-VP-61	-73.23519047300	42.41476010960
163	20	6	0.5	10.0	4/10/2025	5A-VP-61	-73.23521546950	42.41473622610
164	20	6	0.5	10.0	4/10/2025	5A-VP-61	-73.23514472810	42.41469991270
165	20	4	0.3	6.7	4/10/2025	5A-VP-61	-73.23515092370	42.41469742230
166	20	4	0.3	6.7	4/10/2025	5A-VP-61	-73.23515910380	42.41467793320
167	10	3	0.3	2.5	4/10/2025	5A-VP-61	-73.23509823940	42.41466802550
168	5	8	0.7	3.3	4/10/2025	5A-VP-61	-73.23511392840	42.41464121190
169	12	7	0.6	7.0	4/10/2025	5A-VP-61	-73.23507555510	42.41462271830
170	6	3	0.3	1.5	4/10/2025	5A-VP-61	-73.23508489310	42.41462219830
171	8	3	0.3	2.0	4/10/2025	5A-VP-61	-73.23510067470	42.41461061140
172	4	6	0.5	2.0	4/10/2025	5A-VP-61	-73.23511542230	42.41456996450

173	15	5	0.4	6.3	4/10/2025	5A-VP-61	-73.23526214960	42.41465850380
174	6	6	0.5	3.0	4/10/2025	5A-VP-61	-73.23530457700	42.41473190860
14	20	7	0.6	11.7	4/3/2025	5A-VP-7	-73.24871500030	42.43038666650
15	15	4	0.3	5.0	4/3/2025	5A-VP-7	-73.24872166670	42.43041833350
16	5	6	0.5	2.5	4/3/2025	5A-VP-7	-73.24875833330	42.43041833350
17	12	4	0.3	4.0	4/3/2025	5A-VP-7	-73.24870166670	42.43030333310
18	17	8	0.7	11.3	4/3/2025	5A-VP-7	-73.24884500000	42.43051500000
19	9	8	0.7	6.0	4/3/2025	5A-VP-7	-73.24897666700	42.43036833340
40	30	10	0.8	25.0	4/3/2025	5A-VP-7	-73.24901773800	42.43038070440
41	30	6	0.5	15.0	4/3/2025	5A-VP-7	-73.24898998090	42.43043269840
42	12	4	0.3	4.0	4/3/2025	5A-VP-7	-73.24902815310	42.43037308270
43	30	8	0.7	20.0	4/3/2025	5A-VP-7	-73.24896018470	42.43039261670
220	18	6	0.5	9.0	4/3/2025	5A-VP-7	-73.24870226760	42.43030886620
221	6	4	0.3	2.0	4/3/2025	5A-VP-7	-73.24869507410	42.43031040490
222	3	9	0.8	2.3	4/3/2025	5A-VP-7	-73.24870098680	42.43029744980
232	7	8	0.7	4.7	4/3/2025	5A-VP-7	-73.24883371650	42.43051191870
233	25	7	0.6	14.6	4/3/2025	5A-VP-7	-73.24882944010	42.43052008400
234	15	12	1.0	15.0	4/3/2025	5A-VP-7	-73.24882975650	42.43053151490
235	10	6	0.5	5.0	4/3/2025	5A-VP-7	-73.24884194280	42.43050702880
236	15	12	1.0	15.0	4/3/2025	5A-VP-7	-73.24897389150	42.43036175700
237	8	5	0.4	3.3	4/3/2025	5A-VP-7	-73.24897958890	42.43035845410
20	15	12	1.0	15.0	4/3/2025	5A-VP-9	-73.24671666660	42.43033166700
21	20	13	1.1	21.7	4/3/2025	5A-VP-9	-73.24678999960	42.43026166660
44	25	7	0.6	14.6	4/3/2025	5A-VP-9	-73.24705392110	42.43049161310
45	50	5	0.4	20.8	4/3/2025	5A-VP-9	-73.24707000360	42.43044971140
46	60	8	0.7	40.0	4/3/2025	5A-VP-9	-73.24711644740	42.43036439220
47	25	10	0.8	20.8	4/3/2025	5A-VP-9	-73.24694476680	42.43034371050
48	15	9	0.8	11.3	4/3/2025	5A-VP-9	-73.24694399960	42.43036389760
49	20	8	0.7	13.3	4/3/2025	5A-VP-9	-73.24668243710	42.43019069350
238	12	9	0.8	9.0	4/3/2025	5A-VP-9	-73.24673146940	42.43031640410
239	25	9	0.8	18.8	4/3/2025	5A-VP-9	-73.24677315950	42.43026442850
240	8	7	0.6	4.7	4/3/2025	5A-VP-9	-73.24679289660	42.43024407810
243	12	6	0.5	6.0	4/3/2025	5A-VP-9	-73.24692867720	42.43036037050
244	20	4	0.3	6.7	4/3/2025	5A-VP-9	-73.24695065950	42.43036003700
245	20	8	0.7	13.3	4/3/2025	5A-VP-9	-73.24667219040	42.43020009480

VP_ID	Transect	Scientific Name	Common Name	Segment Start	Segment Stop	Distance	Total Transect Length
5AVP10	T1	Acer negundo	boxelder	10.8	12.7	1.9	138
5AVP10	T1	Acer negundo	boxelder	14.3	21.0	6.7	138
5AVP10	T1	Acer saccharinum	silver maple	40.0	138.0	98.0	138
5AVP10	T1	Carex lurida	sallow sedge	79.0	81.3	2.3	138
5AVP10	T1	Carex sp.	Sedge species	117.0	118.8	1.8	138
5AVP10	T1	Galium palustre	marsh bedstraw	136.2	138.0	1.8	138
5AVP10	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	1.2	1.2	138
5AVP10	T1	Lysimachia nummularia	creeping yellow-loosestrife	73.0	78.4	5.4	138
5AVP10	T1	Lysimachia nummularia	creeping yellow-loosestrife	103.7	104.8	1.1	138
5AVP10	T1	Lysimachia nummularia	creeping yellow-loosestrife	115.5	121.3	5.8	138
5AVP10	T1	Lysimachia nummularia	creeping yellow-loosestrife	126.7	129.0	2.3	138
5AVP10	T1	Lysimachia nummularia	creeping yellow-loosestrife	133.0	135.5	2.5	138
5AVP10	T1	Onoclea sensibilis	sensitive fern	135.5	138.0	2.5	138
5AVP10	T1	Populus deltoides	eastern cottonwood	0.0	51.0	51.0	138
5AVP10	T1	Populus deltoides	eastern cottonwood	57.0	104.0	47.0	138
5AVP10	T1	Spiraea alba	white meadowsweet	61.6	71.7	10.1	138
5AVP10	T1	Ulmus americana	American elm	74.1	75.4	1.3	138
5AVP10	T2	Acer rubrum	red maple	45.0	66.5	21.5	160
5AVP10	T2	Acer saccharinum	silver maple	0.0	73.0	73.0	160
5AVP10	T2	Acer saccharinum	silver maple	76.3	124.0	47.7	160
5AVP10	T2	Acer saccharinum	silver maple	136.0	160.0	24.0	160
5AVP10	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.0	1.5	1.5	160
5AVP10	T2	Lysimachia nummularia	creeping yellow-loosestrife	70.0	78.5	8.5	160
5AVP10	T2	Lysimachia nummularia	creeping yellow-loosestrife	81.5	87.8	6.3	160
5AVP10	T2	Lysimachia nummularia	creeping yellow-loosestrife	136.7	139.2	2.5	160
5AVP10	T2	Lysimachia nummularia	creeping yellow-loosestrife	141.3	146.2	4.9	160
5AVP10	T2	Populus deltoides	eastern cottonwood	6.0	55.0	49.0	160
5AVP10	T2	Populus deltoides	eastern cottonwood	86.0	122.0	36.0	160
5AVP10	T2	Spiraea sp.	meadowsweet species	137.3	138.3	1.0	160
5AVP10	T2	Spiraea sp.	meadowsweet species	140.0	142.2	2.2	160
5AVP12	T1	Acer saccharinum	silver maple	0.0	39.4	39.4	64
5AVP12	T1	Alisma subcordatum	southern water-plantain	23.3	24.3	1.0	64
5AVP12	T1	Alisma subcordatum	southern water-plantain	25.4	26.3	0.9	64
5AVP12	T1	Alisma subcordatum	southern water-plantain	27.1	28.4	1.3	64
5AVP12	T1	Alisma subcordatum	southern water-plantain	45.0	56.9	11.9	64
5AVP12	T1	Bidens frondosa	Devil's beggar-ticks	0.0	0.5	0.5	64
5AVP12	T1	Bidens frondosa	Devil's beggar-ticks	13.7	13.9	0.2	64
5AVP12	T1	Bidens frondosa	Devil's beggar-ticks	26.7	27.5	0.8	64
5AVP12	T1	Bidens frondosa	Devil's beggar-ticks	40.7	41.9	1.2	64
5AVP12	T1	Bidens frondosa	Devil's beggar-ticks	43.3	43.9	0.6	64
5AVP12	T1	Carex lupulina	hop sedge	0.0	2.5	2.5	64
5AVP12	T1	Carex lupulina	hop sedge	58.3	60.4	2.1	64
5AVP12	T1	Carpinus caroliniana	American hornbeam	57.4	61.2	3.8	64
5AVP12	T1	Galium palustre	marsh bedstraw	60.2	63.0	2.8	64
5AVP12	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	5.7	5.7	64
5AVP12	T1	Lysimachia nummularia	creeping yellow-loosestrife	57.3	64.0	6.7	64
5AVP12	T1	Lythrum salicaria	purple loosestrife	6.1	6.8	0.7	64
5AVP12	T1	Onoclea sensibilis	sensitive fern	58.8	60.4	1.6	64
5AVP12	T1	Onoclea sensibilis	sensitive fern	61.4	62.7	1.3	64
5AVP12	T1	Osmundastrum cinnamomeum	cinnamon fern	62.5	64.0	1.5	64
5AVP12	T1	Penthorum sedoides	ditch-stonecrop	49.5	49.8	0.3	64
5AVP12	T1	Penthorum sedoides	ditch-stonecrop	53.6	54.4	0.8	64
5AVP12	T1	Penthorum sedoides	ditch-stonecrop	56.5	57.9	1.4	64
5AVP12	T2	Acer saccharinum	silver maple	25.5	72.0	46.5	72
5AVP12	T2	Alisma subcordatum	southern water-plantain	13.4	28.0	14.6	72
5AVP12	T2	Alisma subcordatum	southern water-plantain	48.7	49.5	0.8	72
5AVP12	T2	Alisma subcordatum	southern water-plantain	50.4	53.0	2.6	72
5AVP12	T2	Alisma subcordatum	southern water-plantain	54.9	57.0	2.1	72
5AVP12	T2	Bidens frondosa	Devil's beggar-ticks	6.2	7.7	1.5	72
5AVP12	T2	Bidens frondosa	Devil's beggar-ticks	67.0	67.8	0.8	72
5AVP12	T2	Crataegus sp.	hawthorn sp.	0.0	14.2	14.2	72
5AVP12	T2	Eleocharis sp.	spikesedge sp.	6.9	11.2	4.3	72
5AVP12	T2	Eleocharis sp.	Tall spike rush	7.4	8.0	0.6	72
5AVP12	T2	Eleocharis sp.	Tall spike rush	9.9	10.6	0.7	72
5AVP12	T2	Eleocharis sp.	Tall spike rush	11.3	11.8	0.5	72
5AVP12	T2	Galium sp.	bedstraw sp.	0.0	1.9	1.9	72
5AVP12	T2	Iris pseudacorus	yellow iris	68.3	72.0	3.7	72
5AVP12	T2	Leersia oryzoides	rice cut grass	5.4	6.7	1.3	72
5AVP12	T2	Leersia oryzoides	rice cut grass	7.8	9.2	1.4	72
5AVP12	T2	Lysimachia nummularia	creeping yellow-loosestrife	2.0	6.0	4.0	72
5AVP12	T2	Lysimachia nummularia	creeping yellow-loosestrife	63.6	68.4	4.8	72
5AVP12	T2	Lysimachia nummularia	creeping yellow-loosestrife	69.6	70.5	0.9	72
5AVP12	T2	Myosotis scorpioides	true forget-me-not	1.0	4.2	3.2	72
5AVP12	T2	Myosotis scorpioides	true forget-me-not	65.0	65.4	0.4	72
5AVP12	T2	Onoclea sensibilis	sensitive fern	0.0	1.5	1.5	72
5AVP12	T2	Onoclea sensibilis	sensitive fern	71.9	72.0	0.1	72
5AVP12	T2	Pontederia cordata	pickerelweed	27.0	28.0	1.0	72
5AVP12	T2	Pontederia cordata	pickerelweed	29.5	30.4	0.9	72
5AVP12	T3	Acer negundo	boxelder	49.7	62.0	12.3	62
5AVP12	T3	Acer saccharinum	silver maple	11.0	23.3	12.3	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	4.7	5.1	0.4	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	6.8	8.1	1.3	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	9.6	18.1	8.5	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	22.0	22.7	0.7	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	28.8	33.9	5.1	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	35.4	46.4	11.0	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	47.9	51.8	3.9	62
5AVP12	T3	Alisma subcordatum	southern water-plantain	53.2	55.2	2.0	62
5AVP12	T3	Bidens frondosa	Devil's beggar-ticks	1.6	2.3	0.7	62
5AVP12	T3	Bidens frondosa	Devil's beggar-ticks	3.3	3.6	0.3	62
5AVP12	T3	Bidens frondosa	Devil's beggar-ticks	58.1	58.9	0.8	62
5AVP12	T3	Crataegus sp.	hawthorn sp.	0.0	7.6	7.6	62
5AVP12	T3	Eleocharis sp.	spikesedge sp.	5.4	7.6	2.2	62
5AVP12	T3	Eleocharis sp.	spikesedge sp.	51.3	53.5	2.2	62
5AVP12	T3	Galium sp.	bedstraw sp.	61.2	62.0	0.8	62
5AVP12	T3	Leersia oryzoides	rice cut grass	4.2	5.7	1.5	62
5AVP12	T3	Leersia oryzoides	rice cut grass	51.6	52.5	0.9	62
5AVP12	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	4.6	4.6	62
5AVP12	T3	Lysimachia nummularia	creeping yellow-loosestrife	6.5	8.0	1.5	62
5AVP12	T3	Lysimachia nummularia	creeping yellow-loosestrife	55.2	62.0	6.8	62
5AVP12	T3	Onoclea sensibilis	sensitive fern	0.0	1.2	1.2	62
5AVP12	T3	Penthorum sedoides	ditch-stonecrop	8.2	8.6	0.4	62
5AVP12	T3	Penthorum sedoides	ditch-stonecrop	57.0	57.5	0.5	62
5AVP12	T3	Persicaria sp.	smartweed species	7.2	7.8	0.6	62
5AVP12	T3	Persicaria sp.	smartweed species	8.6	11.0	2.4	62
5AVP12	T3	Persicaria sp.	smartweed species	16.3	35.1	18.8	62
5AVP12	T3	Persicaria sp.	smartweed species	42.3	43.3	1.0	62
5AVP12	T3	Persicaria sp.	smartweed species	55.5	56.1	0.6	62
5AVP15	T1	Acer saccharinum	silver maple	3.8	21.6	17.8	32
5AVP15	T1	Acer saccharinum	silver maple	22.3	23.2	0.9	32
5AVP15	T1	Acer saccharinum	silver maple	25.5	26.1	0.6	32
5AVP15	T1	Alisma subcordatum	southern water-plantain	18.7	19.6	0.9	32
5AVP15	T1	Carex lupulina	hop sedge	5.3	9.7	4.4	32
5AVP15	T1	Carex lurida	sallow sedge	9.0	11.4	2.4	32
5AVP15	T1	Carex lurida	sallow sedge	18.0	19.8	1.8	32
5AVP15	T1	Cicuta sp.	water-hemlock species	8.0	9.5	1.5	32
5AVP15	T1	Cirsium arvense	creeping thistle	0.0	1.8	1.8	32
5AVP15	T1	Lysimachia ciliata	fringed yellow-loosestrife	28.5	30.4	1.9	32
5AVP15	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	10.8	10.8	32
5AVP15	T1	Lysimachia nummularia	creeping yellow-loosestrife	20.0	27.6	7.6	32

5AVP9 - Vegetation too think to pull tape measure, used GPS points to calculate segment lengths

Row Labels
5AVP10
5AVP12
5AVP15
5AVP16
5AVP21
5AVP22
5AVP26
5AVP27
5AVP3
5AVP4
5AVP5
5AVP52
5AVP55
5AVP57
5AVP61
5AVP7
5AVP9
Grand Total

5AVP15	T1	Lysimachia nummularia	creeping yellow-loosestrife	30.4	31.0	0.6	32
5AVP15	T1	Lysimachia terrestris	swamp yellow-loosestrife	4.7	6.6	1.9	32
5AVP15	T1	Lysimachia terrestris	swamp yellow-loosestrife	7.8	8.1	0.3	32
5AVP15	T1	Lythrum salicaria	purple loosestrife	21.3	23.7	2.4	32
5AVP15	T1	Onoclea sensibilis	sensitive fern	0.0	2.6	2.6	32
5AVP15	T1	Onoclea sensibilis	sensitive fern	26.8	32.0	5.2	32
5AVP15	T1	Penthorum sedoides	ditch-stonecrop	8.0	9.6	1.6	32
5AVP15	T1	Penthorum sedoides	ditch-stonecrop	17.5	21.6	4.1	32
5AVP15	T1	Swida amomum	silky dogwood	2.0	2.7	0.7	32
5AVP15	T2	Acer saccharinum	silver maple	0.0	18.6	18.6	76
5AVP15	T2	Alisma subcordatum	southern water-plantain	60.1	60.7	0.6	76
5AVP15	T2	Bidens frondosa	Devil's beggar-ticks	25.2	26.1	0.9	76
5AVP15	T2	Bidens frondosa	Devil's beggar-ticks	27.9	28.3	0.4	76
5AVP15	T2	Bidens frondosa	Devil's beggar-ticks	29.6	30.2	0.6	76
5AVP15	T2	Bidens frondosa	Devil's beggar-ticks	35.4	36.3	0.9	76
5AVP15	T2	Carex sp.	Sedge species	52.8	55.0	2.2	76
5AVP15	T2	Eleocharis sp.	Tall spike rush	57.2	66.5	9.3	76
5AVP15	T2	Geum sp.	avens species	0.0	1.3	1.3	76
5AVP15	T2	Iris pseudacorus	yellow iris	13.6	18.8	5.2	76
5AVP15	T2	Juglans cinerea	butternut	63.0	76.0	13.0	76
5AVP15	T2	Leersia oryzoides	rice cut grass	54.0	56.5	2.5	76
5AVP15	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.0	16.0	16.0	76
5AVP15	T2	Lysimachia nummularia	creeping yellow-loosestrife	18.0	25.2	7.2	76
5AVP15	T2	Lysimachia nummularia	creeping yellow-loosestrife	38.2	58.0	19.8	76
5AVP15	T2	Lysimachia nummularia	creeping yellow-loosestrife	70.2	72.9	2.7	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	13.4	14.2	0.8	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	34.6	35.6	1.0	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	40.9	48.6	7.7	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	51.0	51.8	0.8	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	53.1	54.1	1.0	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	55.8	56.7	0.9	76
5AVP15	T2	Lythrum salicaria	purple loosestrife	58.0	58.8	0.8	76
5AVP15	T2	Myosotis scorpioides	true forget-me-not	17.3	30.0	12.7	76
5AVP15	T2	Myosotis scorpioides	true forget-me-not	43.0	46.9	3.9	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	0.0	4.2	4.2	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	6.7	7.1	0.4	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	10.2	10.6	0.4	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	26.6	27.4	0.8	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	28.1	29.3	1.2	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	30.0	30.7	0.7	76
5AVP15	T2	Onoclea sensibilis	sensitive fern	33.1	36.2	3.1	76
5AVP15	T2	Persicaria sagittata	arrow-leaved tearthumb	5.5	5.9	0.4	76
5AVP15	T2	Persicaria sagittata	arrow-leaved tearthumb	8.9	10.1	1.2	76
5AVP15	T2	Persicaria sagittata	arrow-leaved tearthumb	10.6	11.1	0.5	76
5AVP15	T2	Persicaria sagittata	arrow-leaved tearthumb	36.2	37.0	0.8	76
5AVP15	T2	Populus sp.	poplar species	62.0	76.0	14.0	76
5AVP15	T2	Rosa multiflora	multiflora rose	74.0	76.0	2.0	76
5AVP15	T2	Ulmus americana	American elm	0.0	23.7	23.7	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	11.7	12.2	0.5	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	19.3	20.1	0.8	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	23.8	24.6	0.8	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	26.0	26.5	0.5	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	28.7	29.5	0.8	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	30.7	40.6	9.9	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	41.6	42.3	0.7	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	46.7	51.0	4.3	76
5AVP15	T2	Xanthium strumarium	Rough cocklebur	52.7	55.6	2.9	76
5AVP15	T3	Crataegus sp.	hawthorn sp.	45.0	58.0	13.0	58
5AVP15	T3	Eleocharis sp.	Tall spike rush	8.3	10.9	2.6	58
5AVP15	T3	Eleocharis sp.	Tall spike rush	12.2	13.7	1.5	58
5AVP15	T3	Eleocharis sp.	Tall spike rush	44.4	49.3	4.9	58
5AVP15	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	12.8	12.8	58
5AVP15	T3	Lysimachia nummularia	creeping yellow-loosestrife	45.4	58.0	12.6	58
5AVP15	T3	Lythrum salicaria	purple loosestrife	10.5	11.0	0.5	58
5AVP15	T3	Lythrum salicaria	purple loosestrife	15.5	15.7	0.2	58
5AVP15	T3	Myosotis scorpioides	true forget-me-not	4.8	5.7	0.9	58
5AVP15	T3	Penthorum sedoides	ditch-stonecrop	5.7	6.5	0.8	58
5AVP15	T3	Penthorum sedoides	ditch-stonecrop	10.4	11.3	0.9	58
5AVP15	T3	Persicaria sp.	smartweed species	12.6	45.6	33.0	58
5AVP15	T3	Persicaria sp.	smartweed species	47.4	49.6	2.2	58
5AVP15	T3	Sparganium sp.	bur-reed species	6.3	10.3	4.0	58
5AVP15	T3	Swida amomum	silky dogwood	0.0	5.1	5.1	58
5AVP15	T3	Swida amomum	silky dogwood	50.3	58.0	7.7	58
5AVP15	T3	Vitis riparia	river-bank grape	51.0	58.0	7.0	58
5AVP15	T3	Xanthium strumarium	Rough cocklebur	5.3	6.4	1.1	58
5AVP15	T3	Xanthium strumarium	Rough cocklebur	8.1	13.1	5.0	58
5AVP16	T1	Crataegus sp.	hawthorn sp.	6.3	17.0	10.7	48
5AVP16	T1	Galium sp.	bedstraw sp.	34.0	36.9	2.9	48
5AVP16	T1	Impatiens capensis	jewelweed	1.8	2.1	0.3	48
5AVP16	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	16.0	16.0	48
5AVP16	T1	Lysimachia nummularia	creeping yellow-loosestrife	23.3	46.2	22.9	48
5AVP16	T1	Lythrum salicaria	purple loosestrife	29.9	30.6	0.7	48
5AVP16	T1	Onoclea sensibilis	sensitive fern	0.0	4.0	4.0	48
5AVP16	T1	Penthorum sedoides	ditch-stonecrop	35.9	36.7	0.8	48
5AVP16	T1	Penthorum sedoides	ditch-stonecrop	41.7	42.5	0.8	48
5AVP16	T1	Pilea pumila	Canada clearweed	3.9	4.4	0.5	48
5AVP16	T1	Swida amomum	silky dogwood	38.3	38.8	0.5	48
5AVP16	T1	Swida amomum	silky dogwood	42.6	48.0	5.4	48
5AVP16	T1	Vitis riparia	river-bank grape	46.2	48.0	1.8	48
5AVP16	T2	Acer saccharinum	silver maple	31.0	36.0	5.0	36
5AVP16	T2	Cicuta maculata	spotted water-hemlock	13.2	14.8	1.6	36
5AVP16	T2	Crataegus sp.	hawthorn sp.	0.0	6.4	6.4	36
5AVP16	T2	Lysimachia ciliata	fringed yellow-loosestrife	0.0	0.7	0.7	36
5AVP16	T2	Lysimachia nummularia	creeping yellow-loosestrife	1.8	17.7	15.9	36
5AVP16	T2	Lysimachia nummularia	creeping yellow-loosestrife	24.0	36.0	12.0	36
5AVP16	T2	Lythrum salicaria	purple loosestrife	33.4	34.1	0.7	36
5AVP16	T2	Myosotis scorpioides	true forget-me-not	0.0	2.0	2.0	36
5AVP16	T2	Penthorum sedoides	ditch-stonecrop	1.5	2.5	1.0	36
5AVP16	T2	Penthorum sedoides	ditch-stonecrop	2.7	3.8	1.1	36
5AVP16	T2	Persicaria virginiana	jumpseed	0.7	1.2	0.5	36
5AVP16	T2	Salix sp.	willow species	18.0	26.2	8.2	36
5AVP16	T2	Swida amomum	silky dogwood	32.0	36.0	4.0	36
5AVP21	T1	Cephalanthus occidentalis	common buttonbush	0.8	1.0	0.2	80
5AVP21	T1	Cephalanthus occidentalis	common buttonbush	35.7	40.0	4.3	80
5AVP21	T1	Fallen Log		20.8	22.0	1.2	80
5AVP21	T1	Lemna minor	common duckweed	48.4	55.0	6.6	80
5AVP21	T1	Lythrum salicaria	purple loosestrife	1.1	1.4	0.3	80
5AVP21	T1	Lythrum salicaria	purple loosestrife	60.8	61.2	0.4	80
5AVP21	T1	Lythrum salicaria	purple loosestrife	67.9	68.2	0.3	80
5AVP21	T1	Persicaria amphibia	water smartweed	0.8	2.1	1.3	80
5AVP21	T1	Persicaria amphibia	water smartweed	20.8	24.0	3.2	80
5AVP21	T1	Persicaria amphibia	water smartweed	36.0	41.6	5.6	80
5AVP21	T1	Persicaria amphibia	water smartweed	44.4	53.0	8.6	80
5AVP21	T1	Persicaria amphibia	water smartweed	55.1	72.0	16.9	80
5AVP21	T1	Phalaris arundinacea	reed canary grass	0.0	20.8	20.8	80
5AVP21	T1	Phalaris arundinacea	reed canary grass	22.0	65.6	43.6	80
5AVP21	T1	Sparganium eurycarpum	great bur-reed	9.6	10.1	0.5	80
5AVP21	T1	Sparganium eurycarpum	great bur-reed	33.8	34.1	0.3	80
5AVP21	T1	Swida amomum	silky dogwood	70.2	80.0	9.8	80
5AVP21	T2	Acer rubrum	red maple	108.0	136.0	28.0	136
5AVP21	T2	Cephalanthus occidentalis	common buttonbush	1.5	1.8	0.3	136

5AVP21	T2	Cephalanthus occidentalis	common buttonbush	16.7	19.0	2.3	136	
5AVP21	T2	Cephalanthus occidentalis	common buttonbush	38.0	76.0	38.0	136	
5AVP21	T2	Fallen Log		7.9	9.8	1.9	136	
5AVP21	T2	Ilex verticillata	common winterberry	3.4	4.5	1.1	136	
5AVP21	T2	Ilex verticillata	common winterberry	81.0	87.2	6.2	136	
5AVP21	T2	Lysimachia nummularia	creeping yellow-loosestrife	77.0	136.0	59.0	136	
5AVP21	T2	Lysimachia terrestris	swamp candles	130.1	130.4	0.3	136	
5AVP21	T2	Onoclea sensibilis	sensitive fern	87.0	95.2	8.2	136	
5AVP21	T2	Onoclea sensibilis	sensitive fern	99.0	107.2	8.2	136	
5AVP21	T2	Onoclea sensibilis	sensitive fern	109.0	110.6	1.6	136	
5AVP21	T2	Osmundastrum cinnamomeum	cinnamon fern	81.0	83.0	2.0	136	
5AVP21	T2	Osmundastrum cinnamomeum	cinnamon fern	87.0	87.5	0.5	136	
5AVP21	T2	Persicaria amphibia	water smartweed	6.2	7.9	1.7	136	
5AVP21	T2	Persicaria amphibia	water smartweed	10.5	26.2	15.7	136	
5AVP21	T2	Persicaria sagittata	arrow-leaved tearthumb	123.2	123.8	0.6	136	
5AVP21	T2	Persicaria sagittata	arrow-leaved tearthumb	126.5	126.7	0.2	136	
5AVP21	T2	Persicaria virginiana	jumpseed	83.4	83.8	0.4	136	
5AVP21	T2	Phalaris arundinacea	reed canary grass	6.2	6.4	0.2	136	
5AVP21	T2	Phalaris arundinacea	reed canary grass	14.7	15.2	0.5	136	
5AVP21	T2	Phalaris arundinacea	reed canary grass	21.0	40.0	19.0	136	
5AVP21	T2	Quercus rubra	northern red oak	0.0	37.0	37.0	136	
5AVP21	T2	Spiraea alba	white meadowsweet	89.9	90.2	0.3	136	
5AVP21	T2	Swida amomum	silky dogwood	86.0	124.2	38.2	136	
5AVP21	T3	Equisetum hyemale	tall scouring-rush	0.9	1.0	0.1	76	
5AVP21	T3	Erechtites hieraciifolius	American burnweed	7.0	7.2	0.2	76	
5AVP21	T3	Fagus grandifolia	American beech	0.0	11.0	11.0	76	
5AVP21	T3	Galium asprellum	rough bedstraw	4.8	9.5	4.7	76	
5AVP21	T3	Galium asprellum	rough bedstraw	21.7	23.2	1.5	76	
5AVP21	T3	Galium asprellum	rough bedstraw	27.0	28.7	1.7	76	
5AVP21	T3	Galium asprellum	rough bedstraw	44.5	46.1	1.6	76	
5AVP21	T3	Galium asprellum	rough bedstraw	47.5	57.0	9.5	76	
5AVP21	T3	Galium asprellum	rough bedstraw	64.0	71.3	7.3	76	
5AVP21	T3	Glyceria grandis	American manna grass	26.3	26.4	0.1	76	
5AVP21	T3	Impatiens capensis	jewelweed	15.7	16.0	0.3	76	1.4
5AVP21	T3	Impatiens capensis	jewelweed	34.4	34.6	0.2	76	
5AVP21	T3	Impatiens capensis	jewelweed	40.4	40.9	0.5	76	
5AVP21	T3	Impatiens capensis	jewelweed	47.2	47.6	0.4	76	
5AVP21	T3	Lemna minor	common duckweed	0.0	20.0	20.0	76	
5AVP21	T3	Lysimachia nummularia	creeping yellow-loosestrife	1.8	2.1	0.3	76	
5AVP21	T3	Lysimachia nummularia	creeping yellow-loosestrife	47.2	48.1	0.9	76	
5AVP21	T3	Lysimachia nummularia	creeping yellow-loosestrife	61.7	76.0	14.3	76	
5AVP21	T3	Lysimachia terrestris	swamp yellow-loosestrife	51.2	51.7	0.5	76	
5AVP21	T3	Lysimachia terrestris	swamp yellow-loosestrife	72.9	76.2	3.3	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	6.0	6.4	0.4	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	13.9	14.5	0.6	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	15.8	16.7	0.9	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	27.3	28.5	1.2	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	42.4	46.3	3.9	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	55.7	57.0	1.3	76	
5AVP21	T3	Lythrum salicaria	purple loosestrife	67.7	69.6	1.9	76	
5AVP21	T3	Myosotis scorpioides	true forget-me-not	4.1	23.5	19.4	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	0.0	1.4	1.4	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	33.7	34.9	1.2	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	50.6	50.8	0.2	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	52.1	53.4	1.3	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	54.8	59.5	4.7	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	61.4	63.5	2.1	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	66.5	69.9	3.4	76	
5AVP21	T3	Onoclea sensibilis	sensitive fern	74.4	76.0	1.6	76	
5AVP21	T3	Osmundastrum cinnamomeum	cinnamon fern	59.7	60.6	0.9	76	
5AVP21	T3	Ribes americanum	eastern black currant	26.1	27.3	1.2	76	
5AVP21	T3	Sagittaria latifolia	common arrowhead	7.8	10.0	2.2	76	
5AVP21	T3	Sagittaria latifolia	common arrowhead	11.9	13.5	1.6	76	
5AVP21	T3	Sagittaria latifolia	common arrowhead	43.5	44.4	0.9	76	
5AVP21	T3	Salix sp.	willow species	29.7	32.1	2.4	76	
5AVP21	T3	Salix sp.	willow species	36.1	42.0	5.9	76	
5AVP21	T3	Salix sp.	willow species	49.5	50.5	1.0	76	
5AVP21	T3	Scutellaria galericulata	hooded skullcap	54.1	54.4	0.3	76	
5AVP21	T3	Solanum dulcamara	climbing nightshade	9.4	10.2	0.8	76	
5AVP21	T3	Sparganium eurycarpum	great bur-reed	5.0	5.3	0.3	76	
5AVP21	T3	Spiraea alba	white meadowsweet	0.0	6.0	6.0	76	
5AVP21	T3	Spiraea alba	white meadowsweet	1.7	2.8	1.1	76	
5AVP21	T3	Spiraea alba	white meadowsweet	42.7	43.5	0.8	76	
5AVP21	T3	Spiraea alba	white meadowsweet	46.5	47.2	0.7	76	
5AVP21	T3	Spiraea alba	white meadowsweet	50.1	50.8	0.7	76	
5AVP21	T3	Swida amomum	silky dogwood	17.1	43.0	25.9	76	
5AVP21	T3	Swida amomum	silky dogwood	49.5	50.4	0.9	76	
5AVP21	T3	Swida amomum	silky dogwood	56.2	58.0	1.8	76	
5AVP21	T3	Symplocarpus foetidus	skunk-cabbage	49.5	51.2	1.7	76	
5AVP21	T3	Symplocarpus foetidus	skunk-cabbage	56.8	58.1	1.3	76	
5AVP21	T3	Symplocarpus foetidus	skunk-cabbage	71.5	73.2	1.7	76	
5AVP21	T3	Thelypteris palustris	marsh fern	45.4	46.6	1.2	76	
5AVP21	T3	Thelypteris palustris	marsh fern	52.1	53.0	0.9	76	
5AVP21	T3	Thelypteris palustris	marsh fern	61.2	61.6	0.4	76	
5AVP21	T3	Viburnum lentago	nannyberry	62.9	76.0	13.1	76	
5AVP21	T4	Bidens sp.	beggar-tick species	1.9	17.0	15.1	46	
5AVP21	T4	Bidens sp.	beggar-tick species	19.8	28.8	9.0	46	
5AVP21	T4	Cicuta bulbifera	bulbet-bearing water-hemlock	26.4	26.7	0.3	46	
5AVP21	T4	Equisetum hyemale	tall scouring-rush	2.3	3.4	1.1	46	
5AVP21	T4	Galium asprellum	rough bedstraw	1.6	6.6	5.0	46	
5AVP21	T4	Galium asprellum	rough bedstraw	30.3	32.0	1.7	46	
5AVP21	T4	Leersia oryzoides	rice cut grass	5.4	40.0	34.6	46	
5AVP21	T4	Leersia oryzoides	rice cut grass	44.0	46.0	2.0	46	
5AVP21	T4	Ludwigia palustris	common water-primrose	32.9	33.4	0.5	46	
5AVP21	T4	Lysimachia nummularia	creeping yellow-loosestrife	0.0	6.4	6.4	46	
5AVP21	T4	Lysimachia nummularia	creeping yellow-loosestrife	16.7	41.3	24.6	46	
5AVP21	T4	Lysimachia nummularia	creeping yellow-loosestrife	43.0	46.0	3.0	46	
5AVP21	T4	Lysimachia terrestris	swamp yellow-loosestrife	1.8	3.4	1.6	46	
5AVP21	T4	Onoclea sensibilis	sensitive fern	0.0	1.8	1.8	46	
5AVP21	T4	Sium suave	water-parsnip	15.5	15.9	0.4	46	
5AVP21	T4	Sparganium sp.	bur-reed species	13.4	15.2	1.8	46	
5AVP21	T4	Spiraea alba	white meadowsweet	17.4	21.3	3.9	46	
5AVP21	T4	Swida amomum	silky dogwood	22.7	23.8	1.1	46	
5AVP21	T4	Swida amomum	silky dogwood	26.0	26.3	0.3	46	
5AVP21	T4	Swida amomum	silky dogwood	31.7	32.3	0.6	46	
5AVP21	T4	Swida amomum	silky dogwood	35.0	42.1	7.1	46	
5AVP21	T5	Acer saccharinum	silver maple	0.0	53.0	53.0	53	
5AVP21	T5	Fraxinus pennsylvanica	green ash	0.0	5.0	5.0	53	
5AVP21	T5	Iris pseudacorus	yellow iris	1.0	1.7	0.7	53	
5AVP21	T5	Lysimachia nummularia	creeping yellow-loosestrife	0.0	3.2	3.2	53	
5AVP21	T5	Onoclea sensibilis	sensitive fern	0.0	1.9	1.9	53	
5AVP21	T5	Phalaris arundinacea	reed canary grass	3.2	10.8	7.6	53	
5AVP21	T5	Rhamnus cathartica	European buckthorn	27.0	35.5	8.5	53	
5AVP21	T5	Rhamnus cathartica	European buckthorn	40.0	53.0	13.0	53	
5AVP21	T5	Ulmus americana	American elm	29.0	53.0	24.0	53	
5AVP21	T6	Acer rubrum	red maple	0.0	20.0	20.0	98	
5AVP21	T6	Acer saccharinum	silver maple	58.0	98.0	40.0	98	
5AVP21	T6	Alisma subcordatum	southern water-plantain	5.0	6.2	1.2	98	
5AVP21	T6	Cephalanthus occidentalis	common buttonbush	20.0	76.0	56.0	98	
5AVP21	T6	Eleocharis acicularis	needle spikesedge	13.5	18.0	4.5	98	
5AVP21	T6	Lysimachia nummularia	creeping yellow-loosestrife	92.8	98.0	5.2	98	

5AVP21	T6	Lythrum salicaria	purple loosestrife	4.8	5.2	0.4	98
5AVP21	T6	Lythrum salicaria	purple loosestrife	17.0	20.0	3.0	98
5AVP21	T6	Persicaria amphibia	water smartweed	1.6	1.9	0.3	98
5AVP21	T6	Persicaria amphibia	water smartweed	15.0	16.3	1.3	98
5AVP21	T6	Phalaris arundinacea	reed canary grass	0.0	13.5	13.5	98
5AVP21	T6	Phalaris arundinacea	reed canary grass	14.3	20.0	5.7	98
5AVP21	T6	Swida amomum	silky dogwood	76.0	98.0	22.0	98
5AVP21	T6	Viburnum lentago	nannyberry	86.0	98.0	12.0	98
5AVP22	T1	Acer saccharinum	silver maple	0.0	54.0	54.0	62
5AVP22	T1	Bidens sp.	beggar-tick species	29.2	29.4	0.2	62
5AVP22	T1	Bidens sp.	beggar-tick species	32.5	32.9	0.4	62
5AVP22	T1	Carex lupulina	hop sedge	7.5	8.0	0.5	62
5AVP22	T1	Carex lupulina	hop sedge	18.9	22.7	3.8	62
5AVP22	T1	Erechtites hieraciifolius	American burnweed	48.1	48.9	0.8	62
5AVP22	T1	Iris versicolor	blue iris	43.9	44.0	0.1	62
5AVP22	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	10.4	10.4	62
5AVP22	T1	Lysimachia nummularia	creeping yellow-loosestrife	13.6	14.2	0.6	62
5AVP22	T1	Lysimachia nummularia	creeping yellow-loosestrife	53.3	62.0	8.7	62
5AVP22	T1	Lysimachia terrestris	swamp yellow-loosestrife	3.9	4.3	0.4	62
5AVP22	T1	Lysimachia terrestris	swamp yellow-loosestrife	48.3	48.7	0.4	62
5AVP22	T1	Lysimachia terrestris	swamp yellow-loosestrife	54.0	54.2	0.2	62
5AVP22	T1	Onoclea sensibilis	sensitive fern	0.3	1.0	0.7	62
5AVP22	T1	Onoclea sensibilis	sensitive fern	52.9	53.2	0.3	62
5AVP22	T1	Onoclea sensibilis	sensitive fern	57.7	61.4	3.7	62
5AVP22	T1	Persicaria sagittata	arrow-leaved tearthumb	43.5	43.7	0.2	62
5AVP22	T1	Persicaria sagittata	arrow-leaved tearthumb	45.0	45.2	0.2	62
5AVP22	T1	Rhamnus cathartica	European buckthorn	0.0	2.5	2.5	62
5AVP22	T1	Scirpus cyperinus	common woolsedge	25.0	25.8	0.8	62
5AVP22	T1	Scirpus cyperinus	common woolsedge	27.0	27.6	0.6	62
5AVP22	T1	Scirpus cyperinus	common woolsedge	34.8	36.0	1.2	62
5AVP22	T1	Scirpus cyperinus	common woolsedge	51.0	51.6	0.6	62
5AVP22	T2	Acer saccharinum	silver maple	50.2	89.0	38.8	114
5AVP22	T2	Bidens sp.	beggar-tick species	73.3	73.6	0.3	114
5AVP22	T2	Bidens sp.	beggar-tick species	74.0	75.2	1.2	114
5AVP22	T2	Bidens sp.	beggar-tick species	77.2	77.7	0.5	114
5AVP22	T2	Bidens sp.	beggar-tick species	82.4	89.9	7.5	114
5AVP22	T2	Carex crinita	fringed sedge	50.7	53.4	2.7	114
5AVP22	T2	Carex lupulina	hop sedge	71.2	73.2	2.0	114
5AVP22	T2	Carex lupulina	hop sedge	75.7	76.0	0.3	114
5AVP22	T2	Carex retrorsa	retrose sedge	7.7	8.0	0.3	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	6.0	6.3	0.3	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	23.1	23.3	0.2	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	47.2	49.3	2.1	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	59.8	60.2	0.4	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	61.4	61.8	0.4	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	66.0	66.8	0.8	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	67.6	67.9	0.3	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	79.6	79.9	0.3	114
5AVP22	T2	Erechtites hieraciifolius	American burnweed	94.1	95.1	1.0	114
5AVP22	T2	Galium asprellum	rough bedstraw	7.3	7.5	0.2	114
5AVP22	T2	Galium asprellum	rough bedstraw	16.5	17.0	0.5	114
5AVP22	T2	Galium asprellum	rough bedstraw	20.1	24.3	4.2	114
5AVP22	T2	Galium asprellum	rough bedstraw	62.8	64.8	2.0	114
5AVP22	T2	Impatiens capensis	jewelweed	0.5	0.8	0.3	114
5AVP22	T2	Impatiens capensis	jewelweed	5.7	6.4	0.7	114
5AVP22	T2	Impatiens capensis	jewelweed	11.9	12.3	0.4	114
5AVP22	T2	Impatiens capensis	jewelweed	26.8	27.1	0.3	114
5AVP22	T2	Impatiens capensis	jewelweed	29.1	29.6	0.5	114
5AVP22	T2	Impatiens capensis	jewelweed	30.3	30.6	0.3	114
5AVP22	T2	Iris pseudacorus	yellow iris	16.5	18.2	1.7	114
5AVP22	T2	Iris versicolor	blue iris	46.6	46.9	0.3	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.0	58.6	58.6	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	60.8	60.9	0.1	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	68.0	70.7	2.7	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	73.1	74.6	1.5	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	76.4	91.2	14.8	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	96.2	106.0	9.8	114
5AVP22	T2	Lysimachia nummularia	creeping yellow-loosestrife	102.8	114.0	11.2	114
5AVP22	T2	Lysimachia terrestris	swamp yellow-loosestrife	9.2	9.6	0.4	114
5AVP22	T2	Lysimachia terrestris	swamp yellow-loosestrife	27.0	27.4	0.4	114
5AVP22	T2	Lysimachia terrestris	swamp yellow-loosestrife	62.1	62.5	0.4	114
5AVP22	T2	Lysimachia terrestris	swamp yellow-loosestrife	71.0	71.3	0.3	114
5AVP22	T2	Lysimachia terrestris	swamp yellow-loosestrife	82.5	82.8	0.3	114
5AVP22	T2	Lysimachia terrestris	swamp yellow-loosestrife	84.9	85.3	0.4	114
5AVP22	T2	Onoclea sensibilis	sensitive fern	0.0	3.1	3.1	114
5AVP22	T2	Onoclea sensibilis	sensitive fern	111.5	114.0	2.5	114
5AVP22	T2	Persicaria sagittata	arrow-leaved tearthumb	3.9	4.5	0.6	114
5AVP22	T2	Persicaria sagittata	arrow-leaved tearthumb	24.6	24.9	0.3	114
5AVP22	T2	Persicaria sagittata	arrow-leaved tearthumb	83.7	84.1	0.4	114
5AVP22	T2	Prunus virginiana	choke cherry	109.4	114.0	4.6	114
5AVP22	T2	Rhamnus cathartica	European buckthorn	107.6	114.0	6.4	114
5AVP22	T2	Sium suave	water-parsnip	43.8	44.1	0.3	114
5AVP22	T2	Swida amomum	silky dogwood	0.0	5.0	5.0	114
5AVP22	T2	Swida amomum	silky dogwood	13.7	36.2	22.5	114
5AVP22	T2	Swida amomum	silky dogwood	89.5	114.0	24.5	114
5AVP22	T2	Vitis riparia	river-bank grape	102.2	102.8	0.6	114
5AVP22	T3	Acer saccharum	sugar maple	0.0	79.0	79.0	140
5AVP22	T3	Carex retrorsa	retrose sedge	10.1	11.0	0.9	140
5AVP22	T3	Carex retrorsa	retrose sedge	14.0	14.4	0.4	140
5AVP22	T3	Carex retrorsa	retrose sedge	37.3	37.6	0.3	140
5AVP22	T3	Carex retrorsa	retrose sedge	53.5	53.8	0.3	140
5AVP22	T3	Cephalanthus occidentalis	common buttonbush	67.6	70.2	2.6	140
5AVP22	T3	Galium asprellum	rough bedstraw	1.0	5.1	4.1	140
5AVP22	T3	Galium asprellum	rough bedstraw	7.8	9.0	1.2	140
5AVP22	T3	Galium asprellum	rough bedstraw	20.1	20.6	0.5	140
5AVP22	T3	Galium asprellum	rough bedstraw	25.6	31.1	5.5	140
5AVP22	T3	Impatiens capensis	jewelweed	17.1	18.0	0.9	140
5AVP22	T3	Impatiens capensis	jewelweed	19.4	20.5	1.1	140
5AVP22	T3	Impatiens capensis	jewelweed	25.3	25.6	0.3	140
5AVP22	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	58.9	58.9	140
5AVP22	T3	Lysimachia nummularia	creeping yellow-loosestrife	60.1	61.6	1.5	140
5AVP22	T3	Lysimachia nummularia	creeping yellow-loosestrife	134.6	140.0	5.4	140
5AVP22	T3	Lysimachia terrestris	swamp yellow-loosestrife	33.5	34.0	0.5	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	0.0	0.3	0.3	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	1.9	2.4	0.5	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	3.0	7.5	4.5	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	9.7	13.4	3.7	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	11.5	13.4	1.9	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	14.4	17.2	2.8	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	20.1	20.4	0.3	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	26.2	33.4	7.2	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	34.2	35.3	1.1	140
5AVP22	T3	Onoclea sensibilis	sensitive fern	38.6	38.9	0.3	140
5AVP22	T3	Persicaria pensylvanica	Pennsylvania smartweed	72.1	75.2	3.1	140
5AVP22	T3	Persicaria virginiana	jumpseed	32.8	33.6	0.8	140
5AVP22	T3	Phalaris arundinacea	reed canary grass	77.6	130.0	52.4	140
5AVP22	T3	Schoenoplectus tabernaemontani	soft-stemmed club-bulrush	106.0	106.1	0.1	140
5AVP22	T3	Schoenoplectus tabernaemontani	soft-stemmed club-bulrush	115.0	115.7	0.7	140
5AVP22	T3	Scirpus cyperinus	common woolsedge	76.3	77.0	0.7	140
5AVP22	T3	Scirpus cyperinus	common woolsedge	79.8	80.2	0.4	140
5AVP22	T3	Sium suave	water-parsnip	70.5	70.8	0.3	140

5AVP22	T3	Swida amomum	silky dogwood	14.2	22.0	7.8	140
5AVP22	T3	Swida amomum	silky dogwood	124.6	140.0	15.4	140
5AVP22	T3	Vitis riparia	river-bank grape	26.8	28.8	2.0	140
5AVP22	T4	Acer saccharinum	silver maple	10.0	72.0	62.0	135
5AVP22	T4	Carex retrorsa	retrose sedge	24.9	25.4	0.5	135
5AVP22	T4	Carex sp.	Sedge species	15.0	15.3	0.3	135
5AVP22	T4	Cephalanthus occidentalis	common buttonbush	18.5	18.8	0.3	135
5AVP22	T4	Cephalanthus occidentalis	common buttonbush	50.5	54.7	4.2	135
5AVP22	T4	Cephalanthus occidentalis	common buttonbush	61.0	71.3	10.3	135
5AVP22	T4	Erechtites hieraciifolius	American burnweed	42.2	42.4	0.2	135
5AVP22	T4	Erechtites hieraciifolius	American burnweed	43.3	43.6	0.3	135
5AVP22	T4	Erechtites hieraciifolius	American burnweed	119.5	120.0	0.5	135
5AVP22	T4	Erechtites hieraciifolius	American burnweed	124.2	127.1	2.9	135
5AVP22	T4	Galium asprellum	rough bedstraw	0.0	3.8	3.8	135
5AVP22	T4	Galium asprellum	rough bedstraw	41.1	41.2	0.1	135
5AVP22	T4	Galium asprellum	rough bedstraw	98.2	101.0	2.8	135
5AVP22	T4	Galium asprellum	rough bedstraw	114.0	127.2	13.2	135
5AVP22	T4	Impatiens capensis	jewelweed	6.6	7.1	0.5	135
5AVP22	T4	Impatiens capensis	jewelweed	10.7	10.9	0.2	135
5AVP22	T4	Lysimachia nummularia	creeping yellow-loosestrife	0.0	21.1	21.1	135
5AVP22	T4	Lysimachia nummularia	creeping yellow-loosestrife	26.0	38.8	12.8	135
5AVP22	T4	Lysimachia terrestris	swamp yellow-loosestrife	8.2	8.6	0.4	135
5AVP22	T4	Lysimachia terrestris	swamp yellow-loosestrife	11.4	12.3	0.9	135
5AVP22	T4	Onoclea sensibilis	sensitive fern	6.4	7.1	0.7	135
5AVP22	T4	Persicaria hydropiper	water-pepper smartweed	40.4	40.9	0.5	135
5AVP22	T4	Persicaria hydropiper	water-pepper smartweed	41.7	42.6	0.9	135
5AVP22	T4	Persicaria hydropiper	water-pepper smartweed	43.3	48.5	5.2	135
5AVP22	T4	Persicaria hydropiper	water-pepper smartweed	98.8	100.5	1.7	135
5AVP22	T4	Persicaria hydropiper	water-pepper smartweed	117.0	118.2	1.2	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	13.2	15.2	2.0	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	18.4	18.7	0.3	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	38.9	40.0	1.1	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	42.7	43.3	0.6	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	53.0	65.2	12.2	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	70.1	97.3	27.2	135
5AVP22	T4	Phalaris arundinacea	reed canary grass	100.7	118.1	17.4	135
5AVP22	T4	Sparganium eurycarpum	giant bur-reed	117.0	129.0	12.0	135
5AVP22	T4	Swida amomum	silky dogwood	0.0	9.8	9.8	135
5AVP22	T4	Swida amomum	silky dogwood	65.0	69.5	4.5	135
5AVP22	T4	Swida amomum	silky dogwood	90.1	98.6	8.5	135
5AVP22	T4	Swida amomum	silky dogwood	129.7	135.0	5.3	135
5AVP26	T1	Lysimachia terrestris	swamp yellow-loosestrife	0.2	1.0	0.8	30
5AVP26	T1	Lysimachia terrestris	swamp yellow-loosestrife	6.6	6.8	0.2	30
5AVP26	T1	Penthorum sedoides	ditch-stonecrop	0.0	1.1	1.1	30
5AVP26	T1	Penthorum sedoides	ditch-stonecrop	1.8	24.0	22.2	30
5AVP26	T1	Penthorum sedoides	ditch-stonecrop	4.3	5.3	1.0	30
5AVP26	T1	Penthorum sedoides	ditch-stonecrop	11.5	16.3	4.8	30
5AVP26	T1	Penthorum sedoides	ditch-stonecrop	19.5	19.5	0.0	30
5AVP26	T1	Rhamnus cathartica	European buckthorn	1.5	2.3	0.8	30
5AVP26	T1	Scutellaria galericulata	hooded skullcap	29.5	30.0	0.5	30
5AVP26	T1	Swida amomum	silky dogwood	5.8	11.1	5.3	30
5AVP26	T1	Swida amomum	silky dogwood	13.2	14.5	1.3	30
5AVP26	T1	Swida amomum	silky dogwood	15.6	16.0	0.4	30
5AVP26	T1	Swida amomum	silky dogwood	17.7	18.1	0.4	30
5AVP26	T1	Swida amomum	silky dogwood	19.9	30.0	10.1	30
5AVP26	T2	Acer rubrum	red maple	0.0	33.0	33.0	41
5AVP26	T2	Lycopus uniflorus	northern water-horehound	40.6	50.7	10.1	41
5AVP26	T2	Lysimachia nummularia	creeping yellow-loosestrife	21.3	28.8	7.5	41
5AVP26	T2	Lysimachia nummularia	creeping yellow-loosestrife	32.0	41.0	9.0	41
5AVP26	T2	Onoclea sensibilis	sensitive fern	35.7	36.1	0.4	41
5AVP26	T2	Rhamnus cathartica	European buckthorn	0.0	2.0	2.0	41
5AVP26	T2	Rhamnus cathartica	European buckthorn	26.0	41.0	15.0	41
5AVP26	T2	Rosa multiflora	multiflora rose	40.6	40.7	0.1	41
5AVP26	T2	Vitis riparia	river-bank grape	22.0	26.0	4.0	41
5AVP27	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	3.7	3.7	22
5AVP27	T1	Lysimachia nummularia	creeping yellow-loosestrife	7.4	22.0	14.6	22
5AVP27	T1	Onoclea sensibilis	sensitive fern	3.4	3.7	0.3	22
5AVP27	T1	Onoclea sensibilis	sensitive fern	6.4	6.7	0.3	22
5AVP27	T1	Persicaria virginiana	jumpseed	21.6	22.0	0.4	22
5AVP27	T1	Rhamnus cathartica	European buckthorn	0.0	15.0	15.0	22
5AVP27	T1	Rhamnus cathartica	European buckthorn	18.0	22.0	4.0	22
5AVP27	T1	Vitis riparia	river-bank grape	0.0	6.0	6.0	22
5AVP27	T2	Impatiens capensis	jewelweed	66.9	67.1	0.2	87
5AVP27	T2	Lonicera morrowii	Morrow's honeysuckle	78.0	87.0	9.0	87
5AVP27	T2	Lysimachia nummularia	creeping yellow-loosestrife	3.3	3.5	0.2	87
5AVP27	T2	Lysimachia nummularia	creeping yellow-loosestrife	4.3	19.3	15.0	87
5AVP27	T2	Lysimachia nummularia	creeping yellow-loosestrife	41.5	73.1	31.6	87
5AVP27	T2	Lysimachia nummularia	creeping yellow-loosestrife	85.5	87.0	1.5	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	1.7	2.2	0.5	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	6.4	7.9	1.5	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	9.4	9.6	0.2	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	11.9	12.6	0.7	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	16.6	17.6	1.0	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	56.2	59.0	2.8	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	63.3	63.4	0.1	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	66.6	66.8	0.2	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	68.9	69.9	1.0	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	70.9	72.0	1.1	87
5AVP27	T2	Onoclea sensibilis	sensitive fern	73.1	73.6	0.5	87
5AVP27	T2	Pachysandra terminalis	Japanese mountain-spurge	18.5	42.3	23.8	87
5AVP27	T2	Persicaria virginiana	jumpseed	43.7	43.9	0.2	87
5AVP27	T2	Persicaria virginiana	jumpseed	44.5	44.9	0.4	87
5AVP27	T2	Persicaria virginiana	jumpseed	49.2	49.5	0.3	87
5AVP27	T2	Persicaria virginiana	jumpseed	51.4	60.8	9.4	87
5AVP27	T2	Rhamnus cathartica	European buckthorn	0.0	87.0	87.0	87
5AVP3	T1	Acer saccharinum	silver maple	28.3	90.0	61.7	90
5AVP3	T1	Impatiens capensis	jewelweed	2.6	2.9	0.3	90
5AVP3	T1	Impatiens capensis	jewelweed	7.7	8.2	0.5	90
5AVP3	T1	Impatiens capensis	jewelweed	19.7	20.3	0.6	90
5AVP3	T1	Impatiens capensis	jewelweed	23.0	24.9	1.9	90
5AVP3	T1	Impatiens capensis	jewelweed	51.6	52.0	0.4	90
5AVP3	T1	Impatiens capensis	jewelweed	56.9	58.3	1.4	90
5AVP3	T1	Impatiens capensis	jewelweed	60.4	70.4	10.0	90
5AVP3	T1	Impatiens capensis	jewelweed	71.7	75.6	3.9	90
5AVP3	T1	Ligustrum sp.	privet species	87.5	90.0	2.5	90
5AVP3	T1	Lonicera morrowii	Morrow's honeysuckle	77.5	90.0	12.5	90
5AVP3	T1	Lysimachia ciliata	fringed yellow-loosestrife	4.7	5.0	0.3	90
5AVP3	T1	Lysimachia ciliata	fringed yellow-loosestrife	6.0	6.7	0.7	90
5AVP3	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	29.3	29.3	90
5AVP3	T1	Lysimachia nummularia	creeping yellow-loosestrife	58.8	80.0	21.2	90
5AVP3	T1	Morus alba	white mulberry	0.0	18.2	18.2	90
5AVP3	T1	Onoclea sensibilis	sensitive fern	4.0	4.5	0.5	90
5AVP3	T1	Onoclea sensibilis	sensitive fern	8.0	9.2	1.2	90
5AVP3	T1	Onoclea sensibilis	sensitive fern	19.4	20.6	1.2	90
5AVP3	T1	Onoclea sensibilis	sensitive fern	71.8	72.6	0.8	90
5AVP3	T1	Onoclea sensibilis	sensitive fern	76.0	76.5	0.5	90
5AVP3	T1	Onoclea sensibilis	sensitive fern	86.7	87.8	1.1	90
5AVP3	T1	Persicaria virginiana	jumpseed	0.6	2.0	1.4	90
5AVP3	T1	Persicaria virginiana	jumpseed	5.1	6.5	1.4	90
5AVP3	T1	Swida amomum	silky dogwood	22.9	24.4	1.5	90
5AVP3	T1	Swida amomum	silky dogwood	27.7	43.9	16.2	90

5AVP3	T1	Swida amomum	silky dogwood	45.0	47.5	2.5	90
5AVP3	T1	Swida amomum	silky dogwood	51.4	53.3	1.9	90
5AVP3	T1	Swida amomum	silky dogwood	55.0	57.1	2.1	90
5AVP3	T1	Vitis riparia	river-bank grape	56.2	61.5	5.3	90
5AVP3	T1	Vitis riparia	river-bank grape	63.3	71.1	7.8	90
5AVP3	T2	Acer saccharum	sugar maple	0.0	6.8	6.8	86
5AVP3	T2	Impatiens capensis	jewelweed	0.0	2.2	2.2	86
5AVP3	T2	Impatiens capensis	jewelweed	3.0	6.0	3.0	86
5AVP3	T2	Impatiens capensis	jewelweed	7.7	20.8	13.1	86
5AVP3	T2	Impatiens capensis	jewelweed	22.3	27.0	4.7	86
5AVP3	T2	Impatiens capensis	jewelweed	37.5	38.7	1.2	86
5AVP3	T2	Impatiens capensis	jewelweed	70.6	73.3	2.7	86
5AVP3	T2	Impatiens capensis	jewelweed	81.4	82.9	1.5	86
5AVP3	T2	Lonicera morrowii	Morrow's honeysuckle	76.3	86.0	9.7	86
5AVP3	T2	Lysimachia nummularia	creeping yellow-loosestrife	23.6	41.7	18.1	86
5AVP3	T2	Lysimachia nummularia	creeping yellow-loosestrife	52.0	78.0	26.0	86
5AVP3	T2	Lysimachia nummularia	creeping yellow-loosestrife	79.5	81.4	1.9	86
5AVP3	T2	Onoclea sensibilis	sensitive fern	55.8	56.2	0.4	86
5AVP3	T2	Onoclea sensibilis	sensitive fern	58.0	60.7	2.7	86
5AVP3	T2	Onoclea sensibilis	sensitive fern	69.8	71.6	1.8	86
5AVP3	T2	Onoclea sensibilis	sensitive fern	81.3	82.2	0.9	86
5AVP3	T2	Persicaria virginiana	jumpseed	82.7	84.0	1.3	86
5AVP3	T2	Swida amomum	silky dogwood	12.4	13.2	0.8	86
5AVP3	T2	Swida amomum	silky dogwood	16.7	17.5	0.8	86
5AVP3	T2	Swida amomum	silky dogwood	20.8	24.3	3.5	86
5AVP3	T2	Swida amomum	silky dogwood	25.0	25.7	0.7	86
5AVP3	T2	Swida amomum	silky dogwood	27.4	28.0	0.6	86
5AVP3	T2	Swida amomum	silky dogwood	30.8	33.3	2.5	86
5AVP3	T2	Swida amomum	silky dogwood	39.5	55.2	15.7	86
5AVP3	T2	Swida amomum	silky dogwood	55.7	68.5	12.8	86
5AVP3	T2	Ulmus americana	American elm	5.4	31.2	25.8	86
5AVP3	T2	Ulmus americana	American elm	45.5	68.4	22.9	86
5AVP3	T2	Vitis riparia	river-bank grape	61.0	64.7	3.7	86
5AVP3	T3	Acer negundo	boxelder	39.0	60.5	21.5	75
5AVP3	T3	Acer saccharinum	silver maple	3.0	48.5	45.5	75
5AVP3	T3	Alliaria petiolata	garlic-mustard	1.7	2.3	0.6	75
5AVP3	T3	Carex sp.	Sedge species	6.9	7.9	1.0	75
5AVP3	T3	Impatiens capensis	jewelweed	1.0	1.6	0.6	75
5AVP3	T3	Impatiens capensis	jewelweed	2.0	2.7	0.7	75
5AVP3	T3	Impatiens capensis	jewelweed	8.7	9.7	1.0	75
5AVP3	T3	Impatiens capensis	jewelweed	10.1	11.9	1.8	75
5AVP3	T3	Impatiens capensis	jewelweed	13.2	14.7	1.5	75
5AVP3	T3	Impatiens capensis	jewelweed	15.1	15.9	0.8	75
5AVP3	T3	Impatiens capensis	jewelweed	18.3	18.9	0.6	75
5AVP3	T3	Lonicera morrowii	Morrow's honeysuckle	0.0	6.4	6.4	75
5AVP3	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	6.9	6.9	75
5AVP3	T3	Lysimachia nummularia	creeping yellow-loosestrife	58.5	61.5	3.0	75
5AVP3	T3	Lysimachia nummularia	creeping yellow-loosestrife	62.8	72.6	9.8	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	4.7	5.9	1.2	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	12.0	13.1	1.1	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	23.8	24.9	1.1	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	26.0	26.9	0.9	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	27.6	31.3	3.7	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	33.8	36.5	2.7	75
5AVP3	T3	Onoclea sensibilis	sensitive fern	67.6	71.0	3.4	75
5AVP3	T3	Parthenocissus quinquefolia	Virginia-creeper	0.8	2.1	1.3	75
5AVP3	T3	Persicaria virginiana	jumpseed	39.3	40.0	0.7	75
5AVP3	T3	Persicaria virginiana	jumpseed	41.8	42.9	1.1	75
5AVP3	T3	Pilea pumila	Canada clearweed	72.0	73.3	1.3	75
5AVP3	T3	Populus deltoides	eastern cottonwood	0.0	75.0	75.0	75
5AVP3	T3	Rosa multiflora	multiflora rose	65.8	70.0	4.2	75
5AVP3	T3	Solidago sp.	goldenrod species	0.0	1.2	1.2	75
5AVP3	T3	Swida amomum	silky dogwood	66.5	68.0	1.5	75
5AVP3	T3	Ulmus americana	American elm	52.0	60.3	8.3	75
5AVP4	T1	Acer negundo	boxelder	0.0	3.9	3.9	45
5AVP4	T1	Acer saccharum	sugar maple	0.0	19.0	19.0	45
5AVP4	T1	Carex crinita	fringed sedge	24.3	25.7	1.4	45
5AVP4	T1	Carex lurida	sallow sedge	18.9	24.5	5.6	45
5AVP4	T1	Carex lurida	sallow sedge	34.7	38.3	3.6	45
5AVP4	T1	Euonymus alatus	burning-bush	0.0	1.8	1.8	45
5AVP4	T1	Impatiens capensis	jewelweed	6.3	7.0	0.7	45
5AVP4	T1	Impatiens capensis	jewelweed	12.6	12.8	0.2	45
5AVP4	T1	Impatiens capensis	jewelweed	24.7	26.4	1.7	45
5AVP4	T1	Impatiens capensis	jewelweed	31.5	34.6	3.1	45
5AVP4	T1	Lysimachia nummularia	creeping yellow-loosestrife	19.0	21.2	2.2	45
5AVP4	T1	Lysimachia nummularia	creeping yellow-loosestrife	22.8	35.4	12.6	45
5AVP4	T1	Lysimachia nummularia	creeping yellow-loosestrife	37.0	45.0	8.0	45
5AVP4	T1	Onoclea sensibilis	sensitive fern	27.6	28.0	0.4	45
5AVP4	T1	Onoclea sensibilis	sensitive fern	38.0	42.4	4.4	45
5AVP4	T1	Rosa multiflora	multiflora rose	43.0	46.0	3.0	45
5AVP4	T1	Swida amomum	silky dogwood	32.2	35.3	3.1	45
5AVP4	T1	Ulmus americana	American elm	0.0	33.0	33.0	45
5AVP4	T1	Vitis riparia	river-bank grape	37.7	38.2	0.5	45
5AVP4	T1	Vitis riparia	river-bank grape	42.0	45.0	3.0	45
5AVP4	T2	Acer negundo	boxelder	24.9	40.0	15.1	50
5AVP4	T2	Acer negundo	boxelder	43.3	49.0	5.7	50
5AVP4	T2	Acer rubrum	red maple	37.0	50.0	13.0	50
5AVP4	T2	Galium palustre	marsh bedstraw	13.0	14.7	1.7	50
5AVP4	T2	Impatiens capensis	jewelweed	5.1	6.2	1.1	50
5AVP4	T2	Impatiens capensis	jewelweed	9.3	10.0	0.7	50
5AVP4	T2	Impatiens capensis	jewelweed	10.9	12.4	1.5	50
5AVP4	T2	Impatiens capensis	jewelweed	21.0	24.2	3.2	50
5AVP4	T2	Impatiens capensis	jewelweed	25.0	27.5	2.5	50
5AVP4	T2	Impatiens capensis	jewelweed	30.5	31.0	0.5	50
5AVP4	T2	Impatiens capensis	jewelweed	42.8	45.0	2.2	50
5AVP4	T2	Lonicera morrowii	Morrow's honeysuckle	0.0	5.3	5.3	50
5AVP4	T2	Lysimachia ciliata	fringed yellow-loosestrife	0.0	1.5	1.5	50
5AVP4	T2	Lysimachia ciliata	fringed yellow-loosestrife	2.7	3.4	0.7	50
5AVP4	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.0	4.6	4.6	50
5AVP4	T2	Lysimachia nummularia	creeping yellow-loosestrife	13.3	50.0	36.7	50
5AVP4	T2	Onoclea sensibilis	sensitive fern	0.0	0.7	0.7	50
5AVP4	T2	Onoclea sensibilis	sensitive fern	2.2	2.6	0.4	50
5AVP4	T2	Onoclea sensibilis	sensitive fern	31.6	33.3	1.7	50
5AVP4	T2	Onoclea sensibilis	sensitive fern	47.4	48.5	1.1	50
5AVP4	T2	Swida amomum	silky dogwood	4.8	11.3	6.5	50
5AVP4	T2	Swida amomum	silky dogwood	17.0	19.0	2.0	50
5AVP4	T2	Swida amomum	silky dogwood	24.3	50.0	25.7	50
5AVP4	T2	Ulmus americana	American elm	9.0	20.0	11.0	50
5AVP4	T3	Impatiens capensis	jewelweed	8.6	9.2	0.6	57
5AVP4	T3	Impatiens capensis	jewelweed	11.2	13.5	2.3	57
5AVP4	T3	Impatiens capensis	jewelweed	14.3	18.5	4.2	57
5AVP4	T3	Impatiens capensis	jewelweed	19.6	19.9	0.3	57
5AVP4	T3	Impatiens capensis	jewelweed	46.7	54.0	7.3	57
5AVP4	T3	Lonicera morrowii	Morrow's honeysuckle	53.0	57.0	4.0	57
5AVP4	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	54.0	54.0	57
5AVP4	T3	Onoclea sensibilis	sensitive fern	0.5	3.4	2.9	57
5AVP4	T3	Onoclea sensibilis	sensitive fern	5.5	5.9	0.4	57
5AVP4	T3	Onoclea sensibilis	sensitive fern	6.6	7.9	1.3	57
5AVP4	T3	Onoclea sensibilis	sensitive fern	8.4	10.0	1.6	57
5AVP4	T3	Osmunda regalis	royal fern	46.8	48.9	2.1	57
5AVP4	T3	Persicaria sp.	smartweed species	31.2	32.4	1.2	57

5AVP4	T3	Persicaria virginiana	jumpseed	1.2	2.9	1.7	57
5AVP4	T3	Rhamnus cathartica	European buckthorn	0.0	1.8	1.8	57
5AVP4	T3	Swida amomum	silky dogwood	48.3	57.0	8.7	57
5AVP4	T3	Vitis riparia	river-bank grape	49.6	57.0	7.4	57
5AVP5	T1	Acer rubrum	red maple	41.2	98.3	57.1	112
5AVP5	T1	Acer rubrum	red maple	69.3	95.5	26.2	112
5AVP5	T1	Acer saccharinum	silver maple	93.0	111.7	18.7	112
5AVP5	T1	Alnus incana	speckled alder	32.8	37.8	5.0	112
5AVP5	T1	Galium palustre	marsh bedstraw	61.0	61.3	0.3	112
5AVP5	T1	Lysimachia nummularia	creeping yellow-loosestrife	65.4	66.5	1.1	112
5AVP5	T1	Lysimachia nummularia	creeping yellow-loosestrife	70.2	70.8	0.6	112
5AVP5	T1	Lysimachia nummularia	creeping yellow-loosestrife	74.0	80.6	6.6	112
5AVP5	T1	Lysimachia nummularia	creeping yellow-loosestrife	82.0	83.6	1.6	112
5AVP5	T1	Lysimachia nummularia	creeping yellow-loosestrife	86.0	87.5	1.5	112
5AVP5	T1	Lysimachia nummularia	creeping yellow-loosestrife	90.0	112.0	22.0	112
5AVP5	T1	Lythrum salicaria	purple loosestrife	41.2	42.0	0.8	112
5AVP5	T1	Onoclea sensibilis	sensitive fern	90.8	91.7	0.9	112
5AVP5	T1	Penthorum sedoides	ditch-stonecrop	105.5	107.6	2.1	112
5AVP5	T1	Persicaria hydropiperoides	false water-pepper smartweed	12.9	36.5	23.6	112
5AVP5	T1	Persicaria hydropiperoides	false water-pepper smartweed	41.2	64.5	23.3	112
5AVP5	T1	Rosa multiflora	rambler rose	0.0	4.8	4.8	112
5AVP5	T1	Rosa multiflora	rambler rose	6.0	7.5	1.5	112
5AVP5	T1	Salix sp.	willow species	19.4	19.9	0.5	112
5AVP5	T1	Salix sp.	willow species	36.5	43.5	7.0	112
5AVP5	T1	Solanum dulcamara	climbing nightshade	10.0	10.5	0.5	112
5AVP5	T1	Swida amomum	silky dogwood	3.4	16.7	13.3	112
5AVP5	T1	Swida amomum	silky dogwood	31.2	50.0	18.8	112
5AVP5	T1	Swida amomum	silky dogwood	56.5	57.0	0.5	112
5AVP5	T1	Swida amomum	silky dogwood	75.2	76.1	0.9	112
5AVP5	T1	Swida amomum	silky dogwood	77.5	102.0	24.5	112
5AVP5	T1	Swida amomum	silky dogwood	111.0	112.0	1.0	112
5AVP5	T1	Thelypteris palustris	marsh fern	85.0	85.7	0.7	112
5AVP5	T1	Ulmus americana	American elm	77.0	93.0	16.0	112
5AVP5	T1	Vitis riparia	river-bank grape	8.5	9.2	0.7	112
5AVP5	T2	Acer rubrum	red maple	0.0	25.8	25.8	110
5AVP5	T2	Acer rubrum	red maple	105.0	110.0	5.0	110
5AVP5	T2	Lysimachia nummularia	creeping yellow-loosestrife	94.2	110.0	15.8	110
5AVP5	T2	Onoclea sensibilis	sensitive fern	0.0	3.2	3.2	110
5AVP5	T2	Onoclea sensibilis	sensitive fern	4.7	7.0	2.3	110
5AVP5	T2	Onoclea sensibilis	sensitive fern	100.0	100.6	0.6	110
5AVP5	T2	Onoclea sensibilis	sensitive fern	108.0	110.0	2.0	110
5AVP5	T2	Penthorum sedoides	ditch-stonecrop	103.3	105.8	2.5	110
5AVP5	T2	Persicaria hydropiperoides	false water-pepper smartweed	19.5	79.5	60.0	110
5AVP5	T2	Rhamnus cathartica	European buckthorn	0.0	7.0	7.0	110
5AVP5	T2	Rhamnus cathartica	European buckthorn	103.4	110.0	6.6	110
5AVP5	T2	Rosa multiflora	rambler rose	1.0	5.8	4.8	110
5AVP5	T2	Salix sp.	willow species	78.6	83.8	5.2	110
5AVP5	T2	Salix sp.	willow species	90.0	96.0	6.0	110
5AVP5	T2	Swida amomum	silky dogwood	8.6	23.3	14.7	110
5AVP5	T2	Swida amomum	silky dogwood	71.5	72.1	0.6	110
5AVP5	T2	Swida amomum	silky dogwood	80.0	102.5	22.5	110
5AVP5	T2	Veronica scutellata	skullcap speedwell	98.2	99.4	1.2	110
5AVP5	T2	Veronica scutellata	skullcap speedwell	100.8	101.2	0.4	110
5AVP5	T3	Acer rubrum	red maple	61.5	84.0	22.5	84
5AVP5	T3	Acer saccharinum	silver maple	9.4	51.0	41.6	84
5AVP5	T3	Euonymus alatus	burning-bush	1.4	2.8	1.4	84
5AVP5	T3	Geum canadense	white avens	2.4	3.1	0.7	84
5AVP5	T3	Impatiens capensis	jewelweed	0.5	0.9	0.4	84
5AVP5	T3	Lysimachia nummularia	creeping yellow-loosestrife	2.0	13.0	11.0	84
5AVP5	T3	Lythrum salicaria	purple loosestrife	7.0	7.7	0.7	84
5AVP5	T3	Onoclea sensibilis	sensitive fern	1.1	1.6	0.5	84
5AVP5	T3	Onoclea sensibilis	sensitive fern	2.1	7.4	5.3	84
5AVP5	T3	Onoclea sensibilis	sensitive fern	83.0	84.0	1.0	84
5AVP5	T3	Persicaria sp.	smartweed species	17.3	18.2	0.9	84
5AVP5	T3	Persicaria sp.	smartweed species	21.4	26.0	4.6	84
5AVP5	T3	Persicaria sp.	smartweed species	36.8	61.0	24.2	84
5AVP5	T3	Persicaria sp.	smartweed species	73.3	75.4	2.1	84
5AVP5	T3	Persicaria sp.	smartweed species	77.7	78.4	0.7	84
5AVP5	T3	Rhamnus cathartica	European buckthorn	0.0	2.0	2.0	84
5AVP5	T3	Rosa multiflora	multiflora rose	2.7	6.4	3.7	84
5AVP5	T3	Rosa multiflora	multiflora rose	77.2	84.0	6.8	84
5AVP5	T3	Salix sp.	willow species	34.3	38.3	4.0	84
5AVP5	T3	Salix sp.	willow species	43.6	44.6	1.0	84
5AVP5	T3	Salix sp.	willow species	48.3	58.4	10.1	84
5AVP5	T3	Solanum carolinense	Carolina nightshade	50.7	61.5	10.8	84
5AVP5	T3	Swida amomum	silky dogwood	61.6	76.0	14.4	84
5AVP5	T3	Symplocarpus foetidus	skunk-cabbage	1.0	1.9	0.9	84
5AVP5	T3	Vitis riparia	river-bank grape	1.0	14.0	13.0	84
5AVP5	T3	Vitis riparia	river-bank grape	16.0	34.0	18.0	84
5AVP52	T1	Acer saccharinum	silver maple	4.0	47.0	43.0	74
5AVP52	T1	Boehmeria cylindrica	small-spiked fallse nettle	16.0	17.1	1.1	74
5AVP52	T1	Boehmeria cylindrica	small-spiked fallse nettle	18.9	20.0	1.1	74
5AVP52	T1	Boehmeria cylindrica	small-spiked fallse nettle	24.3	24.8	0.5	74
5AVP52	T1	Echinocystis lobata	wild cucumber	22.7	23.0	0.3	74
5AVP52	T1	Iris pseudacorus	yellow iris	11.4	13.0	1.6	74
5AVP52	T1	Lysimachia nummularia	creeping yellow-loosestrife	13.2	15.0	1.8	74
5AVP52	T1	Persicaria hydropiper	water-pepper smartweed	5.4	7.6	2.2	74
5AVP52	T1	Phalaris arundinacea	reed canary grass	0.0	11.4	11.4	74
5AVP52	T1	Phalaris arundinacea	reed canary grass	12.4	74.0	61.6	74
5AVP52	T1	Swida amomum	silky dogwood	0.0	1.5	1.5	74
5AVP52	T1	Symplocarpus foetidus	skunk-cabbage	17.6	18.0	0.4	74
5AVP52	T2	Acer negundo	boxelder	29.8	36.0	6.2	52
5AVP52	T2	Echinocystis lobata	wild cucumber	10.1	11.3	1.2	52
5AVP52	T2	Galium aparine	cleavers	0.0	0.8	0.8	52
5AVP52	T2	Galium asprellum	rough bedstraw	4.2	6.2	2.0	52
5AVP52	T2	Impatiens capensis	jewelweed	6.6	9.5	2.9	52
5AVP52	T2	Laportea canadensis	Canada wood-nettle	0.0	1.1	1.1	52
5AVP52	T2	Lysimachia ciliata	fringed yellow-loosestrife	3.5	5.1	1.6	52
5AVP52	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.0	8.3	8.3	52
5AVP52	T2	Lythrum salicaria	purple loosestrife	4.8	5.3	0.5	52
5AVP52	T2	Lythrum salicaria	purple loosestrife	13.7	15.3	1.6	52
5AVP52	T2	Myosotis scorpioides	true forget-me-not	9.5	13.6	4.1	52
5AVP52	T2	Persicaria sagittata	arrow-leaved tearthumb	9.3	12.0	2.7	52
5AVP52	T2	Phalaris arundinacea	reed canary grass	12.0	52.0	40.0	52
5AVP52	T2	Rudbeckia laciniata	green-headed coneflower	2.4	3.9	1.5	52
5AVP52	T2	Swida amomum	silky dogwood	0.0	6.3	6.3	52
5AVP52	T2	Symplocarpus foetidus	skunk-cabbage	49.0	51.1	2.1	52
5AVP55	T1	Iris pseudacorus	yellow iris	23.0	25.4	2.4	97
5AVP55	T1	Iris pseudacorus	yellow iris	69.3	73.6	4.3	97
5AVP55	T1	Lonicera morrowii	Morrow's honeysuckle	40.7	50.2	9.5	97
5AVP55	T1	Lysimachia nummularia	creeping yellow-loosestrife	86.3	97.0	10.7	97
5AVP55	T1	Lythrum salicaria	purple loosestrife	81.5	86.5	5.0	97
5AVP55	T1	Myosotis scorpioides	true forget-me-not	92.4	96.0	3.6	97
5AVP55	T1	Phalaris arundinacea	reed canary grass	0.0	43.0	43.0	97
5AVP55	T1	Phalaris arundinacea	reed canary grass	48.0	79.3	31.3	97
5AVP55	T1	Pilea pumila	Canada clearweed	43.5	46.2	2.7	97
5AVP55	T1	Rudbeckia laciniata	green-headed coneflower	2.4	3.0	0.6	97
5AVP55	T1	Sparganium eurycarpum	great bur-reed	26.9	35.4	8.5	97
5AVP55	T1	Swida amomum	silky dogwood	78.5	83.4	4.9	97
5AVP55	T1	Swida amomum	silky dogwood	87.5	97.0	9.5	97
5AVP55	T2	Acer negundo	boxelder	92.5	94.0	1.5	94

5AVP55	T2	Carpinus caroliniana	American hornbeam	0.0	9.0	9.0	94
5AVP55	T2	Galium asprellum	rough bedstraw	86.0	94.0	8.0	94
5AVP55	T2	Impatiens capensis	jewelweed	4.4	4.7	0.3	94
5AVP55	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.0	7.2	7.2	94
5AVP55	T2	Lythrum salicaria	purple loosestrife	1.9	4.8	2.9	94
5AVP55	T2	Lythrum salicaria	purple loosestrife	55.2	59.0	3.8	94
5AVP55	T2	Lythrum salicaria	purple loosestrife	62.9	63.8	0.9	94
5AVP55	T2	Lythrum salicaria	purple loosestrife	74.3	94.0	19.7	94
5AVP55	T2	Onoclea sensibilis	sensitive fern	0.0	0.5	0.5	94
5AVP55	T2	Persicaria hydropiperoides	false water-pepper smartweed	4.1	5.6	1.5	94
5AVP55	T2	Persicaria hydropiperoides	false water-pepper smartweed	24.7	28.3	3.6	94
5AVP55	T2	Phalaris arundinacea	reed canary grass	5.6	25.3	19.7	94
5AVP55	T2	Phalaris arundinacea	reed canary grass	29.2	55.5	26.3	94
5AVP55	T2	Phalaris arundinacea	reed canary grass	59.0	84.6	25.6	94
5AVP55	T2	Sparganium eurycarpum	great bur-reed	15.5	22.3	6.8	94
5AVP55	T2	Sparganium eurycarpum	great bur-reed	28.6	35.4	6.8	94
5AVP55	T2	Sparganium eurycarpum	great bur-reed	42.9	68.4	25.5	94
5AVP55	T3	Carex retrorsa	retrose sedge	0.0	1.3	1.3	70
5AVP55	T3	Carex retrorsa	retrose sedge	2.6	3.8	1.2	70
5AVP55	T3	Carpinus caroliniana	American hornbeam	0.0	9.5	9.5	70
5AVP55	T3	Equisetum fluviatile	river horsetail	2.2	7.2	5.0	70
5AVP55	T3	Equisetum fluviatile	river horsetail	49.0	50.0	1.0	70
5AVP55	T3	Ludwigia palustris	common water-primrose	46.5	48.1	1.6	70
5AVP55	T3	Lysimachia nummularia	creeping yellow-loosestrife	1.2	4.2	3.0	70
5AVP55	T3	Lythrum salicaria	purple loosestrife	5.0	6.3	1.3	70
5AVP55	T3	Lythrum salicaria	purple loosestrife	50.6	52.5	1.9	70
5AVP55	T3	Myosotis scorpioides	true forget-me-not	1.4	2.6	1.2	70
5AVP55	T3	Onoclea sensibilis	sensitive fern	0.0	2.2	2.2	70
5AVP55	T3	Persicaria hydropiperoides	false water-pepper smartweed	4.9	35.3	30.4	70
5AVP55	T3	Persicaria hydropiperoides	false water-pepper smartweed	46.6	49.5	2.9	70
5AVP55	T3	Phalaris arundinacea	reed canary grass	34.4	47.1	12.7	70
5AVP55	T3	Salix bebbiana	Bebb's willow	54.5	58.0	3.5	70
5AVP55	T3	Sparganium eurycarpum	great bur-reed	38.8	46.0	7.2	70
5AVP55	T3	Sparganium eurycarpum	great bur-reed	49.5	51.0	1.5	70
5AVP55	T3	Swida amomum	silky dogwood	52.2	70.0	17.8	70
5AVP55	T3	Vitis riparia	river-bank grape	10.0	16.0	6.0	70
5AVP57	T1	Acer saccharinum	silver maple	0.0	112.0	112.0	112
5AVP57	T1	Cinna arundinacea	sweet wood-reed	17.4	19.7	2.3	112
5AVP57	T1	Impatiens capensis	jewelweed	7.4	7.8	0.4	112
5AVP57	T1	Impatiens capensis	jewelweed	107.0	108.0	1.0	112
5AVP57	T1	Impatiens capensis	jewelweed	109.6	111.0	1.4	112
5AVP57	T1	Laportea canadensis	Canada wood-nettle	1.3	22.5	21.2	112
5AVP57	T1	Lycopus virginicus	Virginia water-horehound	26.5	27.0	0.5	112
5AVP57	T1	Lycopus virginicus	Virginia water-horehound	27.9	29.2	1.3	112
5AVP57	T1	Lycopus virginicus	Virginia water-horehound	32.5	33.3	0.8	112
5AVP57	T1	Lycopus virginicus	Virginia water-horehound	33.9	34.2	0.3	112
5AVP57	T1	Lysimachia nummularia	creeping yellow-loosestrife	11.0	13.2	2.2	112
5AVP57	T1	Lysimachia nummularia	creeping yellow-loosestrife	26.7	40.3	13.6	112
5AVP57	T1	Lysimachia terrestris	swamp yellow-loosestrife	36.8	37.9	1.1	112
5AVP57	T1	Lysimachia terrestris	swamp yellow-loosestrife	40.7	41.5	0.8	112
5AVP57	T1	Matteuccia struthiopteris	ostrich fern	0.0	5.8	5.8	112
5AVP57	T1	Matteuccia struthiopteris	ostrich fern	8.7	10.4	1.7	112
5AVP57	T1	Onoclea sensibilis	sensitive fern	22.2	23.5	1.3	112
5AVP57	T1	Onoclea sensibilis	sensitive fern	27.0	32.3	5.3	112
5AVP57	T1	Onoclea sensibilis	sensitive fern	45.8	46.7	0.9	112
5AVP57	T1	Onoclea sensibilis	sensitive fern	99.5	101.0	1.5	112
5AVP57	T1	Onoclea sensibilis	sensitive fern	102.0	103.3	1.3	112
5AVP57	T1	Pilea pumila	Canada clearweed	97.2	99.0	1.8	112
5AVP57	T1	Scutellaria lateriflora	mad dog skullcap	36.8	37.9	1.1	112
5AVP57	T1	Solidago canadensis	Canada goldenrod	21.9	23.0	1.1	112
5AVP57	T1	Solidago gigantea	smooth goldenrod	28.0	28.8	0.8	112
5AVP57	T1	Swida amomum	silky dogwood	98.4	98.8	0.4	112
5AVP57	T1	Swida amomum	silky dogwood	102.0	110.5	8.5	112
5AVP57	T1	Viola sp.	violet species	1.1	4.0	2.9	112
5AVP57	T1	Viola sp.	violet species	5.4	6.9	1.5	112
5AVP57	T1	Viola sp.	violet species	14.8	15.7	0.9	112
5AVP57	T1	Viola sp.	violet species	26.7	27.2	0.5	112
5AVP57	T2	Acer saccharinum	silver maple	0.0	109.0	109.0	109
5AVP57	T2	Aegopodium podagraria	bishop's goutweed	101.0	109.0	8.0	109
5AVP57	T2	Cryptotaenia canadensis	Canada honewort	76.3	78.8	2.5	109
5AVP57	T2	Cryptotaenia canadensis	Canada honewort	86.6	87.5	0.9	109
5AVP57	T2	Cryptotaenia canadensis	Canada honewort	88.3	90.8	2.5	109
5AVP57	T2	Cryptotaenia canadensis	Canada honewort	92.2	92.8	0.6	109
5AVP57	T2	Impatiens capensis	jewelweed	3.0	3.4	0.4	109
5AVP57	T2	Impatiens capensis	jewelweed	9.9	11.0	1.1	109
5AVP57	T2	Laportea canadensis	Canada wood-nettle	63.7	67.5	3.8	109
5AVP57	T2	Laportea canadensis	Canada wood-nettle	68.3	71.4	3.1	109
5AVP57	T2	Laportea canadensis	Canada wood-nettle	72.7	77.3	4.6	109
5AVP57	T2	Laportea canadensis	Canada wood-nettle	82.7	87.7	5.0	109
5AVP57	T2	Laportea canadensis	Canada wood-nettle	100.4	104.3	3.9	109
5AVP57	T2	Lysimachia nummularia	creeping yellow-loosestrife	60.6	65.0	4.4	109
5AVP57	T2	Lysimachia nummularia	creeping yellow-loosestrife	71.0	72.6	1.6	109
5AVP57	T2	Matteuccia struthiopteris	ostrich fern	68.0	72.5	4.5	109
5AVP57	T2	Matteuccia struthiopteris	ostrich fern	78.5	84.2	5.7	109
5AVP57	T2	Matteuccia struthiopteris	ostrich fern	88.4	90.2	1.8	109
5AVP57	T2	Matteuccia struthiopteris	ostrich fern	95.0	96.1	1.1	109
5AVP57	T2	Matteuccia struthiopteris	ostrich fern	97.2	104.6	7.4	109
5AVP57	T2	Pilea pumila	Canada clearweed	61.0	61.5	0.5	109
5AVP57	T2	Sicyos angulatus	one-seeded bur-cucumber	90.8	91.6	0.8	109
5AVP57	T2	Solidago canadensis	Canada goldenrod	2.0	6.9	4.9	109
5AVP57	T2	Solidago canadensis	Canada goldenrod	7.8	8.2	0.4	109
5AVP57	T2	Swida amomum	silky dogwood	0.0	6.5	6.5	109
5AVP57	T2	Viola sororia	Woolly blue violet	64.6	66.2	1.6	109
5AVP57	T2	Viola sororia	Woolly blue violet	79.0	81.0	2.0	109
5AVP57	T2	Viola sororia	Woolly blue violet	82.8	83.2	0.4	109
5AVP57	T2	Viola sororia	Woolly blue violet	90.6	91.3	0.7	109
5AVP57	T2	Viola sororia	Woolly blue violet	93.5	94.1	0.6	109
5AVP57	T3	Acer saccharinum	silver maple	14.0	65.0	51.0	65
5AVP57	T3	Aegopodium podagraria	bishop's goutweed	58.7	61.1	2.4	65
5AVP57	T3	Bidens frondosa	Devil's beggar-ticks	7.3	8.7	1.4	65
5AVP57	T3	Bidens frondosa	Devil's beggar-ticks	29.6	30.0	0.4	65
5AVP57	T3	Carpinus caroliniana	American hornbeam	0.0	22.6	22.6	65
5AVP57	T3	Fallopia japonica	Japanese knotweed	59.1	65.0	5.9	65
5AVP57	T3	Fraxinus americana	white ash	0.0	8.0	8.0	65
5AVP57	T3	Geum canadense	white avens	2.8	3.8	1.0	65
5AVP57	T3	Glechoma hederacea	Gill-over-the-ground	52.4	65.0	12.6	65
5AVP57	T3	Impatiens capensis	jewelweed	1.1	2.0	0.9	65
5AVP57	T3	Impatiens capensis	jewelweed	4.5	4.9	0.4	65
5AVP57	T3	Impatiens capensis	jewelweed	6.1	7.0	0.9	65
5AVP57	T3	Impatiens capensis	jewelweed	56.1	56.7	0.6	65
5AVP57	T3	Impatiens capensis	jewelweed	57.7	58.4	0.7	65
5AVP57	T3	Lysimachia nummularia	creeping yellow-loosestrife	2.1	9.0	6.9	65
5AVP57	T3	Lysimachia nummularia	creeping yellow-loosestrife	31.7	32.1	0.4	65
5AVP57	T3	Lysimachia nummularia	creeping yellow-loosestrife	34.5	35.0	0.5	65
5AVP57	T3	Lysimachia nummularia	creeping yellow-loosestrife	50.3	65.0	14.7	65
5AVP57	T3	Lysimachia terrestris	swamp yellow-loosestrife	22.6	23.5	0.9	65
5AVP57	T3	Lysimachia terrestris	swamp yellow-loosestrife	53.4	53.8	0.4	65
5AVP57	T3	Persicaria virginiana	jumpseed	0.2	1.0	0.8	65
5AVP57	T3	Sicyos angulatus	one-seeded bur-cucumber	20.0	20.3	0.3	65
5AVP61	T1	Acer rubrum	red maple	0.0	17.0	17.0	38
5AVP61	T1	Acer saccharum	sugar maple	0.0	4.0	4.0	38

5AVP61	T1	Acer saccharum	sugar maple	28.7	38.0	9.3	38
5AVP61	T1	Carex lupulina	hop sedge	2.0	2.3	0.3	38
5AVP61	T1	Carex lupulina	hop sedge	3.3	7.5	4.2	38
5AVP61	T1	Carex lupulina	hop sedge	10.0	13.2	3.2	38
5AVP61	T1	Carex lupulina	hop sedge	19.7	21.0	1.3	38
5AVP61	T1	Carex lupulina	hop sedge	24.0	28.7	4.7	38
5AVP61	T1	Cinna arundinacea	wood-reed grass	4.4	4.7	0.3	38
5AVP61	T1	Cinna arundinacea	wood-reed grass	31.9	33.7	1.8	38
5AVP61	T1	Fraxinus americana	white ash	0.0	5.5	5.5	38
5AVP61	T1	Fraxinus americana	white ash	23.0	38.0	15.0	38
5AVP61	T1	Impatiens capensis	jewelweed	0.0	0.3	0.3	38
5AVP61	T1	Impatiens capensis	jewelweed	1.0	1.8	0.8	38
5AVP61	T1	Impatiens capensis	jewelweed	4.9	5.2	0.3	38
5AVP61	T1	Impatiens capensis	jewelweed	7.2	7.7	0.5	38
5AVP61	T1	Impatiens capensis	jewelweed	36.3	36.9	0.6	38
5AVP61	T1	Lysimachia nummularia	creeping yellow-loosestrife	21.0	36.0	15.0	38
5AVP61	T1	Onoclea sensibilis	sensitive fern	31.1	31.8	0.7	38
5AVP61	T1	Onoclea sensibilis	sensitive fern	36.0	36.5	0.5	38
5AVP61	T1	Persicaria virginiana	jumpseed	34.8	36.0	1.2	38
5AVP61	T1	Toxicodendron radicans	poison-ivy	34.2	35.4	1.2	38
5AVP61	T1	Toxicodendron radicans	poison-ivy	36.6	38.0	1.4	38
5AVP61	T2	Acer rubrum	red maple	0.0	10.5	10.5	47
5AVP61	T2	Acer saccharinum	silver maple	0.0	23.0	23.0	47
5AVP61	T2	Acer saccharinum	silver maple	27.0	37.0	10.0	47
5AVP61	T2	Acer saccharum	sugar maple	43.5	47.0	3.5	47
5AVP61	T2	Carex lupulina	hop sedge	5.7	15.4	9.7	47
5AVP61	T2	Carex lupulina	hop sedge	16.2	16.9	0.7	47
5AVP61	T2	Carex lupulina	hop sedge	19.4	20.8	1.4	47
5AVP61	T2	Carex lupulina	hop sedge	22.7	23.2	0.5	47
5AVP61	T2	Carex lupulina	hop sedge	34.6	40.6	6.0	47
5AVP61	T2	Carex lupulina	hop sedge	42.7	43.5	0.8	47
5AVP61	T2	Carex lupulina	hop sedge	44.9	45.6	0.7	47
5AVP61	T2	Carpinus caroliniana	American hornbeam	34.7	44.2	9.5	47
5AVP61	T2	Cicuta sp.	water-hemlock species	21.0	22.3	1.3	47
5AVP61	T2	Fraxinus americana	white ash	22.3	47.0	24.7	47
5AVP61	T2	Hamamelis virginiana	American witch-hazel	41.9	47.0	5.1	47
5AVP61	T2	Impatiens capensis	jewelweed	0.6	0.9	0.3	47
5AVP61	T2	Impatiens capensis	jewelweed	46.2	46.4	0.2	47
5AVP61	T2	Iris pseudacorus	yellow iris	9.7	11.5	1.8	47
5AVP61	T2	Lysimachia nummularia	creeping yellow-loosestrife	0.8	15.3	14.5	47
5AVP61	T2	Lysimachia nummularia	creeping yellow-loosestrife	18.8	20.2	1.4	47
5AVP61	T2	Lysimachia nummularia	creeping yellow-loosestrife	35.8	42.9	7.1	47
5AVP61	T2	Onoclea sensibilis	sensitive fern	1.1	1.4	0.3	47
5AVP61	T2	Onoclea sensibilis	sensitive fern	13.2	13.5	0.3	47
5AVP61	T2	Onoclea sensibilis	sensitive fern	14.5	14.8	0.3	47
5AVP61	T2	Prunus serotina	black cherry	44.0	47.0	3.0	47
5AVP61	T2	Thelypteris palustris	marsh fern	4.6	5.3	0.7	47
5AVP61	T2	Thelypteris palustris	marsh fern	16.6	17.2	0.6	47
5AVP61	T2	Toxicodendron radicans	poison-ivy	1.3	2.2	0.9	47
5AVP61	T2	Ulmus americana	American elm	2.3	2.9	0.6	47
5AVP61	T3	Acer rubrum	red maple	0.0	19.8	19.8	55
5AVP61	T3	Acer rubrum	red maple	49.0	55.0	6.0	55
5AVP61	T3	Asteraceae	aster species	0.0	0.5	0.5	55
5AVP61	T3	Asteraceae	aster species	2.5	2.8	0.3	55
5AVP61	T3	Asteraceae	aster species	3.4	4.7	1.3	55
5AVP61	T3	Bidens frondosa	Devil's beggar-ticks	10.1	10.6	0.5	55
5AVP61	T3	Bidens frondosa	Devil's beggar-ticks	13.1	13.3	0.2	55
5AVP61	T3	Bidens frondosa	Devil's beggar-ticks	32.6	33.6	1.0	55
5AVP61	T3	Bidens frondosa	Devil's beggar-ticks	39.2	39.9	0.7	55
5AVP61	T3	Bidens frondosa	Devil's beggar-ticks	41.4	45.3	3.9	55
5AVP61	T3	Carex crinita	fringed sedge	7.4	9.2	1.8	55
5AVP61	T3	Carex lupulina	hop sedge	0.8	3.0	2.2	55
5AVP61	T3	Carex lupulina	hop sedge	4.5	5.5	1.0	55
5AVP61	T3	Carex lupulina	hop sedge	47.4	49.5	2.1	55
5AVP61	T3	Carex lurida	sallow sedge	44.8	48.6	3.8	55
5AVP61	T3	Carex lurida	sallow sedge	49.7	50.3	0.6	55
5AVP61	T3	Cephalanthus occidentalis	common buttonbush	14.1	27.0	12.9	55
5AVP61	T3	Iris pseudacorus	yellow iris	50.0	51.5	1.5	55
5AVP61	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	8.1	8.1	55
5AVP61	T3	Lysimachia nummularia	creeping yellow-loosestrife	45.0	55.0	10.0	55
5AVP61	T3	Osmundastrum cinnamomeum	cinnamon fern	54.0	55.0	1.0	55
5AVP61	T3	Scutellaria lateriflora	mad dog skullcap	51.2	51.7	0.5	55
5AVP61	T3	Scutellaria lateriflora	mad dog skullcap	53.5	54.1	0.6	55
5AVP61	T3	Swida amomum	silky dogwood	51.5	52.7	1.2	55
5AVP61	T4	Acer saccharum	sugar maple	27.4	54.0	26.6	54
5AVP61	T4	Carex lupulina	hop sedge	1.3	2.3	1.0	54
5AVP61	T4	Carex lupulina	hop sedge	5.2	7.3	2.1	54
5AVP61	T4	Carpinus caroliniana	American hornbeam	36.7	54.0	17.3	54
5AVP61	T4	Fraxinus americana	white ash	22.7	54.0	31.3	54
5AVP61	T4	Ilex verticillata	common winterberry	28.2	36.3	8.1	54
5AVP61	T4	Ilex verticillata	common winterberry	37.6	41.3	3.7	54
5AVP61	T4	Lysimachia nummularia	creeping yellow-loosestrife	0.0	10.7	10.7	54
5AVP61	T4	Onoclea sensibilis	sensitive fern	0.0	1.5	1.5	54
5AVP61	T4	Swida amomum	silky dogwood	4.9	10.8	5.9	54
5AVP61	T4	Vitis riparia	river-bank grape	0.0	11.2	11.2	54
5AVP7	T1	Acer saccharinum	silver maple	12.2	22.0	9.8	101
5AVP7	T1	Acer saccharinum	silver maple	28.5	91.2	62.7	101
5AVP7	T1	Impatiens capensis	jewelweed	1.8	2.4	0.6	101
5AVP7	T1	Impatiens capensis	jewelweed	6.6	8.2	1.6	101
5AVP7	T1	Impatiens capensis	jewelweed	10.8	13.3	2.5	101
5AVP7	T1	Lysimachia nummularia	creeping yellow-loosestrife	0.0	37.0	37.0	101
5AVP7	T1	Lysimachia nummularia	creeping yellow-loosestrife	78.0	101.0	23.0	101
5AVP7	T1	Lythrum sp.	loosestrife sp.	95.0	95.5	0.5	101
5AVP7	T1	Lythrum sp.	loosestrife sp.	98.0	100.0	2.0	101
5AVP7	T1	Onoclea sensibilis	sensitive fern	12.1	13.7	1.6	101
5AVP7	T1	Onoclea sensibilis	sensitive fern	14.2	15.7	1.5	101
5AVP7	T1	Onoclea sensibilis	sensitive fern	17.8	19.9	2.1	101
5AVP7	T1	Persicaria sp.	smartweed species	78.8	79.7	0.9	101
5AVP7	T1	Persicaria sp.	smartweed species	92.2	93.2	1.0	101
5AVP7	T1	Rosa multiflora	multiflora rose	98.0	101.0	3.0	101
5AVP7	T1	Salix sp.	willow species	5.0	18.0	13.0	101
5AVP7	T1	Scirpus cyperinus	common woolsedge	84.0	85.0	1.0	101
5AVP7	T1	Scirpus cyperinus	common woolsedge	86.3	88.8	2.5	101
5AVP7	T1	Scirpus cyperinus	common woolsedge	92.7	96.0	3.3	101
5AVP7	T1	Swida amomum	silky dogwood	0.0	1.2	1.2	101
5AVP7	T1	Vitis riparia	river-bank grape	0.0	5.4	5.4	101
5AVP7	T1	Vitis riparia	river-bank grape	8.0	9.5	1.5	101
5AVP7	T2	Acer saccharinum	silver maple	21.0	67.5	46.5	75
5AVP7	T2	Acer saccharinum	silver maple	21.3	31.5	10.2	75
5AVP7	T2	Crataegus sp.	hawthorn sp.	0.0	7.5	7.5	75
5AVP7	T2	Echinocystis lobata	wild cucumber	47.5	48.5	1.0	75
5AVP7	T2	Galium sp.	bedstraw sp.	9.0	10.2	1.2	75
5AVP7	T2	Galium sp.	bedstraw sp.	13.5	16.7	3.2	75
5AVP7	T2	Lonicera morrowii	Morrow's honeysuckle	69.3	75.0	5.7	75
5AVP7	T2	Lysimachia nummularia	creeping yellow-loosestrife	8.0	24.8	16.8	75
5AVP7	T2	Lysimachia nummularia	creeping yellow-loosestrife	67.0	71.2	4.2	75
5AVP7	T2	Onoclea sensibilis	sensitive fern	67.5	69.5	2.0	75
5AVP7	T2	Scutellaria lateriflora	blue skull-cap	8.2	10.6	2.4	75
5AVP7	T2	Scutellaria lateriflora	blue skull-cap	11.4	16.2	4.8	75
5AVP7	T2	Scutellaria lateriflora	blue skull-cap	17.9	19.4	1.5	75
5AVP7	T2	Swida amomum	silky dogwood	36.4	50.0	13.6	75

5AVP7	T2	Swida amomum	silky dogwood	60.0	61.3	1.3	75
5AVP7	T2	Swida amomum	silky dogwood	63.2	65.4	2.2	75
5AVP7	T2	Vitis riparia	river-bank grape	0.0	8.2	8.2	75
5AVP7	T2	Vitis riparia	river-bank grape	62.3	66.7	4.4	75
5AVP7	T2	Vitis riparia	river-bank grape	70.7	72.3	1.6	75
5AVP7	T3	Acer negundo	boxelder	8.5	17.0	8.5	90
5AVP7	T3	Acer negundo	boxelder	21.4	26.6	5.2	90
5AVP7	T3	Acer negundo	boxelder	32.0	47.0	15.0	90
5AVP7	T3	Acer saccharinum	silver maple	19.8	20.6	0.8	90
5AVP7	T3	Lysimachia ciliata	fringed yellow-loosestrife	5.0	13.5	8.5	90
5AVP7	T3	Lysimachia nummularia	creeping yellow-loosestrife	0.0	18.5	18.5	90
5AVP7	T3	Lysimachia nummularia	creeping yellow-loosestrife	21.8	24.0	2.2	90
5AVP7	T3	Onoclea sensibilis	sensitive fern	0.0	2.6	2.6	90
5AVP7	T3	Populus deltoides	eastern cottonwood	0.0	74.0	74.0	90
5AVP7	T3	Rhamnus cathartica	European buckthorn	0.0	10.2	10.2	90
5AVP7	T3	Swida amomum	silky dogwood	13.0	16.4	3.4	90
5AVP7	T3	Swida amomum	silky dogwood	47.0	90.0	43.0	90
5AVP7	T3	Viburnum sp.	Viburnum species	0.0	13.2	13.2	90
5AVP7	T3	Viburnum sp.	Viburnum species	27.0	33.5	6.5	90
5AVP7	T3	Vitis riparia	river-bank grape	6.0	10.4	4.4	90
5AVP7	T3	Vitis riparia	river-bank grape	34.3	37.9	3.6	90
5AVP7	T3	Vitis riparia	river-bank grape	80.5	84.5	4.0	90
5AVP9	T1	Acer negundo	boxelder			9.3	137
5AVP9	T1	Acer negundo	boxelder			44.1	137
5AVP9	T1	Acer rubrum	red maple			28.2	137
5AVP9	T1	Cornus amomum	silky dogwood			17.6	137
5AVP9	T1	Cornus amomum	silky dogwood			100.8	137
5AVP9	T1	Lysimachia nummularia	creeping yellow-loosestrife			6.9	137
5AVP9	T1	Lysimachia nummularia	creeping yellow-loosestrife			25	137
5AVP9	T1	Vitis riparia	river-bank grape			9.3	137
5AVP9	T2	Cornus amomum	silky dogwood			77	77
5AVP9	T3	Acer negundo	boxelder			8.3	130
5AVP9	T3	Acer negundo	boxelder			25	130
5AVP9	T3	Cornus amomum	silky dogwood			18	130
5AVP9	T3	Cornus amomum	silky dogwood			77.1	130
5AVP9	T3	Galium palustre	marsh bedstraw			9	130
5AVP9	T3	Lysimachia nummularia	creeping yellow-loosestrife			9	130
5AVP9	T3	Lysimachia nummularia	creeping yellow-loosestrife			20	130
5AVP9	T3	Onoclea sensibilis	sensitive fern			6	130
5AVP9	T3	Salix sp	willow species			18	130

Pool	Common Name	Scientific Name	Total Percent Cover within Pool Transects	Invasive
		Amendment		
5A-VP-12	Ash-Leaf Maple	Acer negundo	6.2%	
	Silver Maple	Acer saccharinum	49.6%	
	American Water-Plantain	Alisma subcordatum	34.4%	
	Devil's-Pitchfork	Bidens frondosa	3.7%	
	Hop Sedge	Carex lupulina	2.3%	
	American Hornbeam	Carpinus caroliniana	1.9%	
	Cock-Spur Hawthorn	Crataegus crus-galli	11.0%	
	Spike Rush	Eleocharis sp.	5.3%	
	Common Marsh Bedstraw	Galium palustre	1.4%	
	Bedstraw	Galium sp.	1.4%	
	Pale-Yellow Iris	Iris pseudacorus	1.9%	
	Rice Cut Grass	Leersia oryzoides	2.6%	
	Creeping-Jenny	Lysimachia nummularia	17.7%	Invasive[A]
	Purple Loosestrife	Lythrum salicaria	0.4%	Invasive[A,B,C]
	True Forget-Me-Not	Myosotis scorpioides	1.8%	Invasive[D]
	Sensitive Fern	Onoclea sensibilis	2.9%	
	Cinnamon Fern	Osmundastrum cinnamomeum	0.8%	
	Ditch-Stonecrop	Penthorum sedoides	1.7%	
	Mild Water-Pepper	Persicaria hydropiper	11.8%	
	Pickerelweed	Pontederia cordata	1.0%	
5A-VP-15	Silver Maple	Acer saccharinum	20.6%	
	American Water-Plantain	Alisma subcordatum	0.8%	
	Devil's-Pitchfork	Bidens frondosa	1.5%	
	Hop Sedge	Carex lupulina	2.4%	
	Shallow Sedge	Carex lurida	2.3%	
	Sedge	Carex sp.	1.2%	
	Bulblet-Bearing Water-Hemlock	Cicuta bulbifera	0.8%	
	Canada Thistle	Cirsium arvense	1.0%	
	Cock-Spur Hawthorn	Crataegus crus-galli	7.1%	
	Spike Rush	Eleocharis sp.	9.9%	
	Avens	Geum sp.	0.7%	
	Pale-Yellow Iris	Iris pseudacorus	2.8%	
	White Walnut	Juglans cinerea	7.1%	
	Rice Cut Grass	Leersia oryzoides	1.4%	
	Fringed Yellow-Loosestrife	Lysimachia ciliata	1.0%	
	Creeping-Jenny	Lysimachia nummularia	49.0%	Invasive[A]
	Swampcandles	Lysimachia terrestris	1.2%	
	Purple Loosestrife	Lythrum salicaria	8.8%	Invasive[A,B,C]
	True Forget-Me-Not	Myosotis scorpioides	9.5%	Invasive[D]
	Sensitive Fern	Onoclea sensibilis	10.1%	
	Ditch-Stonecrop	Penthorum sedoides	4.0%	
	Swamp Smartweed	Persicaria hydropiperoides	19.1%	

	Arrow-Leaf Tearthumb	Persicaria sagittata	1.6%	
	Eastern Cottonwood	Populus deltoides	7.6%	
	Rambler Rose	Rosa multiflora	1.1%	Invasive[A,B,C]
	Bur-reed	Sparganium sp.	2.2%	
	Silky dogwood	Swida amomum	7.3%	
	American Elm	Ulmus americana	12.9%	
	River-Bank Grape	Vitis riparia	3.8%	
	Rough Cockleburr	Xanthium strumarium	14.8%	Non-native
5A-VP-22	Silver Maple	Acer saccharinum	34.3%	
	Sugar Maple	Acer saccharum	17.5%	
	Devil's-Pitchfork	Bidens frondosa	2.2%	
	Fringed Sedge	Carex crinita	0.6%	
	Hop Sedge	Carex lupulina	1.5%	
	Retrorse Sedge	Carex retrorsa	0.6%	
	Sedge	Carex sp.	0.1%	
	Common Buttonbush	Cephalanthus occidentalis	3.9%	
	American Burnweed	Erechtites hieraciifolius	2.3%	
	Rough Bedstraw	Galium asprellum	8.4%	
	Spotted Touch-Me-Not	Impatiens capensis	1.2%	
	Pale-Yellow Iris	Iris pseudacorus	0.4%	
	Harlequin Blueflag	Iris versicolor	0.1%	
	Creeping-Jenny	Lysimachia nummularia	48.4%	Invasive[A]
	Swampcandles	Lysimachia terrestris	1.1%	
	Sensitive Fern	Onoclea sensibilis	7.5%	
	Mild Water-Pepper	Persicaria hydropiper	2.1%	
	Pinkweed	Persicaria pensylvanica	0.7%	
	Arrow-Leaf Tearthumb	Persicaria sagittata	0.4%	
	Jumpseed	Persicaria virginiana	0.2%	
	Reed Canary Grass	Phalaris arundinacea	25.1%	Invasive[A,B,C]
	Choke Cherry	Prunus virginiana	1.0%	
	European Buckthorn	Rhamnus cathartica	2.0%	Invasive[A,B,C]
	Soft-Stem Club-Rush	Schoenoplectus tabernaemontani	0.2%	
	Cottongrass Bulrush	Scirpus cyperinus	1.0%	
	Hemlock Water-Parsnip	Sium suave	0.1%	
	Broad-Fruit Burr-Reed	Sparganium eurycarpum	2.7%	
	Silky dogwood	Swida amomum	22.9%	
	River-Bank Grape	Vitis riparia	0.6%	
5A-VP-27	Spotted Touch-Me-Not	Impatiens capensis	0.2%	
	Morrow's Honeysuckle	Lonicera morrowii	8.3%	Invasive[A,B]
	Creeping-Jenny	Lysimachia nummularia	61.1%	Invasive[A]
	Sensitive Fern	Onoclea sensibilis	9.4%	
	Japanese Mountain-Spurge	Pachysandra terminalis	21.8%	Non-native
	Jumpseed	Persicaria virginiana	9.8%	
	European Buckthorn	Rhamnus cathartica	97.2%	Invasive[A,B,C]
	River-Bank Grape	Vitis riparia	5.5%	
5A-VP-9	Ash-Leaf Maple	Acer negundo	25.2%	

	Red Maple	Acer rubrum	8.2%	
	Common Marsh Bedstraw	Galium palustre	2.6%	
	Creeping-Jenny	Lysimachia nummularia	17.7%	Invasive[A]
	Sensitive Fern	Onoclea sensibilis	1.7%	
	Willow	Salix sp	5.2%	
	Silky dogwood	Swida amomum	84.4%	
	River-Bank Grape	Vitis riparia	2.7%	
		Control		
5A-VP-10	Ash-Leaf Maple	Acer negundo	2.9%	
	Red Maple	Acer rubrum	7.2%	
	Silver Maple	Acer saccharinum	81.4%	
	Shallow Sedge	Carex lurida	0.8%	
	Sedge	Carex sp.	0.6%	
	Common Marsh Bedstraw	Galium palustre	0.6%	
	Creeping-Jenny	Lysimachia nummularia	14.1%	Invasive[A]
	Sensitive Fern	Onoclea sensibilis	0.8%	
	Eastern Cottonwood	Populus deltoides	61.4%	
	White Meadowsweet	Spiraea alba	4.5%	
	American Elm	Ulmus americana	0.4%	
5A-VP-21	Red Maple	Acer rubrum	11.1%	
	Silver Maple	Acer saccharinum	21.5%	
	American Water-Plantain	Alisma subcordatum	0.3%	
	Devil's-Pitchfork	Bidens frondosa	5.6%	
	Common Buttonbush	Cephalanthus occidentalis	23.3%	
	Bulblet-Bearing Water-Hemlock	Cicuta bulbifera	0.1%	
	Needle Spike-Rush	Eleocharis acicularis	1.0%	
	Tall Scouring-Rush	Equisetum hyemale	0.3%	
	American Burnweed	Erechtites hieraciifolius	0.0%	
	American Beech	Fagus grandifolia	2.5%	
	Green Ash	Fraxinus pennsylvanica	1.2%	
	Rough Bedstraw	Galium asprellum	7.6%	
	American Manna Grass	Glyceria grandis	0.0%	
	Common Winterberry	Ilex verticillata	1.7%	
	Spotted Touch-Me-Not	Impatiens capensis	0.3%	
	Pale-Yellow Iris	Iris pseudacorus	0.2%	
	Rice Cut Grass	Leersia oryzoides	8.5%	
	Common Duckweed	Lemna minor	6.1%	
	Marsh Primrose-Willow	Ludwigia palustris	0.1%	
	Creeping-Jenny	Lysimachia nummularia	27.0%	Invasive[A]
	Swampcandles	Lysimachia terrestris	1.3%	
	Purple Loosestrife	Lythrum salicaria	3.4%	Invasive[A,B,C]
	True Forget-Me-Not	Myosotis scorpioides	4.5%	Invasive[D]
	Sensitive Fern	Onoclea sensibilis	8.7%	
	Cinnamon Fern	Osmundastrum cinnamomeum	0.8%	
	Water Smartweed	Persicaria amphibia	12.6%	
	Arrow-Leaf Tearthumb	Persicaria sagittata	0.2%	

	Jumpseed	Persicaria virginiana	0.1%	
	Reed Canary Grass	Phalaris arundinacea	25.6%	Invasive[A,B,C]
	Northern Red Oak	Quercus rubra	8.5%	
	European Buckthorn	Rhamnus cathartica	5.0%	Invasive[A,B,C]
	Wild Black Currant	Ribes americanum	0.3%	
	Duck-Potato	Sagittaria latifolia	1.1%	
	Willow	Salix sp.	2.1%	
	Hooded Skullcap	Scutellaria galericulata	0.1%	
	Hemlock Water-Parsnip	Sium suave	0.1%	
	Climbing Nightshade	Solanum dulcamara	0.2%	Non-native
	Broad-Fruit Burr-Reed	Sparganium eurycarpum	0.3%	
	Bur-reed	Sparganium sp.	0.4%	
	White Meadowsweet	Spiraea alba	3.1%	
	Silky dogwood	Swida amomum	24.9%	
	Skunk-Cabbage	Symplocarpus foetidus	1.1%	
	Eastern Marsh Fern	Thelypteris palustris	0.6%	
	American Elm	Ulmus americana	5.5%	
	Nanny-Berry	Viburnum lentago	5.8%	
5A-VP-26	Red Maple	Acer rubrum	46.5%	
	Northern Water-Horehound	Lycopus uniflorus	14.2%	
	Creeping-Jenny	Lysimachia nummularia	23.2%	Invasive[A]
	Swampcandles	Lysimachia terrestris	1.4%	
	Sensitive Fern	Onoclea sensibilis	0.6%	
	Ditch-Stonecrop	Penthorum sedoides	41.0%	
	European Buckthorn	Rhamnus cathartica	25.1%	Invasive[A,B,C]
	Rambler Rose	Rosa multiflora	0.1%	Invasive[A,B,C]
	Hooded Skullcap	Scutellaria galericulata	0.7%	
	Silky dogwood	Swida amomum	24.6%	
	River-Bank Grape	Vitis riparia	5.6%	
5A-VP-3	Ash-Leaf Maple	Acer negundo	8.6%	
	Silver Maple	Acer saccharinum	42.7%	
	Sugar Maple	Acer saccharum	2.7%	
	Garlic-Mustard	Alliaria petiolata	0.2%	Invasive[A,B]
	Sedge	Carex sp.	0.4%	
	Spotted Touch-Me-Not	Impatiens capensis	21.7%	
	European Privet	Ligustrum vulgare	1.0%	
	Morrow's Honeysuckle	Lonicera morrowii	11.4%	Invasive[A,B]
	Fringed Yellow-Loosestrife	Lysimachia ciliata	0.4%	
	Creeping-Jenny	Lysimachia nummularia	46.3%	Invasive[A]
	White Mulberry	Morus alba	7.3%	
	Sensitive Fern	Onoclea sensibilis	10.0%	
	Virginia-Creeper	Parthenocissus quinquefolia	0.5%	
	Jumpseed	Persicaria virginiana	2.4%	
	Canadian Clearweed	Pilea pumila	0.5%	
	Eastern Cottonwood	Populus deltoides	29.9%	
	Rambler Rose	Rosa multiflora	1.7%	Invasive[A,B,C]

	Goldenrod	Solidago sp.	0.5%	
	Silky dogwood	Swida amomum	25.1%	
	American Elm	Ulmus americana	22.7%	
	River-Bank Grape	Vitis riparia	6.7%	
5A-VP-5	Red Maple	Acer rubrum	44.6%	
	Silver Maple	Acer saccharinum	19.7%	
	Speckled Alder	Alnus incana	1.6%	
	Winged Euonymus	Euonymus alatus	0.5%	Invasive[A,B,C]
	Common Marsh Bedstraw	Galium palustre	0.1%	
	White Avens	Geum canadense	0.2%	
	Spotted Touch-Me-Not	Impatiens capensis	0.1%	
	Creeping-Jenny	Lysimachia nummularia	19.7%	Invasive[A]
	Purple Loosestrife	Lythrum salicaria	0.5%	Invasive[A,B,C]
	Sensitive Fern	Onoclea sensibilis	5.2%	
	Ditch-Stonecrop	Penthorum sedoides	1.5%	
	Swamp Smartweed	Persicaria hydropiperoides	34.9%	
	Swamp Smartweed	Persicaria hydropiperoides	10.6%	
	European Buckthorn	Rhamnus cathartica	5.1%	Invasive[A,B,C]
	Rambler Rose	Rosa multiflora	7.1%	Invasive[A,B,C]
	Willow	Salix sp.	11.0%	
	Carolina Horse-Nettle	Solanum carolinense	3.5%	Non-native
	Climbing Nightshade	Solanum dulcamara	0.2%	Non-native
	Silky dogwood	Swida amomum	36.3%	
	Skunk-Cabbage	Symplocarpus foetidus	0.3%	
	Eastern Marsh Fern	Thelypteris palustris	0.2%	
	American Elm	Ulmus americana	5.2%	
	Grass-Leaf Speedwell	Veronica scutellata	0.5%	
	River-Bank Grape	Vitis riparia	10.4%	
5A-VP-55	Ash-Leaf Maple	Acer negundo	0.6%	
	Retrorse Sedge	Carex retrorsa	1.0%	
	American Hornbeam	Carpinus caroliniana	7.1%	
	Water Horsetail	Equisetum fluviatile	2.3%	
	Rough Bedstraw	Galium asprellum	3.1%	
	Spotted Touch-Me-Not	Impatiens capensis	0.1%	
	Pale-Yellow Iris	Iris pseudacorus	2.6%	
	Morrow's Honeysuckle	Lonicera morrowii	3.6%	Invasive[A,B]
	Marsh Primrose-Willow	Ludwigia palustris	0.6%	
	Creeping-Jenny	Lysimachia nummularia	8.0%	Invasive[A]
	Purple Loosestrife	Lythrum salicaria	13.6%	Invasive[A,B,C]
	True Forget-Me-Not	Myosotis scorpioides	1.8%	Invasive[D]
	Sensitive Fern	Onoclea sensibilis	1.0%	
	Swamp Smartweed	Persicaria hydropiperoides	14.7%	
	Reed Canary Grass	Phalaris arundinacea	60.8%	Invasive[A,B,C]
	Canadian Clearweed	Pilea pumila	1.0%	
	Green-Head Coneflower	Rudbeckia laciniata	0.2%	
	Gray Willow	Salix bebbiana	1.3%	

	Broad-Fruit Burr-Reed	Sparganium eurycarpum	21.6%	
	Silky dogwood	Swida amomum	12.3%	
	River-Bank Grape	Vitis riparia	2.3%	
5A-VP-61	Red Maple	Acer rubrum	27.5%	
	Silver Maple	Acer saccharinum	17.0%	
	Sugar Maple	Acer saccharum	22.4%	
	Daisy	Asteraceae	1.1%	
	Devil's-Pitchfork	Bidens frondosa	3.2%	
	Fringed Sedge	Carex crinita	0.9%	
	Hop Sedge	Carex lupulina	21.6%	
	Shallow Sedge	Carex lurida	2.3%	
	American Hornbeam	Carpinus caroliniana	13.8%	
	Common Buttonbush	Cephalanthus occidentalis	6.6%	
	Bulblet-Bearing Water-Hemlock	Cicuta bulbifera	0.7%	
	Sweet Wood-Reed	Cinna arundinacea	1.1%	
	White Ash	Fraxinus americana	39.4%	
	American Witch-Hazel	Hamamelis virginiana	2.6%	
	Common Winterberry	Ilex verticillata	6.1%	
	Spotted Touch-Me-Not	Impatiens capensis	1.5%	
	Pale-Yellow Iris	Iris pseudacorus	1.7%	
	Creeping-Jenny	Lysimachia nummularia	34.4%	Invasive[A]
	Sensitive Fern	Onoclea sensibilis	1.9%	
	Cinnamon Fern	Osmundastrum cinnamomeum	0.5%	
	Jumpseed	Persicaria virginiana	0.6%	
	Black Cherry	Prunus serotina	1.5%	
	Mad Dog Skullcap	Scutellaria lateriflora	0.6%	
	Silky dogwood	Swida amomum	3.7%	
	Eastern Marsh Fern	Thelypteris palustris	0.7%	
	Eastern Poison Ivy	Toxicodendron radicans	1.8%	
	American Elm	Ulmus americana	0.3%	
	River-Bank Grape	Vitis riparia	5.8%	
		Excavate/Restore		
5A-VP-16	Silver Maple	Acer saccharinum	6.0%	
	Spotted Water-Hemlock	Cicuta maculata	1.9%	
	Cock-Spur Hawthorn	Crataegus crus-galli	20.4%	
	Bedstraw	Galium sp.	3.5%	
	Spotted Touch-Me-Not	Impatiens capensis	0.4%	
	Fringed Yellow-Loosestrife	Lysimachia ciliata	0.8%	
	Creeping-Jenny	Lysimachia nummularia	79.5%	Invasive[A]
	Purple Loosestrife	Lythrum salicaria	1.7%	Invasive[A,B,C]
	True Forget-Me-Not	Myosotis scorpioides	2.4%	Invasive[D]
	Sensitive Fern	Onoclea sensibilis	4.8%	
	Ditch-Stonecrop	Penthorum sedoides	4.4%	
	Jumpseed	Persicaria virginiana	0.6%	
	Canadian Clearweed	Pilea pumila	0.6%	
	Willow	Salix sp.	9.8%	

	Silky dogwood	Swida amomum	11.8%	
	River-Bank Grape	Vitis riparia	2.1%	
5A-VP-4	Ash-Leaf Maple	Acer negundo	16.3%	
	Red Maple	Acer rubrum	8.6%	
	Sugar Maple	Acer saccharum	12.5%	
	Fringed Sedge	Carex crinita	0.9%	
	Shallow Sedge	Carex lurida	6.1%	
	Winged Euonymus	Euonymus alatus	1.2%	Invasive[A,B,C]
	Common Marsh Bedstraw	Galium palustre	1.1%	
	Spotted Touch-Me-Not	Impatiens capensis	21.1%	
	Morrow's Honeysuckle	Lonicera morrowii	6.1%	Invasive[A,B]
	Fringed Yellow-Loosestrife	Lysimachia ciliata	1.4%	
	Creeping-Jenny	Lysimachia nummularia	77.7%	Invasive[A]
	Sensitive Fern	Onoclea sensibilis	9.8%	
	Royal Fern	Osmunda regalis	1.4%	
	Pinkweed	Persicaria pensylvanica	0.8%	
	Jumpseed	Persicaria virginiana	1.1%	
	European Buckthorn	Rhamnus cathartica	1.2%	Invasive[A,B,C]
	Rambler Rose	Rosa multiflora	2.0%	Invasive[A,B,C]
	Silky dogwood	Swida amomum	30.3%	
	American Elm	Ulmus americana	28.9%	
	River-Bank Grape	Vitis riparia	7.2%	
5A-VP-52	Ash-Leaf Maple	Acer negundo	4.9%	
	Silver Maple	Acer saccharinum	34.1%	
	Small-Spike False Nettle	Boehmeria cylindrica	2.1%	
	Wild Cucumber	Echinocystis lobata	1.2%	
	Sticky-Willy	Galium aparine	0.6%	
	Rough Bedstraw	Galium asprellum	1.6%	
	Spotted Touch-Me-Not	Impatiens capensis	2.3%	
	Pale-Yellow Iris	Iris pseudacorus	1.3%	
	Canadian Wood-Nettle	Laportea canadensis	0.9%	
	Fringed Yellow-Loosestrife	Lysimachia ciliata	1.3%	
	Creeping-Jenny	Lysimachia nummularia	8.0%	Invasive[A]
	Purple Loosestrife	Lythrum salicaria	1.7%	Invasive[A,B,C]
	True Forget-Me-Not	Myosotis scorpioides	3.3%	Invasive[D]
	Mild Water-Pepper	Persicaria hydropiper	1.7%	
	Arrow-Leaf Tearthumb	Persicaria sagittata	2.1%	
	Reed Canary Grass	Phalaris arundinacea	89.7%	Invasive[A,B,C]
	Green-Head Coneflower	Rudbeckia laciniata	1.2%	
	Silky dogwood	Swida amomum	6.2%	
	Skunk-Cabbage	Symplocarpus foetidus	2.0%	
5A-VP-57	Silver Maple	Acer saccharinum	95.1%	
	Bishop's Goutweed	Aegopodium podagraria	3.6%	Invasive[A,B]
	Devil's-Pitchfork	Bidens frondosa	0.6%	
	American Hornbeam	Carpinus caroliniana	7.9%	
	Sweet Wood-Reed	Cinna arundinacea	0.8%	

	Canadian Honewort	Cryptotaenia canadensis	2.3%	
	Japanese Knotweed	Fallopia japonica	2.1%	Invasive[A,B,C]
	White Ash	Fraxinus americana	2.8%	
	White Avens	Geum canadense	0.3%	
	Groundivy	Glechoma hederacea	4.4%	Non-native
	Spotted Touch-Me-Not	Impatiens capensis	2.7%	
	Canadian Wood-Nettle	Laportea canadensis	14.5%	
	Virginia Water-Horehound	Lycopus virginicus	1.0%	
	Creeping-Jenny	Lysimachia nummularia	15.5%	Invasive[A]
	Swampcandles	Lysimachia terrestris	1.1%	
	Ostrich Fern	Matteuccia struthiopteris	9.8%	
	Sensitive Fern	Onoclea sensibilis	3.6%	
	Jumpseed	Persicaria virginiana	0.3%	
	Canadian Clearweed	Pilea pumila	0.8%	
	Mad Dog Skullcap	Scutellaria lateriflora	0.4%	
	One-Seed Burr-Cucumber	Sicyos angulatus	0.4%	
	Canadian Goldenrod	Solidago canadensis	2.2%	
	Late Goldenrod	Solidago gigantea	0.3%	
	Silky dogwood	Swida amomum	5.4%	
	Hooded Blue Violet	Viola sororia	1.9%	
5A-VP-7	Ash-Leaf Maple	Acer negundo	10.8%	
	Silver Maple	Acer saccharinum	48.9%	
	Cock-Spur Hawthorn	Crataegus crus-galli	2.8%	
	Wild Cucumber	Echinocystis lobata	0.4%	
	Bedstraw	Galium sp.	1.7%	
	Spotted Touch-Me-Not	Impatiens capensis	1.8%	
	Morrow's Honeysuckle	Lonicera morrowii	2.1%	Invasive[A,B]
	Fringed Yellow-Loosestrife	Lysimachia ciliata	3.2%	
	Creeping-Jenny	Lysimachia nummularia	38.2%	Invasive[A]
	Purple Loosestrife	Lythrum salicaria	0.9%	Invasive[A,B,C]
	Sensitive Fern	Onoclea sensibilis	3.7%	
	Smartweed	Persicaria sp.	0.7%	
	Eastern Cottonwood	Populus deltoides	27.8%	
	European Buckthorn	Rhamnus cathartica	3.8%	Invasive[A,B,C]
	Rambler Rose	Rosa multiflora	1.1%	Invasive[A,B,C]
	Willow	Salix sp.	4.9%	
	Cottongrass Bulrush	Scirpus cyperinus	2.6%	
	Mad Dog Skullcap	Scutellaria lateriflora	3.3%	
	Silky dogwood	Swida amomum	24.3%	
	Southern Arrow-Wood	Viburnum dentatum	7.4%	
	River-Bank Grape	Vitis riparia	12.4%	

			Pilot Pools																			
			Amendment					Excavate / Restore					Control									
Scientific Name	Common Name	Mature Growth Form [1]	5A-VP-9	5A-VP-12	5A-VP-15	5A-VP-22	5A-VP-27	5A-VP-4	5A-VP-7	5A-VP-16	5A-VP-52	5A-VP-57	5A-VP-3	5A-VP-5	5A-VP-10	5A-VP-21	5A-VP-26	5A-VP-55	5A-VP-61	Wetland Indicator Status [2]	Invasive Status [3]
1 *Acer negundo*	Box Elder	T	✓	✓				✓	✓		✓		✓		✓	✓		✓		FAC	
2 *Acer rubrum*	Red Maple	T	✓		✓			✓				✓	✓	✓	✓	✓	✓		✓	FAC	
3 *Acer saccharinum*	Silver Maple	T		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	FACW	
4 *Acer saccharum*	Sugar Maple	T														✓			✓	FACU	
5 *Acorus calamus*	Single-Vein Sweetflag	F														✓				OBL	
6 *Aegopodium podagraria*	Bishop's Goutweed	F										✓								FAC	X, I
7 *Agrimonia gryposepala*	Tall Hairy Groovebur	F										✓								FACU	
8 *Alisma subcordatum*	American Water-Plantain	F		✓	✓	✓					✓			✓		✓	✓	✓	✓	OBL	
9 *Alisma triviale*	Northern Water-Plantain	F		✓												✓		✓		OBL	
10 *Alliaria petiolata*	Garlic Mustard	F											✓							FACU	X, I
11 *Alnus incana*	Speckled Alder	S												✓						FACW	
12 *Arisaema triphyllum*	Jack-in-the-Pulpit	F										✓								FAC	
13 *Betula populifolia*	Gray Birch	T												✓						FAC	
14 *Bidens cernua*	Nodding Bur-Marigold	F														✓				OBL	
15 *Bidens frondosa*	Devil's-Pitchfork	F		✓	✓	✓						✓							✓	FACW	
16 *Boehmeria cylindrica*	Small-Spike False Nettle	F						✓			✓		✓							OBL	
17 *Calamagrostis canadensis*	Bluejoint	G				✓												✓		OBL	
18 *Cardamine pensylvanica*	Quaker Bittercress	F																	✓	FACW	
19 *Cardamine pratensis*	Cuckoo Flower	F																✓		NL	
20 *Carex bromoides*	Brome-Like Sedge	G						✓							✓				✓	FACW	
21 *Carex crinita*	Fringed Sedge	G				✓		✓											✓	OBL	
22 *Carex intumescens*	Greater Bladder Sedge	G		✓				✓						✓					✓	FACW	
23 *Carex lacustris*	Lakebank Sedge	G																	✓	OBL	
24 *Carex lupulina*	Hop Sedge	G		✓	✓	✓			✓			✓				✓			✓	OBL	
25 *Carex prasina*	Drooping Sedge	G						✓	✓					✓	✓				✓	OBL	
26 *Carex radiata*	Eastern Star Sedge	G					✓													FAC	
27 *Carex retrorsa*	Retrorse Sedge	G			✓	✓		✓					✓		✓			✓	✓	OBL	
28 *Carpinus caroliniana*	American Hornbeam	T		✓								✓		✓				✓	✓	FAC	
29 *Carya cordiformis*	Bitternut Hickory	T																	✓	FAC	
30 *Celastrus orbiculatus*	Asian Bittersweet	L															✓			FACU	X, I
31 *Cephalanthus occidentalis*	Common Buttonbush	S				✓										✓			✓	OBL	
32 *Cicuta bulbifera*	Bulblet-Bearing Water-Hemlock	F								✓						✓			✓	OBL	
33 *Cinna arundinacea*	Sweet Wood-Reed	G										✓							✓	FACW	
34 *Cinna latifolia*	Slender Wood-Reed	G				✓						✓							✓	FACW	
35 *Cirsium arvense*	Canada Thistle	F			✓															FACU	
36 *Clematis virginiana*	Virginia Virgin's-Bower	F																✓		FAC	
37 *Crataegus crus-galli*	Cockspur Hawthorn	T			✓				✓								✓			FAC	
38 *Cryptotaenia canadensis*	Canada Honewort	F										✓								FAC	
39 *Cuscuta gronovii*	Common Dodder	F										✓								NA	
40 *Echinocystis lobata*	Wild Cucumber	F		✓							✓	✓								FACW	
41 *Eleocharis acicularis*	Needle Spike-Rush	G		✓	✓									✓		✓				OBL	
42 *Eleocharis palustris*	Common Spike-Rush	G			✓															OBL	
43 *Equisetum fluviatile*	Water Horsetail	P														✓		✓		OBL	
44 *Equisetum hyemale*	Tall Scouring-Rush	P														✓				FAC	
45 *Erechtites hieraciifolius*	American Burnweed	F	✓			✓										✓				FACU	
46 *Euonymus alatus*	Winged Euonymus	S						✓						✓						NL	X, I
47 *Fagus grandifolia*	American Beech	T														✓				FACU	
48 *Fallopia japonica*	Japanese Knotweed	F										✓								FACU	X, I
49 *Frangula alnus*	Glossy Buckthorn	S											✓	✓						FAC	X, I
50 *Fraxinus americana*	White Ash	T										✓							✓	FACU	
51 *Fraxinus pennsylvanica*	Green Ash	T												✓		✓				FACW	
52 *Galium aparine*	Cleavers	F									✓									FACU	
53 *Galium asprellum*	Rough Bedstraw	F		✓		✓			✓	✓	✓			✓	✓	✓		✓	✓	OBL	
54 *Galium palustre*	Common Marsh Bedstraw	F		✓				✓						✓	✓					OBL	
55 *Galium tinctorium*	Stiff Marsh Bedstraw	F				✓	✓	✓				✓								OBL	
56 *Geum canadense*	White Avens	F										✓		✓						FAC	

57	*Geum laciniatum*	Rough Avens	F									✓		✓	✓						FACW	
58	*Glechoma hederacea*	Ground-Ivy	F									✓									FACU	
59	*Glyceria grandis*	American Manna Grass	G													✓					OBL	
60	*Glyceria striata*	Fowl Manna Grass	G											✓	✓						OBL	
61	*Hamamelis virginiana*	American Witch-Hazel	S																	✓	FACU	
62	*Ilex verticillata*	Common Winterberry	S													✓				✓	FACW	
63	*Impatiens capensis*	Jewelweed	F	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	FACW	
64	*Iris pseudacorus*	Pale-Yellow Iris	F	✓	✓	✓	✓			✓		✓	✓	✓				✓		✓	✓	OBL	X, I
65	*Iris versicolor*	Harlequin Blueflag	F		✓	✓	✓						✓					✓			✓	OBL	
66	*Juglans cinerea*	Butternut	T			✓															FACU	
67	*Juncus effusus*	Soft Rush	G												✓						OBL	
68	*Laportea canadensis*	Canada Wood-Nettle	F								✓	✓							✓		FACW	
69	*Leersia oryzoides*	Rice Cut Grass	G		✓	✓												✓			OBL	
70	*Leersia virginica*	White Grass	G		✓																FACW	
71	*Lemna minor*	Common Duckweed	F				✓								✓		✓	✓		✓	OBL	
72	*Ligustrum vulgare*	European Privet	S										✓								FACU	
73	*Lonicera morrowii*	Morrow's Honeysuckle	S					✓	✓	✓		✓		✓	✓				✓		FACU	X, I
74	*Ludwigia palustris*	Water-Purslane	F														✓		✓		OBL	
75	*Lycopus uniflorus*	Northern Bugleweed	F		✓	✓					✓	✓					✓	✓			OBL	
76	*Lycopus virginicus*	Virginia Bugleweed	F									✓									OBL	
77	*Lysimachia ciliata*	Fringed Yellow-Loosestrife	F			✓			✓	✓	✓	✓	✓	✓							FACW	
78	*Lysimachia nummularia*	Moneywort	F	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FACW	X, I
79	*Lysimachia terrestris*	Swamp Candles	F			✓	✓			✓			✓				✓	✓		✓	OBL	
80	*Lythrum salicaria*	Purple Loosestrife	F		✓	✓	✓			✓	✓	✓			✓		✓	✓	✓		OBL	X, I
81	*Matteuccia struthiopteris*	Ostrich Fern	P							✓			✓						✓		FAC	
82	*Morus alba*	White Mulberry	T											✓							FACU	
83	*Myosotis scorpioides*	True Forget-Me-Not	F		✓	✓			✓		✓	✓	✓				✓		✓		OBL	X, L
84	*Onoclea sensibilis*	Sensitive Fern	P		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FACW	
85	*Osmunda regalis*	Royal Fern	P						✓												OBL	
86	*Osmundastrum cinnamomeum*	Cinnamon Fern	P		✓				✓						✓		✓			✓	FACW	
87	*Pachysandra terminalis*	Japanese Mountain-Spurge	L					✓													NL	
88	*Parthenocissus quinquefolia*	Virginia Creeper	L											✓							FACU	
89	*Peltandra virginica*	Arrow-Arum	F																✓		OBL	
90	*Penthorum sedoides*	Ditch Stonecrop	F		✓	✓			✓			✓	✓		✓			✓	✓		OBL	
91	*Persicaria amphibia*	Water Smartweed	F														✓				OBL	
92	*Persicaria hydropiper*	Mild Water-Pepper	F		✓		✓				✓										OBL	
93	*Persicaria hydropiperoides*	Swamp Smartweed	F	✓		✓									✓				✓		OBL	
94	*Persicaria pensylvanica*	Pinkweed	F		✓	✓	✓		✓						✓		✓		✓		FACW	
95	*Persicaria sagittata*	Arrow-Leaf Tearthumb	F			✓	✓				✓						✓				OBL	
96	*Persicaria virginiana*	Jumpseed	F				✓	✓	✓		✓	✓	✓	✓			✓			✓	FAC	
97	*Phalaris arundinacea*	Reed Canary Grass	G				✓				✓						✓		✓		FACW	X, I
98	*Pilea pumila*	Canada Clearweed	F							✓		✓	✓						✓		FACW	
99	*Populus deltoides*	Eastern Cottonwood	T				✓		✓				✓		✓						FAC	
100	*Prunus serotina*	Black Cherry	T																	✓	FACU	
101	*Quercus rubra*	Northern Red Oak	T														✓				FACU	
102	*Ranunculus caricetorum*	Swamp Buttercup	F								✓	✓									FAC	
103	*Rhamnus cathartica*	European Buckthorn	S				✓	✓	✓	✓					✓		✓	✓	✓	✓	FAC	X, I
104	*Ribes americanum*	Wild Black Currant	S											✓			✓				FACW	
105	*Rosa multiflora*	Multiflora Rose	S			✓		✓	✓	✓				✓	✓			✓			FACU	X, I
106	*Rudbeckia laciniata*	Green-Head Coneflower	F																✓		FACW	
107	*Rumex britannica*	Greater Water Dock	F								✓										OBL	
108	*Rumex obtusifolius*	Bitter Dock	F												✓						FAC	
109	*Sagittaria latifolia*	Duck-Potato	F														✓				OBL	
110	*Salix alba*	White Willow	T									✓	✓				✓		✓		FACW	
111	*Salix bebbiana*	Bebb's Willow	S																✓		FACW	
112	*Salix nigra*	Black Willow	T	✓											✓		✓				OBL	
113	*Salix petiolaris*	Meadow Willow	S														✓		✓		FACW	
114	*Sambucus nigra*	Black Elder	S								✓										FACW	
115	*Schoenoplectus tabernaemontani*	Softstem Bulrush	G				✓														OBL	
116	*Scirpus cyperinus*	Woolgrass	G				✓			✓									✓		OBL	
117	*Scutellaria galericulata*	Hooded Skullcap	F														✓	✓			OBL	
118	*Scutellaria lateriflora*	Mad-Dog Skullcap	F				✓			✓	✓		✓							✓	OBL	
119	*Sicyos angulatus*	One-Seed Bur-Cucumber	F										✓								FACW	

120	*Sium suave*	Hemlock Water-Parsnip	F			✓					✓			✓		✓	✓		OBL
121	*Solanum carolinense*	Carolina Horse-Nettle	F									✓							FACU
122	*Solanum dulcamara*	Climbing Nightshade	F									✓		✓					FAC
123	*Solidago canadensis*	Canada Goldenrod	F								✓								FACU
124	*Solidago gigantea*	Late Goldenrod	F								✓								FACW
125	*Sparganium americanum*	American Bur-Reed	F											✓					OBL
126	*Sparganium eurycarpum*	Broad-Fruit Bur-Reed	F			✓	✓							✓		✓			OBL
127	*Spiraea alba*	White Meadowsweet	S										✓	✓					FACW
128	*Swida amomum*	Silky Dogwood	S	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	FACW
129	*Swida sericea*	Red Osier	S											✓					FACW
130	*Symplocarpus foetidus*	Skunk Cabbage	F							✓	✓		✓	✓	✓		✓		OBL
131	*Thelypteris palustris*	Marsh Fern	P				✓						✓		✓			✓	FACW
132	*Toxicodendron radicans*	Eastern Poison Ivy	L															✓	FAC
133	*Typha latifolia*	Broad-Leaf Cattail	F									✓							OBL
134	*Ulmus americana*	American Elm	T			✓			✓			✓	✓	✓	✓			✓	FACW
135	*Veronica scutellata*	Grass-Leaf Speedwell	F										✓						OBL
136	*Viburnum dentatum*	Southern Arrow-Wood	S						✓				✓						FAC
137	*Viburnum lentago*	Nanny-Berry	S												✓				FAC
138	*Vitis riparia*	River-Bank Grape	L	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	FAC

Invasive Plant Cover

Pool ID	Min	Max	Average	Count of Species
Amendment				
5A-VP-12	0.4%	17.7%	6.6%	4
5A-VP-15	1.1%	49.0%	17.1%	5
5A-VP-22	2.0%	48.4%	25.1%	5
5A-VP-27	8.3%	97.2%	55.5%	4
5A-VP-9	17.7%	17.7%	17.7%	2
Excavate/Restore				
5A-VP-16	1.7%	79.5%	27.9%	3
5A-VP-4	1.2%	77.7%	17.6%	6
5A-VP-52	1.7%	89.7%	25.7%	6
5A-VP-57	2.1%	15.5%	7.1%	5
5A-VP-7	0.9%	38.2%	9.3%	6
Control				
5A-VP-10	14.1%	14.1%	14.1%	1
5A-VP-21	3.4%	27.0%	13.1%	6
5A-VP-26	0.1%	25.1%	16.2%	5
5A-VP-3	0.2%	46.3%	14.9%	6
5A-VP-5	0.5%	19.7%	6.6%	7
5A-VP-55	1.8%	60.8%	17.6%	7
5A-VP-61	34.4%	34.4%	34.4%	3

Percent Cover among Pools

Common Name	Scientific Name	Number of Pools	Minimum	Maximum	Average	Standard Error
Bishop's Goutweed	*Aegopodium podagraria*	1	3.6%	3.6%	3.6%	-
Garlic-Mustard	*Alliaria petiolata*	1	0.2%	0.2%	0.2%	-
Winged Euonymus	*Euonymus alatus*	2	0.5%	1.2%	0.8%	0.004
Japanese Knotweed	*Fallopia japonica*	1	2.1%	2.1%	2.1%	-
Morrow's Honeysuckle	*Lonicera morrowii*	5	2.1%	11.4%	6.3%	0.02
Creeping-Jenny	*Lysimachia nummularia*	17	8.0%	79.5%	34.4%	0.06
Purple Loosestrife	*Lythrum salicaria*	8	0.4%	13.6%	3.9%	0.02
True Forget-Me-Not	*Myosotis scorpioides*	6	1.8%	9.5%	3.9%	0.01
Reed Canary Grass	*Phalaris arundinacea*	4	25.1%	89.7%	50.3%	0.16
Common Buckthorn	*Rhamnus cathartica*	7	1.2%	97.2%	19.9%	0.13
Rambler Rose	*Rosa multiflora*	6	0.1%	7.1%	2.2%	0.01

	Geomorphology and Physical Habitat Structure													Pool Hydrology	
Pool_ID	Area (Acres)	Channel Forming Pool? (Y = Yes, N = No, Blank = Unknown)	Pond (at Full Bank Height)	Cut-off from Outlet	PSC1 (%)	CSC1 (%)	Macrophytes, Trees, Root Wads (%)	Herbicide Mitigation (Y or N)	Average Water Depth Observed, in 2023 (ft)	Average Water Depth, Estimated, in 2023 (ft)	Max Water Depth Observed, in 2023 (ft)	Max Water Depth Estimated, in 2023 (ft)	Typical Spring Pool Depth Range (ft)	Pool Hydrology[1]
Amendment															
SA-VP-9	0.6		✓		8-15	0-8%	6-15	1-5	16	9.4	26	24	7-12	Seasonally Flooded
SA-VP-12	0.27	✓		✓	1-5	2-5%	0	0	24	13.7	31	30	18-25	Seasonally Flooded/Saturated
SA-VP-15	0.37	✓			1-5	0-5%	0	0	18	7.8	25	30	13-18	Seasonally Flooded/Saturated
SA-VP-22	0.82		✓		1-5	0-3%	0	6-15	27	12.6	29	40	18-25	Seasonally Flooded/Saturated
SA-VP-27	0.08	✓			1-5	0-5%	0	0	Dry	0	10	30	4-8	Seasonally Flooded
Excavate / Restore															
SA-VP-4	0.23	✓			16-25	5-8%	0	1-5	16	7.4	36	30	10-15	Seasonally Flooded/Saturated
SA-VP-7	0.41	✓		✓	8-15	1-5%	1-5	0	16	8.8	32	30	12-25	Seasonally Flooded
SA-VP-16	0.53	✓			16-25	1-2%	0	1-5	23	13.3	21	24	18-25	Seasonally Flooded
SA-VP-32	0.09	✓			1-5	0-5%	0	1-5	11	5.3	16	18	12-18	Seasonally Flooded
SA-VP-57	0.69	✓		✓	16-25	5-8%	6-15	0	37	19.9	40	18	13-18	Seasonally Flooded
Control															
SA-VP-3	0.39	✓		✓	8-15	0-8%	1-5	0	8	2.6	15	30	8-10	Seasonally Flooded
SA-VP-5	0.33		✓		1-5	0-5%	0	0	17	8.6	25	30	8-14	Semi-permanently Flooded
SA-VP-10	0.17		✓		16-25	1-8%	0	0	13	6.9	12	18	8-12	Seasonally Flooded
SA-VP-21	1.65		✓		8-15	0-5%	1-5	0	23	13.8	28	36	18-25	Seasonally Flooded/Saturated
SA-VP-26	0.08	✓		✓	1-5	1-5%	0	0	16	7.6	16	18	10-16	Seasonally Flooded
SA-VP-53	0.25	✓		✓	1-5	0-8%	0	0	17	8.8	40	30	18-25	Semi-permanently Flooded
SA-VP-61	0.39	✓			16-25	2-8%	1-5	0	17	9.1	26	24	12-18	Seasonally Flooded

1. Holding capacity is estimated based on topography and is the potential max depth of water with no flow in or out of the pool

		dl
SAVP12	Amendment	0.04
SAVP15	Amendment	0.08
SAVP22	Amendment	0.08
SAVP27	Amendment	0.08
SAVP9	Amendment	0.17
SAVP10	Control	0.23
SAVP21	Control	0.26
SAVP26	Control	0.26
SAVP3	Control	0.27
SAVP5	Control	0.33
SAVP53	Control	0.37
SAVP61	Control	0.39
SAVP16	Excavate/Restore	0.45
SAVP4	Excavate/Restore	0.49
SAVP32	Excavate/Restore	0.6
SAVP57	Excavate/Restore	0.82
SAVP7	Excavate/Restore	1.66

Pool_ID	Substrate Type2	FWD	CWD	Windthrow	Hummocks (Sedge/Grass/shrub)	
SA-VP-9	Mineral/FSL	10.5	3	10.5		3
SA-VP-12	Mucky-Mineral/SIL	3	10.5	0		0
SA-VP-15	Mucky-Mineral/FSL	3	10.5	0		0
SA-VP-22	Mucky-Mineral/LS	3	3	0		10.5
SA-VP-27	Mineral/FSL	3	0	0		0
SA-VP-4	Mineral/SIL	20.5	3	0		3
SA-VP-7	Mineral/VFSL	10.5	3	3		0
SA-VP-16	Mucky-Mineral/FSL	20.5	10.5	0		3
SA-VP-32	Mucky-Mineral/VFSL	3	0	0		3
SA-VP-57	Mineral/VFSL	20.5	10.5	10.5		0
SA-VP-3	Mineral/VFSL	10.5	3	3		0
SA-VP-5	Mucky-Mineral/VFSL	3	0	0		0
SA-VP-10	Mineral/VFSL	20.5	10.5	0		0
SA-VP-21	Deep Organic Muck	10.5	10.5	3		0
SA-VP-26	Mucky-Mineral/FSL	3	10.5	0		0
SA-VP-53	Organic/VFSL	3	10.5	0		0
SA-VP-61	Mineral/VFSL	20.5	10.5	3		0

	Geomorphology and Physical Habitat Structure													Pool Hydrology	
Pool_ID	Area (Acres)	Channel Forming Pool? (Y = Yes, N = No, Blank = Unknown)	Pond (at Full Bank Height)	Cut-off from Outlet	PSC1 (%)	CSC1 (%)	Macrophytes, Trees, Root Wads (%)	Herbicide Mitigation (Y or N)	Average Water Depth Observed, in 2023 (ft)	Average Water Depth, Estimated, in 2023 (ft)	Max Water Depth Observed, in 2023 (ft)	Max Water Depth Estimated, in 2023 (ft)	Typical Spring Pool Depth Range (ft)	Pool Hydrology[1]
Amendment															
SA-VP-9	0.6		✓		8-15	0-8%	6-15	1-5	16	9.4	26	24	7-12	Seasonally Flooded
SA-VP-12	0.27	✓		✓	1-5	2-5%	0	0	24	13.7	31	30	18-25	Seasonally Flooded/Saturated
SA-VP-15	0.37	✓			1-5	0-5%	0	0	18	7.8	25	30	13-18	Seasonally Flooded/Saturated
SA-VP-22	0.82		✓		1-5	0-3%	0	6-15	27	12.6	29	40	18-25	Seasonally Flooded/Saturated
SA-VP-27	0.08	✓			1-5	0-5%	0	0	Dry	0	10	30	4-8	Seasonally Flooded
Excavate / Restore															
SA-VP-4	0.23	✓			16-25	5-8%	0	1-5	16	7.4	36	30	10-15	Seasonally Flooded/Saturated
SA-VP-7	0.41	✓		✓	8-15	1-5%	1-5	0	16	8.8	32	30	12-25	Seasonally Flooded
SA-VP-16	0.53	✓			16-25	1-2%	0	1-5	23	13.3	21	24	18-25	Seasonally Flooded
SA-VP-32	0.09	✓			1-5	0-5%	0	1-5	11	5.3	16	18	12-18	Seasonally Flooded
SA-VP-57	0.69	✓		✓	16-25	5-8%	6-15	0	37	19.9	40	18	13-18	Seasonally Flooded
Control															
SA-VP-3	0.39	✓		✓	8-15	0-8%	1-5	0	8	2.6	15	30	8-10	Seasonally Flooded
SA-VP-5	0.33		✓		1-5	0-5%	0	0	17	8.6	25	30	8-14	Semi-permanently Flooded
SA-VP-10	0.17		✓		16-25	1-8%	0	0	13	6.9	12	18	8-12	Seasonally Flooded
SA-VP-21	1.65		✓		8-15	0-5%	1-5	0	23	13.8	28	36	18-25	Seasonally Flooded/Saturated
SA-VP-26	0.08	✓		✓	1-5	1-5%	0	0	16	7.6	16	18	10-16	Seasonally Flooded
SA-VP-53	0.25	✓		✓	1-5	0-8%	0	0	17	8.8	40	30	18-25	Semi-permanently Flooded
SA-VP-61	0.39	✓			16-25	2-8%	1-5	0	17	9.1	26	24	12-18	Seasonally Flooded

1. Holding capacity is estimated based on topography and is the potential max depth of water with no flow in or out of the pool

treatment	Pool_ID	Area (Acres)	Channel Forming Pool? (Y = Yes, N = No, Blank = Unknown)	Pond (at Full Bank Height)	Cut-off from Outlet	Max Water Depth Observed (cm/in)	Max Water Depth Estimated (cm/in)	Average water depth	Typical Spring Pool Depth Range (cm/in)
Amendment	SA-VP-9	0.6		✓		24	24	9.6	7-12
Amendment	SA-VP-12	0.27	✓		✓	31	30	21	18-25
Amendment	SA-VP-15	0.37	✓			20	30	18	13-18
Amendment	SA-VP-22	0.82		✓		24	40	21	18-25
Amendment	SA-VP-27	0.08	✓			10	30	9	4-8
Excavate/Restore	SA-VP-4	0.23	✓			36	30	12	10-15
Excavate/Restore	SA-VP-7	0.41	✓		✓	32	30	18	12-25
Excavate/Restore	SA-VP-16	0.53	✓			21	24	18	13-18
Excavate/Restore	SA-VP-32	0.09	✓			16	18	18	12-18
Excavate/Restore	SA-VP-57	0.69	✓		✓	40	18	19	13-18
Control	SA-VP-3	0.39	✓		✓	10	30	8	8-10
Control	SA-VP-5	0.33		✓		25	30	10	8-14
Control	SA-VP-10	0.17		✓		12	18	10	8-12
Control	SA-VP-21	1.65		✓		28	36	21	18-25
Control	SA-VP-26	0.08	✓		✓	16	16	13	10-16
Control	SA-VP-53	0.25	✓		✓	40	30	21	18-25
Control	SA-VP-61	0.39	✓			24	24	19	12-18

	treatment	Pool_ID	Max depth 2023	avg depth 2023
1	Amendment	SA-VP-9	26	5.6
2	Amendment	SA-VP-12	24	13.7
3	Amendment	SA-VP-15	18	7.8
4	Amendment	SA-VP-22	27	12.6
5	Amendment	SA-VP-27	Dry	0
6	Control	SA-VP-3	6	2.6
7	Control	SA-VP-5	17	9.6
8	Control	SA-VP-10	13	5.6
9	Control	SA-VP-21	23	13.6
10	Control	SA-VP-26	15	7.5
11	Control	SA-VP-53	17	8.6
12	Control	SA-VP-61	17	9.1
13	Excavate/Restore	SA-VP-4	18	7.6
14	Excavate/Restore	SA-VP-7	18	8.8
15	Excavate/Restore	SA-VP-16	23	10.3
16	Excavate/Restore	SA-VP-32	11	5.3
17	Excavate/Restore	SA-VP-57	27	19.9

Pool_ID	Number of Pools within 1000 feet	Surrounding Land Use (Percent of total area from edge of pool)[5]							
		All Forest		Scrub/Shrub		Open Space		Developed	
		VPE 0-100	CTH 100-750	VPE 0-100	CTH 100-750	VPE 0-100	CTH 100-750	VPE 0-100	CTH 100-750
Amendment									
5A-VP-9	9	90	80.3	4.6	0.4	5.4	10	0	9.3
5A-VP-12	8	90.6	77.8	0	1.5	8.6	13.8	0.8	6.8
5A-VP-15	9	93.1	65.6	0	0.9	6.4	11.1	0.5	22.4
5A-VP-22	4	56.4	65.9	39.8	5.5	3.8	21.1	0	7.4
5A-VP-27	6	91.6	67	8.2	15	0.2	11	0	7
Excavate/Restore									
5A-VP-4	7	94.5	77.1	0	0.4	0	6.7	5.5	15.8
5A-VP-7	9	81.9	84.8	0	1.1	18.1	13.4	0	0.7
5A-VP-16	7	100	62.2	0	0.5	0	8.3	0	29.1
5A-VP-52	7	16.2	38.3	56.2	8.6	27.6	39.4	0	13.8
5A-VP-57	5	57.7	31	11.5	16.6	30.7	47.6	0	4.8
Control									
5A-VP-3	8	100	74.2	0	0.6	0	12.4	0	12.7
5A-VP-5	8	100	70.5	0	1.1	0	3.8	0	24.6
5A-VP-10	11	100	76	0	1.5	0	6.1	0	16.3
5A-VP-21	4	56.4	58.7	16.9	5	18.6	13.7	8.1	22.5
5A-VP-26	4	82.2	66.2	15.4	13.9	0.7	9.3	1.7	10.6
5A-VP-55	7	41.5	36.2	34.4	11	24.1	44.6	0	8.3
5A-VP-61	9	97.1	47.3	0	3.4	2.9	34.8	0	14.4

			Soils Profile Description						
			Matrix		Redox Features				
Plot ID	Depth Start (Inches)	Depth End (Inches)	Color (Moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture
Amendment									
5AVP9	0	3	10YR 3/1	100					Organic/Muck
	3	10	10YR 3/1	95	10YR 4/4	5	C	M	Very Fine Sandy Loam
	10	20	10YR 3/1	95	10YR 4/1	5	C	M	Very Fine Sandy Loam
	20	28	2.5Y 4/1	95	10YR 4/4	5	C	M	Very Fine Sandy Loam
	28	34	5Y 4/1	100					Loamy Sand
5AVP12	0	15	10YR 2/1	100					Organic/Muck
	15	30	10YR 2/2	100					Organic/Muck
	30	34	10YR 3/1	90	10YR 3/6	10	C	M	Loamy Sand
5AVP15	0	32	10YR 2/1	100					Organic/Muck
	32	36	10YR 3/1	90	10YR 4/4	10	C	M	Fine Sandy Loam
5AVP22	0	4	10YR 2/1	100					Organic/Muck
	4	16	10YR 4/1	95	10YR 3/6	5	C	M	Fine Sandy Loam
	16	26	5Y 4/1	95	10YR 3/6	5	C	M	Fine Sandy Loam
	26	34	5Y 3/1	95	10YR 3/6	5	C	M	Fine Sandy Loam
5AVP27	0	8	10YR 3/1	95	10YR 4/6	5	C	M	Fine Sandy Loam
	8	20	2.5Y 4/1	95	10YR 3/6	5	C	M	with streaking FSL
	20	28	2.5Y 3/2	95	10YR 3/4	5	C	M	Loamy Sand
	28	40	10YR5/1	95	10YR 4/4	5	C	M	Loamy Sand
Excavate / Restore									
5AVP4	0	5	10YR 3/1	100					Fine Sandy Loam
	5	20	2.5Y 4/2	95	7.5Y 3/2	5	C	M	Fine Sandy Loam
	20	24	10YR 3/1	95	7.5Y 3/2	5	C	M	Fine Sandy Loam
	24	34	2.5Y 4/1	95	10YR 3/3	5	C	M	Loamy sand
5AVP7	0	13	10YR 3/1	95	10YR 3/4	5	C	M	Very Fine Sandy Loam
	13	26	10YR 4/1	95	10YR 3/4	5	C	M	Very Fine Sandy Loam
	26	32	2.5Y 4/1	95	10YR 3/1	5	C	M	Very Fine Sandy Loam
5AVP16	0	10	10YR 3/1	100					Organic/Muck
	10	24	2.5Y 3/1	95	10YR 3/3	5	C	M	Very Fine Sandy Loam
	24	34	5Y 4/4	95	2.5Y 3/3	5	C	M	Fine Sandy Loam
5AVP52	0	4	10YR 3/1	95	10YR 4/4	5	C	M	Fine Sandy Loam
	4	16	10YR 3/4	95	2.5Y 3/1	5	C	M	Fine Sandy Loam
	16	24	2.5Y 3/1	95	10YR 3/3	5	C	M	Very Fine Sandy Loam
	24	30	2.5Y 4/1	95	10YR 3/3	5	C	M	Very Fine Sandy Loam
5AVP57	0	3	10YR 2/1	100					Organic/Muck
	3	18	2.5Y 3/2	95	10YR 3/3	5	C	M	Fine Sandy Loam
	18	26	2.5Y 3/1	100					Fine Sandy Loam
	26	30	2.5Y 4/1	95	10YR 3/3	5	C	M	Very Fine Sandy Loam
Control									
5AVP3	0	3	10YR 2/2	100					Fine Silt Loam
	3	5	10YR 3/1	100					Fine Silt Loam
	5	10	10YR 4/3	100					Fine Sandy Loam
	10	16	10YR 3/3	95	10YR 4/4	5	C	M	Sandy Loam
	16	24	10YR 4/2	95	10YR 4/4	5	C	M	Coarse Loamy Sand
	24	34	2.5Y 4/2	100					Loamy sand
5AVP5	0	2	10YR 2/1	100					Organic/Muck
	2	10	2.5Y 2.5/1	95	7.5Y 3/2	5	C	M	Very Fine Sandy Loam
	10	20	2.5Y 3/1	95	7.5Y 3/2	5	C	M	Very Fine Sandy Loam

	20	32	2.5Y 4/1	95	7.5Y 3/2	5	C	M	Very Fine Sandy Loam
5AVP10	0	4	10YR 2/2	100					Organic/Muck
	4	10	10YR 3/2	100					Loamy Sand
	10	24	10YR 5/1	95	10YR 5/8	5	C	M	Coarse Loamy Sand
	24	30	10YR 4/1						Silt Loam
	30	36	10YR 4/1	95	10YR 4-6	5	C	M	Silt Loam
5AVP21	0	16	10YR 2/1	100					Organic/Muck
	16	22	10YR 2/1	95	10YR 3/6	5	C	M	Fine Sandy Loam
	22	40	10YR 2/1	100					with organic plant material
5AVP26	0	4	10YR 2/1	100					Organic/Muck
	4	16	10YR 3/1	95	10YR 4/6	5	C	M	Fine Sandy Loam
	16	24	5Y 3/1	95	10YR 4/6	5	C	M	Fine Sandy Loam
	24	30	5Y 4/2	95	2.5Y 5/2	5	C	M	Very Fine Sandy Loam
5AVP55	0	22	2.5Y 3/1	95	10YR 3/3	5	C	M	Fine Sandy Loam
	22	30	2.5Y 4/1	100					Fine Sandy Loam
5AVP61	0	2	10YR 2/1	100					Organic/Muck
	2	12	2.5Y 3/1	95	2.5Y 4/1	5	C	M	Very Fine Sandy Loam
	12	22	2.5Y 4/1	95	2.5Y 3/3	5	C	M	Very Fine Sandy Loam
	22	34	2.5Y 5/1	95	2.5Y 5/6	5	C	M	Very Fine Sandy Loam

SORT	Pool_ID	Treatment	Date	Soil Classification	Percent
1	**5AVP03**	Control	6/25/2024	Gravel	18.5
2	**5AVP03**	Control	6/25/2024	Coarse Sand	5.0
3	**5AVP03**	Control	6/25/2024	Medium Sand	9.4
4	**5AVP03**	Control	6/25/2024	Fine Sand	39.8
5	**5AVP03**	Control	6/25/2024	Fines	27.3
6	**5AVP04**	Excavate/Restore	6/26/2024	Gravel	0.0
7	**5AVP04**	Excavate/Restore	6/26/2024	Coarse Sand	0.0
8	**5AVP04**	Excavate/Restore	6/26/2024	Medium Sand	3.4
9	**5AVP04**	Excavate/Restore	6/26/2024	Fine Sand	29.0
10	**5AVP04**	Excavate/Restore	6/26/2024	Fines	67.6
11	**5AVP05**	Control	6/26/2024	Gravel	0.0
12	**5AVP05**	Control	6/26/2024	Coarse Sand	0.3
13	**5AVP05**	Control	6/26/2024	Medium Sand	2.8
14	**5AVP05**	Control	6/26/2024	Fine Sand	13.3
15	**5AVP05**	Control	6/26/2024	Fines	83.6
16	**5AVP07**	Excavate/Restore	6/25/2024	Gravel	0.0
17	**5AVP07**	Excavate/Restore	6/25/2024	Coarse Sand	0.0
18	**5AVP07**	Excavate/Restore	6/25/2024	Medium Sand	4.7
19	**5AVP07**	Excavate/Restore	6/25/2024	Fine Sand	12.1
20	**5AVP07**	Excavate/Restore	6/25/2024	Fines	83.2
21	**5AVP09**	Amendment	7/1/2024	Gravel	0.0
22	**5AVP09**	Amendment	7/1/2024	Coarse Sand	0.0
23	**5AVP09**	Amendment	7/1/2024	Medium Sand	4.7
24	**5AVP09**	Amendment	7/1/2024	Fine Sand	23.6
25	**5AVP09**	Amendment	7/1/2024	Fines	71.7
26	**5AVP10**	Control	6/26/2024	Gravel	12.5
27	**5AVP10**	Control	6/26/2024	Coarse Sand	9.3
28	**5AVP10**	Control	6/26/2024	Medium Sand	26.2
29	**5AVP10**	Control	6/26/2024	Fine Sand	34.9
30	**5AVP10**	Control	6/26/2024	Fines	17.1
31	**5AVP12**	Amendment	6/27/2024	Gravel	0.0
32	**5AVP12**	Amendment	6/27/2024	Coarse Sand	0.8
33	**5AVP12**	Amendment	6/27/2024	Medium Sand	3.3
34	**5AVP12**	Amendment	6/27/2024	Fine Sand	10.9
35	**5AVP12**	Amendment	6/27/2024	Fines	85.0
36	**5AVP15**	Amendment	6/27/2024	Gravel	0.0
37	**5AVP15**	Amendment	6/27/2024	Coarse Sand	0.4
38	**5AVP15**	Amendment	6/27/2024	Medium Sand	5.4
39	**5AVP15**	Amendment	6/27/2024	Fine Sand	19.5
40	**5AVP15**	Amendment	6/27/2024	Fines	74.7
41	**5AVP16**	Excavate/Restore	6/27/2024	Gravel	0.0
42	**5AVP16**	Excavate/Restore	6/27/2024	Coarse Sand	0.3
43	**5AVP16**	Excavate/Restore	6/27/2024	Medium Sand	3.2
44	**5AVP16**	Excavate/Restore	6/27/2024	Fine Sand	36.3
45	**5AVP16**	Excavate/Restore	6/27/2024	Fines	60.2
46	**5AVP21**	Control	7/2/2024	Gravel	12.2
47	**5AVP21**	Control	7/2/2024	Coarse Sand	3.0
48	**5AVP21**	Control	7/2/2024	Medium Sand	13.4
49	**5AVP21**	Control	7/2/2024	Fine Sand	25.5
50	**5AVP21**	Control	7/2/2024	Fines	45.9
51	**5AVP22**	Amendment	7/2/2024	Gravel	0.0
52	**5AVP22**	Amendment	7/2/2024	Coarse Sand	0.0
53	**5AVP22**	Amendment	7/2/2024	Medium Sand	3.0
54	**5AVP22**	Amendment	7/2/2024	Fine Sand	32.6
55	**5AVP22**	Amendment	7/2/2024	Fines	64.4
56	**5AVP26**	Control	7/2/2024	Gravel	0.0
57	**5AVP26**	Control	7/2/2024	Coarse Sand	1.4
58	**5AVP26**	Control	7/2/2024	Medium Sand	6.7
59	**5AVP26**	Control	7/2/2024	Fine Sand	32.0
60	**5AVP26**	Control	7/2/2024	Fines	59.9
61	**5AVP27**	Amendment	7/2/2024	Gravel	0.0
62	**5AVP27**	Amendment	7/2/2024	Coarse Sand	0.0
63	**5AVP27**	Amendment	7/2/2024	Medium Sand	2.9
64	**5AVP27**	Amendment	7/2/2024	Fine Sand	41.6
65	**5AVP27**	Amendment	7/2/2024	Fines	55.5

Pool_ID	Treatment
5AVP03	Control
5AVP04	Excavate/Restore
5AVP05	Control
5AVP07	Excavate/Restore
5AVP09	Amendment
5AVP10	Control
5AVP12	Amendment
5AVP15	Amendment
5AVP16	Excavate/Restore
5AVP21	Control
5AVP22	Amendment
5AVP26	Control
5AVP27	Amendment
5AVP52	Excavate/Restore
5AVP55	Control
5AVP57	Excavate/Restore
5AVP61	Control

66	**5AVP52**	Excavate/Restore	8/28/2024	Gravel	0.0
67	**5AVP52**	Excavate/Restore	8/28/2024	Coarse Sand	3.9
68	**5AVP52**	Excavate/Restore	8/28/2024	Medium Sand	23.0
69	**5AVP52**	Excavate/Restore	8/28/2024	Fine Sand	36.4
70	**5AVP52**	Excavate/Restore	8/28/2024	Fines	36.7
71	**5AVP55**	Excavate/Restore	8/28/2024	Gravel	0.0
72	**5AVP55**	Control	8/28/2024	Coarse Sand	1.7
73	**5AVP55**	Control	8/28/2024	Medium Sand	8.5
74	**5AVP55**	Control	8/28/2024	Fine Sand	21.5
75	**5AVP55**	Control	8/28/2024	Fines	68.3
76	**5AVP57**	Excavate/Restore	8/28/2024	Gravel	0.0
77	**5AVP57**	Excavate/Restore	8/28/2024	Coarse Sand	0.4
78	**5AVP57**	Excavate/Restore	8/28/2024	Medium Sand	10.8
79	**5AVP57**	Excavate/Restore	8/28/2024	Fine Sand	25.4
80	**5AVP57**	Excavate/Restore	8/28/2024	Fines	63.4
81	**5AVP61**	Control	8/29/2024	Gravel	0.0
82	**5AVP61**	Control	8/29/2024	Coarse Sand	1.1
83	**5AVP61**	Control	8/29/2024	Medium Sand	15.6
84	**5AVP61**	Control	8/29/2024	Fine Sand	30.5
85	**5AVP61**	Control	8/29/2024	Fines	52.8

SORT	Pool_ID	Treatment	Date	Pilot Pool	Grain Size	Percent Passing	Incremental Percent
1	5AVP03	Control	6/25/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
2	5AVP03	Control	6/25/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
3	5AVP03	Control	6/25/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
4	5AVP03	Control	6/25/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
5	5AVP03	Control	6/25/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
6	5AVP03	Control	6/25/2024	Y	Sieve Size 0.375 inch - Percent Finer	92	8
7	5AVP03	Control	6/25/2024	Y	Sieve Size #4 - Percent Finer	81.5	10.5
8	5AVP03	Control	6/25/2024	Y	Sieve Size #10 - Percent Finer	76.5	5
9	5AVP03	Control	6/25/2024	Y	Sieve Size #20 - Percent Finer	72.3	4.2
10	5AVP03	Control	6/25/2024	Y	Sieve Size #40 - Percent Finer	67.1	5.2
11	5AVP03	Control	6/25/2024	Y	Sieve Size #60 - Percent Finer	58.1	9
12	5AVP03	Control	6/25/2024	Y	Sieve Size #80 - Percent Finer	48.2	9.9
13	5AVP03	Control	6/25/2024	Y	Sieve Size #100 - Percent Finer	40.7	7.5
14	5AVP03	Control	6/25/2024	Y	Sieve Size #200 - Percent Finer	27.3	13.4
15	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
16	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
17	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
18	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
19	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
20	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
21	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #4 - Percent Finer	100	0
22	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #10 - Percent Finer	100	0
23	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #20 - Percent Finer	98.6	1.4
24	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #40 - Percent Finer	96.6	2
25	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #60 - Percent Finer	94.1	2.5
26	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #80 - Percent Finer	90.7	3.4
27	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #100 - Percent Finer	87.3	3.4
28	5AVP04	Excavate/Restore	6/26/2024	Y	Sieve Size #200 - Percent Finer	67.6	19.7
29	5AVP05	Control	6/26/2024	Y	Sieve Size 3 inch - Percent Finer	100.0	0.0
30	5AVP05	Control	6/26/2024	Y	Sieve Size 2 inch - Percent Finer	100.0	0.0
31	5AVP05	Control	6/26/2024	Y	Sieve Size 1.5 inch - Percent Finer	100.0	0.0
32	5AVP05	Control	6/26/2024	Y	Sieve Size 1 inch - Percent Finer	100.0	0.0
33	5AVP05	Control	6/26/2024	Y	Sieve Size 0.75 inch - Percent Finer	100.0	0.0
34	5AVP05	Control	6/26/2024	Y	Sieve Size 0.375 inch - Percent Finer	100.0	0.0
35	5AVP05	Control	6/26/2024	Y	Sieve Size #4 - Percent Finer	100.0	0.0
36	5AVP05	Control	6/26/2024	Y	Sieve Size #10 - Percent Finer	99.7	0.3
37	5AVP05	Control	6/26/2024	Y	Sieve Size #20 - Percent Finer	98.4	1.3
38	5AVP05	Control	6/26/2024	Y	Sieve Size #40 - Percent Finer	96.9	1.5
39	5AVP05	Control	6/26/2024	Y	Sieve Size #60 - Percent Finer	95.7	1.2
40	5AVP05	Control	6/26/2024	Y	Sieve Size #80 - Percent Finer	94.8	0.9
41	5AVP05	Control	6/26/2024	Y	Sieve Size #100 - Percent Finer	93.7	1.1
42	5AVP05	Control	6/26/2024	Y	Sieve Size #200 - Percent Finer	83.6	10.1
43	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
44	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
45	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
46	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
47	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
48	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
49	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #4 - Percent Finer	100	0
50	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #10 - Percent Finer	100	0
51	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #20 - Percent Finer	96.8	3.2
52	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #40 - Percent Finer	95.3	1.5
53	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #60 - Percent Finer	93.5	1.8
54	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #80 - Percent Finer	92.2	1.3
55	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #100 - Percent Finer	91.2	1
56	5AVP07	Excavate/Restore	6/25/2024	Y	Sieve Size #200 - Percent Finer	83.2	8
57	5AVP09	Amendment	7/1/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
58	5AVP09	Amendment	7/1/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
59	5AVP09	Amendment	7/1/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
60	5AVP09	Amendment	7/1/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
61	5AVP09	Amendment	7/1/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
62	5AVP09	Amendment	7/1/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
63	5AVP09	Amendment	7/1/2024	Y	Sieve Size #4 - Percent Finer	100	0
64	5AVP09	Amendment	7/1/2024	Y	Sieve Size #10 - Percent Finer	100	0
65	5AVP09	Amendment	7/1/2024	Y	Sieve Size #20 - Percent Finer	97.5	2.5
66	5AVP09	Amendment	7/1/2024	Y	Sieve Size #40 - Percent Finer	95.3	2.2
67	5AVP09	Amendment	7/1/2024	Y	Sieve Size #60 - Percent Finer	92.5	2.8
68	5AVP09	Amendment	7/1/2024	Y	Sieve Size #80 - Percent Finer	89.1	3.4
69	5AVP09	Amendment	7/1/2024	Y	Sieve Size #100 - Percent Finer	85.9	3.2
70	5AVP09	Amendment	7/1/2024	Y	Sieve Size #200 - Percent Finer	71.7	14.2
71	5AVP10	Control	6/26/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
72	5AVP10	Control	6/26/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
73	5AVP10	Control	6/26/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
74	5AVP10	Control	6/26/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
75	5AVP10	Control	6/26/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
76	5AVP10	Control	6/26/2024	Y	Sieve Size 0.375 inch - Percent Finer	96.3	3.7
77	5AVP10	Control	6/26/2024	Y	Sieve Size #4 - Percent Finer	87.5	8.8
78	5AVP10	Control	6/26/2024	Y	Sieve Size #10 - Percent Finer	78.2	9.3
79	5AVP10	Control	6/26/2024	Y	Sieve Size #20 - Percent Finer	68.1	10.1
80	5AVP10	Control	6/26/2024	Y	Sieve Size #40 - Percent Finer	52	16.1
81	5AVP10	Control	6/26/2024	Y	Sieve Size #60 - Percent Finer	34.6	17.4

Pool_ID	Treatment
5AVP03	Control
5AVP04	Excavate/Restore
5AVP05	Control
5AVP07	Excavate/Restore
5AVP09	Amendment
5AVP10	Control
5AVP12	Amendment
5AVP15	Amendment
5AVP16	Excavate/Restore
5AVP21	Control
5AVP22	Amendment
5AVP26	Control
5AVP27	Amendment
5AVP52	Excavate/Restore
5AVP55	Control
5AVP57	Excavate/Restore
5AVP61	Control

82	5AVP10	Control	6/26/2024	Y	Sieve Size #80 - Percent Finer	26.2	8.4
83	5AVP10	Control	6/26/2024	Y	Sieve Size #100 - Percent Finer	22.7	3.5
84	5AVP10	Control	6/26/2024	Y	Sieve Size #200 - Percent Finer	17.1	5.6
85	5AVP12	Amendment	6/27/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
86	5AVP12	Amendment	6/27/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
87	5AVP12	Amendment	6/27/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
88	5AVP12	Amendment	6/27/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
89	5AVP12	Amendment	6/27/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
90	5AVP12	Amendment	6/27/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
91	5AVP12	Amendment	6/27/2024	Y	Sieve Size #4 - Percent Finer	100	0
92	5AVP12	Amendment	6/27/2024	Y	Sieve Size #10 - Percent Finer	99.2	0.8
93	5AVP12	Amendment	6/27/2024	Y	Sieve Size #20 - Percent Finer	96.7	2.5
94	5AVP12	Amendment	6/27/2024	Y	Sieve Size #40 - Percent Finer	95.9	0.8
95	5AVP12	Amendment	6/27/2024	Y	Sieve Size #60 - Percent Finer	94.8	1.1
96	5AVP12	Amendment	6/27/2024	Y	Sieve Size #80 - Percent Finer	93.9	0.9
97	5AVP12	Amendment	6/27/2024	Y	Sieve Size #100 - Percent Finer	93.1	0.8
98	5AVP12	Amendment	6/27/2024	Y	Sieve Size #200 - Percent Finer	85	8.1
99	5AVP15	Amendment	6/27/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
100	5AVP15	Amendment	6/27/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
101	5AVP15	Amendment	6/27/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
102	5AVP15	Amendment	6/27/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
103	5AVP15	Amendment	6/27/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
104	5AVP15	Amendment	6/27/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
105	5AVP15	Amendment	6/27/2024	Y	Sieve Size #4 - Percent Finer	100	0
106	5AVP15	Amendment	6/27/2024	Y	Sieve Size #10 - Percent Finer	99.6	0.4
107	5AVP15	Amendment	6/27/2024	Y	Sieve Size #20 - Percent Finer	95.6	4
108	5AVP15	Amendment	6/27/2024	Y	Sieve Size #40 - Percent Finer	94.2	1.4
109	5AVP15	Amendment	6/27/2024	Y	Sieve Size #60 - Percent Finer	92.1	2.1
110	5AVP15	Amendment	6/27/2024	Y	Sieve Size #80 - Percent Finer	89.6	2.5
111	5AVP15	Amendment	6/27/2024	Y	Sieve Size #100 - Percent Finer	87.4	2.2
112	5AVP15	Amendment	6/27/2024	Y	Sieve Size #200 - Percent Finer	74.7	12.7
113	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
114	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
115	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
116	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
117	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
118	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
119	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #4 - Percent Finer	100	0
120	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #10 - Percent Finer	99.7	0.3
121	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #20 - Percent Finer	98.2	1.5
122	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #40 - Percent Finer	96.5	1.7
123	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #60 - Percent Finer	91	5.5
124	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #80 - Percent Finer	82.8	8.2
125	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #100 - Percent Finer	77.1	5.7
126	5AVP16	Excavate/Restore	6/27/2024	Y	Sieve Size #200 - Percent Finer	60.2	16.9
127	5AVP21	Control	7/2/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
128	5AVP21	Control	7/2/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
129	5AVP21	Control	7/2/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
130	5AVP21	Control	7/2/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
131	5AVP21	Control	7/2/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
132	5AVP21	Control	7/2/2024	Y	Sieve Size 0.375 inch - Percent Finer	90.4	9.6
133	5AVP21	Control	7/2/2024	Y	Sieve Size #4 - Percent Finer	87.8	2.6
134	5AVP21	Control	7/2/2024	Y	Sieve Size #10 - Percent Finer	84.8	3
135	5AVP21	Control	7/2/2024	Y	Sieve Size #20 - Percent Finer	76.9	7.9
136	5AVP21	Control	7/2/2024	Y	Sieve Size #40 - Percent Finer	71.4	5.5
137	5AVP21	Control	7/2/2024	Y	Sieve Size #60 - Percent Finer	66.1	5.3
138	5AVP21	Control	7/2/2024	Y	Sieve Size #80 - Percent Finer	61.5	4.6
139	5AVP21	Control	7/2/2024	Y	Sieve Size #100 - Percent Finer	57.7	3.8
140	5AVP21	Control	7/2/2024	Y	Sieve Size #200 - Percent Finer	45.9	11.8
141	5AVP22	Amendment	7/2/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
142	5AVP22	Amendment	7/2/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
143	5AVP22	Amendment	7/2/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
144	5AVP22	Amendment	7/2/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
145	5AVP22	Amendment	7/2/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
146	5AVP22	Amendment	7/2/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
147	5AVP22	Amendment	7/2/2024	Y	Sieve Size #4 - Percent Finer	100	0
148	5AVP22	Amendment	7/2/2024	Y	Sieve Size #10 - Percent Finer	100	0
149	5AVP22	Amendment	7/2/2024	Y	Sieve Size #20 - Percent Finer	98.5	1.5
150	5AVP22	Amendment	7/2/2024	Y	Sieve Size #40 - Percent Finer	97	1.5
151	5AVP22	Amendment	7/2/2024	Y	Sieve Size #60 - Percent Finer	93.7	3.3
152	5AVP22	Amendment	7/2/2024	Y	Sieve Size #80 - Percent Finer	88.6	5.1
153	5AVP22	Amendment	7/2/2024	Y	Sieve Size #100 - Percent Finer	84.2	4.4
154	5AVP22	Amendment	7/2/2024	Y	Sieve Size #200 - Percent Finer	64.4	19.8
155	5AVP26	Control	7/2/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
156	5AVP26	Control	7/2/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
157	5AVP26	Control	7/2/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
158	5AVP26	Control	7/2/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
159	5AVP26	Control	7/2/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
160	5AVP26	Control	7/2/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
161	5AVP26	Control	7/2/2024	Y	Sieve Size #4 - Percent Finer	100	0
162	5AVP26	Control	7/2/2024	Y	Sieve Size #10 - Percent Finer	98.6	1.4
163	5AVP26	Control	7/2/2024	Y	Sieve Size #20 - Percent Finer	94.4	4.2

164	5AVP26	Control	7/2/2024	Y	Sieve Size #40 - Percent Finer	91.9	2.5
165	5AVP26	Control	7/2/2024	Y	Sieve Size #60 - Percent Finer	88.7	3.2
166	5AVP26	Control	7/2/2024	Y	Sieve Size #80 - Percent Finer	84.3	4.4
167	5AVP26	Control	7/2/2024	Y	Sieve Size #100 - Percent Finer	79.6	4.7
168	5AVP26	Control	7/2/2024	Y	Sieve Size #200 - Percent Finer	59.9	19.7
169	5AVP27	Amendment	7/2/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
170	5AVP27	Amendment	7/2/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
171	5AVP27	Amendment	7/2/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
172	5AVP27	Amendment	7/2/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
173	5AVP27	Amendment	7/2/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
174	5AVP27	Amendment	7/2/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
175	5AVP27	Amendment	7/2/2024	Y	Sieve Size #4 - Percent Finer	100	0
176	5AVP27	Amendment	7/2/2024	Y	Sieve Size #10 - Percent Finer	100	0
177	5AVP27	Amendment	7/2/2024	Y	Sieve Size #20 - Percent Finer	98.5	1.5
178	5AVP27	Amendment	7/2/2024	Y	Sieve Size #40 - Percent Finer	97.1	1.4
179	5AVP27	Amendment	7/2/2024	Y	Sieve Size #60 - Percent Finer	94.9	2.2
180	5AVP27	Amendment	7/2/2024	Y	Sieve Size #80 - Percent Finer	89.8	5.1
181	5AVP27	Amendment	7/2/2024	Y	Sieve Size #100 - Percent Finer	83.7	6.1
182	5AVP27	Amendment	7/2/2024	Y	Sieve Size #200 - Percent Finer	55.5	28.2
183	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
184	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
185	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
186	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
187	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
188	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
189	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #4 - Percent Finer	100	0
190	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #10 - Percent Finer	96.1	3.9
191	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #20 - Percent Finer	83.9	12.2
192	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #40 - Percent Finer	73.1	10.8
193	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #60 - Percent Finer	65	8.1
194	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #80 - Percent Finer	59.8	5.2
195	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #100 - Percent Finer	54.9	4.9
196	5AVP52	Excavate/Restore	8/28/2024	Y	Sieve Size #200 - Percent Finer	36.7	18.2
197	5AVP55	Control	8/28/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
198	5AVP55	Control	8/28/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
199	5AVP55	Control	8/28/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
200	5AVP55	Control	8/28/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
201	5AVP55	Control	8/28/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
202	5AVP55	Control	8/28/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
203	5AVP55	Control	8/28/2024	Y	Sieve Size #4 - Percent Finer	100	0
204	5AVP55	Control	8/28/2024	Y	Sieve Size #10 - Percent Finer	98.3	1.7
205	5AVP55	Control	8/28/2024	Y	Sieve Size #20 - Percent Finer	93.4	4.9
206	5AVP55	Control	8/28/2024	Y	Sieve Size #40 - Percent Finer	89.8	3.6
207	5AVP55	Control	8/28/2024	Y	Sieve Size #60 - Percent Finer	86.8	3
208	5AVP55	Control	8/28/2024	Y	Sieve Size #80 - Percent Finer	83.4	3.4
209	5AVP55	Control	8/28/2024	Y	Sieve Size #100 - Percent Finer	80.4	3
210	5AVP55	Control	8/28/2024	Y	Sieve Size #200 - Percent Finer	68.3	12.1
211	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
212	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
213	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
214	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
215	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
216	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
217	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #4 - Percent Finer	100	0
218	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #10 - Percent Finer	99.6	0.4
219	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #20 - Percent Finer	94.3	5.3
220	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #40 - Percent Finer	88.8	5.5
221	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #60 - Percent Finer	84.7	4.1
222	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #80 - Percent Finer	81.5	3.2
223	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #100 - Percent Finer	78.1	3.4
224	5AVP57	Excavate/Restore	8/28/2024	Y	Sieve Size #200 - Percent Finer	63.4	14.7
225	5AVP61	Control	8/29/2024	Y	Sieve Size 3 inch - Percent Finer	100	0
226	5AVP61	Control	8/29/2024	Y	Sieve Size 2 inch - Percent Finer	100	0
227	5AVP61	Control	8/29/2024	Y	Sieve Size 1.5 inch - Percent Finer	100	0
228	5AVP61	Control	8/29/2024	Y	Sieve Size 1 inch - Percent Finer	100	0
229	5AVP61	Control	8/29/2024	Y	Sieve Size 0.75 inch - Percent Finer	100	0
230	5AVP61	Control	8/29/2024	Y	Sieve Size 0.375 inch - Percent Finer	100	0
231	5AVP61	Control	8/29/2024	Y	Sieve Size #4 - Percent Finer	100	0
232	5AVP61	Control	8/29/2024	Y	Sieve Size #10 - Percent Finer	98.9	1.1
233	5AVP61	Control	8/29/2024	Y	Sieve Size #20 - Percent Finer	89.8	9.1
234	5AVP61	Control	8/29/2024	Y	Sieve Size #40 - Percent Finer	83.3	6.5
235	5AVP61	Control	8/29/2024	Y	Sieve Size #60 - Percent Finer	78.1	5.2
236	5AVP61	Control	8/29/2024	Y	Sieve Size #80 - Percent Finer	73.6	4.5
237	5AVP61	Control	8/29/2024	Y	Sieve Size #100 - Percent Finer	69.2	4.4
238	5AVP61	Control	8/29/2024	Y	Sieve Size #200 - Percent Finer	52.8	16.4

Pool_ID	Treatment	Pool_ID
5AVP03	Control	5AVP03
5AVP04	Excavate/Restore	5AVP04
5AVP05	Control	5AVP05
5AVP07	Excavate/Restore	5AVP07
5AVP09	Amendment	5AVP09
5AVP10	Control	5AVP10
5AVP12	Amendment	5AVP12
5AVP15	Amendment	5AVP15
5AVP16	Excavate/Restore	5AVP16
5AVP21	Control	5AVP21
5AVP22	Amendment	5AVP22
5AVP26	Control	5AVP26
5AVP27	Amendment	5AVP27
5AVP52	Excavate/Restore	5AVP52
5AVP55	Control	5AVP55
5AVP57	Excavate/Restore	5AVP57
5AVP61	Control	5AVP61

Pool ID	Treatment	Date	Period	Total Length (mm)	Notes
5AVP10	Control	5/6/2024	1	20	No limb Development
5AVP10	Control	5/6/2024	1	22	No limb Development
5AVP10	Control	5/6/2024	1	19	No limb Development
5AVP10	Control	5/6/2024	1	20	No limb Development
5AVP12	Amendment	5/8/2024	1	20	No limb Development
5AVP12	Amendment	5/8/2024	1	20	No limb Development
5AVP12	Amendment	5/8/2024	1	21	No limb Development
5AVP12	Amendment	5/8/2024	1	19	No limb Development
5AVP12	Amendment	5/8/2024	1	20	No limb Development
5AVP12	Amendment	5/8/2024	1	22	No limb Development
5AVP15	Amendment	5/6/2024	1	27	No limb Development
5AVP15	Amendment	5/6/2024	1	26	No limb Development
5AVP15	Amendment	5/6/2024	1	21	No limb Development
5AVP15	Amendment	5/6/2024	1	24	No limb Development
5AVP15	Amendment	5/6/2024	1	22	No limb Development
5AVP16	Excavate/Restore	5/6/2024	1	22	No limb Development
5AVP16	Excavate/Restore	5/6/2024	1	21	No limb Development
5AVP16	Excavate/Restore	5/6/2024	1	22	No limb Development
5AVP16	Excavate/Restore	5/6/2024	1	23	No limb Development
5AVP22	Amendment	5/7/2024	1	22	No limb Development
5AVP22	Amendment	5/7/2024	1	27	No limb Development
5AVP22	Amendment	5/7/2024	1	26	No limb Development
5AVP22	Amendment	5/7/2024	1	25	No limb Development
5AVP22	Amendment	5/7/2024	1	25	No limb Development
5AVP22	Amendment	5/7/2024	1	25	No limb Development
5AVP22	Amendment	5/7/2024	1	23	No limb Development
5AVP22	Amendment	5/7/2024	1	20	No limb Development
5AVP22	Amendment	5/7/2024	1	20	No limb Development
5AVP22	Amendment	5/7/2024	1	21	No limb Development
5AVP22	Amendment	5/7/2024	1	24	No limb Development
5AVP22	Amendment	5/7/2024	1	28	No limb Development
5AVP22	Amendment	5/7/2024	1	23	No limb Development
5AVP22	Amendment	5/7/2024	1	26	No limb Development
5AVP22	Amendment	5/7/2024	1	26	No limb Development
5AVP22	Amendment	5/7/2024	1	24	No limb Development
5AVP22	Amendment	5/7/2024	1	25	No limb Development
5AVP22	Amendment	5/7/2024	1	26	No limb Development
5AVP22	Amendment	5/7/2024	1	16	No limb Development
5AVP22	Amendment	5/7/2024	1	22	No limb Development
5AVP22	Amendment	5/7/2024	1	27	No limb Development
5AVP22	Amendment	5/7/2024	1	27	No limb Development
5AVP22	Amendment	5/7/2024	1	26	No limb Development
5AVP5	Control	5/6/2024	1	22	No limb Development

5AVP5	Control	5/6/2024	1	16	No limb Development
5AVP5	Control	5/6/2024	1	15	No limb Development
5AVP5	Control	5/6/2024	1	20	No limb Development
5AVP5	Control	5/6/2024	1	20	No limb Development
5AVP5	Control	5/6/2024	1	14	No limb Development
5AVP5	Control	5/6/2024	1	15	No limb Development
5AVP5	Control	5/6/2024	1	14	No limb Development
5AVP5	Control	5/6/2024	1	15	No limb Development
5AVP5	Control	5/6/2024	1	23	No limb Development
5AVP5	Control	5/6/2024	1	23	No limb Development
5AVP5	Control	5/6/2024	1	27	No limb Development
5AVP5	Control	5/6/2024	1	22	No limb Development
5AVP61	Control	5/7/2024	1	25	No limb Development
5AVP61	Control	5/7/2024	1	26	No limb Development
5AVP61	Control	5/7/2024	1	27	No limb Development
5AVP61	Control	5/7/2024	1	30	No limb Development
5AVP61	Control	5/7/2024	1	28	No limb Development
5AVP61	Control	5/7/2024	1	27	No limb Development
5AVP61	Control	5/7/2024	1	25	No limb Development
5AVP61	Control	5/7/2024	1	20	No limb Development
5AVP61	Control	5/7/2024	1	30	No limb Development
5AVP61	Control	5/7/2024	1	27	No limb Development
5AVP61	Control	5/7/2024	1	25	No limb Development
5AVP61	Control	5/7/2024	1	20	No limb Development
5AVP61	Control	5/7/2024	1	27	No limb Development
5AVP7	Excavate/Restore	5/6/2024	1	20	No limb Development
5AVP7	Excavate/Restore	5/6/2024	1	16	No limb Development
5AVP7	Excavate/Restore	5/6/2024	1	14	No limb Development
5AVP7	Excavate/Restore	5/6/2024	1	16	No limb Development
5AVP12	Amendment	5/30/2024	2	45	Hind limb development
5AVP12	Amendment	5/30/2024	2	45	Hind limb development
5AVP12	Amendment	5/30/2024	2	50	Hind limb development
5AVP12	Amendment	5/30/2024	2	41	Hind limb development
5AVP12	Amendment	5/30/2024	2	52	Hind limb development
5AVP15	Amendment	5/30/2024	2	38	Hind limb development
5AVP15	Amendment	5/30/2024	2	36	Hind limb development
5AVP15	Amendment	5/30/2024	2	36	Hind limb development
5AVP15	Amendment	5/30/2024	2	38	Hind limb development
5AVP15	Amendment	5/30/2024	2	35	Hind limb development
5AVP15	Amendment	5/30/2024	2	38	Hind limb development
5AVP15	Amendment	5/30/2024	2	32	Hind limb development
5AVP15	Amendment	5/30/2024	2	40	Hind limb development
5AVP15	Amendment	5/30/2024	2	35	Hind limb development
5AVP22	Amendment	5/29/2024	2	41	Hind limb development

5AVP22	Amendment	5/29/2024	2	40	Hind limb development
5AVP22	Amendment	5/29/2024	2	43	Hind limb development
5AVP22	Amendment	5/29/2024	2	35	Hind limb development
5AVP22	Amendment	5/29/2024	2	43	Hind limb development
5AVP22	Amendment	5/29/2024	2	40	Hind limb development
5AVP22	Amendment	5/29/2024	2	40	Hind limb development
5AVP22	Amendment	5/29/2024	2	43	Hind limb development
5AVP22	Amendment	5/29/2024	2	40	Hind limb development
5AVP5	Control	5/30/2024	2	48	Hind limb development
5AVP5	Control	5/30/2024	2	50	Hind limb development
5AVP5	Control	5/30/2024	2	45	Hind limb development
5AVP5	Control	5/30/2024	2	45	Hind limb development
5AVP5	Control	5/30/2024	2	40	Hind limb development
5AVP5	Control	5/30/2024	2	47	Hind limb development
5AVP5	Control	5/30/2024	2	40	Hind limb development
5AVP5	Control	5/30/2024	2	47	Hind limb development
5AVP5	Control	5/30/2024	2	42	Hind limb development
5AVP5	Control	5/30/2024	2	44	Hind limb development
5AVP5	Control	5/30/2024	2	45	Hind limb development
5AVP5	Control	5/30/2024	2	42	Hind limb development
5AVP5	Control	5/30/2024	2	43	Hind limb development
5AVP5	Control	5/30/2024	2	41	Hind limb development
5AVP5	Control	5/30/2024	2	49	Hind limb development
5AVP5	Control	5/30/2024	2	46	Hind limb development
5AVP61	Control	5/29/2024	2	33	Hind limb development
5AVP61	Control	5/29/2024	2	35	Hind limb development
5AVP61	Control	5/29/2024	2	35	Hind limb development
5AVP61	Control	5/29/2024	2	27	Hind limb development
5AVP61	Control	5/29/2024	2	27	Hind limb development
5AVP61	Control	5/29/2024	2	32	Hind limb development
5AVP61	Control	5/29/2024	2	27	Hind limb development
5AVP61	Control	5/29/2024	2	35	Hind limb development
5AVP61	Control	5/29/2024	2	32	Hind limb development
5AVP61	Control	5/29/2024	2	30	Hind limb development
5AVP61	Control	5/29/2024	2	32	Hind limb development

	Minimum	Maximum	Average	Count	Standard Error
	Period 1 (Early May)				
Amendment	16	28	23.41	34	0.5
Excavate/Restore	14	23	19.25	8	1.21
Control	14	30	22.13	30	0.88
All	*14*	*30*	*22.42*	*72*	*0.48*
	Period 2 (Late May)				
Amendment	32	52	40.26	23	1
Excavate/Restore	Dry pools and/or no tadpoles observed				
Control	27	50	39.22	27	1.41
All	*27*	*52*	*39.7*	*50*	*0.88*

Pool_ID	Date	Temp (C)	DO (mg/L)	Specific Conductivity	pH	ORP	Turbidity (NTU)	Alkalinity (PPM)[1]	Hardness (ppm)[1]
					Amendment				
5AVP12	4/26/23	11.1	6.3	225	7.0				
	4/1/24	6.5	9.9	165	7.4				
	4/10/25	4.4	6.2	208	7.0	262.5	0.04	80-120	120-250
5AVP15	4/1/24	6.4	9.7	171	7.4				
	4/9/25	11.5	4.9	282	7.1	47.1	1.84	0-40	250-425
5AVP22	4/26/23	11.7	1.9	193	6.6				
	4/1/24	6.8	8.3	111	7.2				
	4/9/25	9.9	4.0	127	6.7	52.8	0.15	0-40	50-120
5AVP27	4/26/23	Dry Pool							
	4/1/24	5.5	7.5	32	6.7				
	4/9/25	8.2	5.0	69	6.5	60.7	0.73	0-40	50-120
5AVP9	4/1/24	5.6	9.0	125	7.3				
	4/9/25	3.0	7.7	171	6.8	67.3	0.07	0-40	120-250
					Excavate/Restore				
5AVP16	4/26/23	11.7	4.7	229	6.8				
	4/1/24	5.9	6.3	146	7.0				
	4/9/25	11.1	4.6	173	6.8	49.4	0.00	80-120	50-120
5AVP4	4/1/24	5.8	7.1	91	6.9				
	4/9/25	2.2	3.1	87	6.3	111.8	14.2	0-40	50-120
5AVP52	4/2/24	5.2	5.1	226	7.1				
	4/10/25	7.8	8.6	321	6.9	111.1	0.00	80-120	50-120
5AVP57	4/2/24	5.3	7.5	170	7.6				
	4/10/25	8.6	5.4	222	7.2	25.3	0.18	120-180	120-250
5AVP7	4/1/24	6.2	8.2	132	7.2				
	4/9/25	4.2	3.7	172	6.7	78.7	2.52	40-80	50-120
					Control				
5AVP10	4/1/24	4.7	7.7	145	7.0				
	4/9/25	3.8	6.6	148	6.8	66.1	0.54	40-80	120-250
5AVP21	4/1/24	7.0	6.3	182	7.0				
	4/9/25	12.3	5.2	191	6.9	51.0	4.55	40-80	120-250
5AVP26	4/1/24	5.5	9.1	110	6.8				
	4/9/25	7.5	9.5	90	6.9	44.1	0.86	0-40	50-120
5AVP3	4/26/23	13.9	3.5	143	6.5				
	4/1/24	4.9	6.0	60	6.8				
	4/9/25	0.7	3.7	141	6.5	116.5	30.0	0-40	50-120
5AVP5	4/26/23	10.4	4.0	112	6.2				
	4/1/24	5.3	3.7	76	6.5				
	4/9/25	8.9	3.0	107	6.3	44.6	0.00	0-40	50-120
5AVP55	4/2/24	5.5	6.8	221	7.5				
	4/10/25	9.6	3.9	215	6.6	8.3	0.46	180-240	250-425
5AVP61	4/2/24	6.8	4.2	66	7.0				
	4/10/25	5.2	7.6	95	6.9	69.2	0.00	0-40	50-120
					Min-Max (Mean)				
Amendment		3-11.7 (7.5)	1.9-9.9 (6.7)	32-282 (157)	6.5-7.4 (7.0)	47.1-262.5 (98.1)	0.04-1.84 (0.6)	20-100 (36)	85-338 (175)
Control		0.7-13.9 (7.0)	2.9-9.5 (5.7)	60-221 (131)	6.2-7.5 (6.8)	8.3-116.5 (57.1)	0-30 (5.2)	20-210 (58)	85-338 (149)
Excavate/Restore		2.2-11.7 (6.7)	3.1-8.6 (5.8)	87-321 (179)	6.3-7.6 (6.9)	25.3-111.8 (75.3)	0-14.2 (3.38)	20-150 (86)	85-185 (105)

1. Min, max and mean based on mid-point value of the range

Pool_ID	Treatment	ALK Midpoint	Hardness Midpoint
5AVP9	Amendment	20	185
5AVP12	Amendment	100	185
5AVP15	Amendment	20	337.5
5AVP22	Amendment	20	85
5AVP27	Amendment	20	85
5AVP3	Control	20	85
5AVP5	Control	20	85
5AVP10	Control	60	120
5AVP21	Control	60	185
5AVP26	Control	20	85
5AVP55	Control	210	337.5
5AVP61	Control	20	85
5AVP4	Excavate/Restore	20	85
5AVP7	Excavate/Restore	60	85
5AVP16	Excavate/Restore	100	85
5AVP52	Excavate/Restore	100	85
5AVP57	Excavate/Restore	150	185

Pool_ID	Treatment	Date	Temp (C)	DO (mg/L)	Specific Conductivity	pH	ORP	Turbidity (NTU)	Alkalinity (PPM)	Hardness (ppm)
5AVP10	Control	4/9/25	3.8	6.6	148	6.8	66.1	0.54	60	185
5AVP10	Control	4/1/24	4.7	7.7	145	7.0				
5AVP12	Amendment	4/10/25	4.4	6.2	208	7.0	262.5	0.04	100	185
5AVP12	Amendment	4/26/23	11.1	6.3	225	7.0				
5AVP12	Amendment	4/1/24	6.5	9.9	165	7.4				
5AVP15	Amendment	4/9/25	11.5	4.9	282	7.1	47.1	1.84	20	338
5AVP15	Amendment	4/1/24	6.4	9.7	171	7.4				
5AVP16	Excavate/Restore	4/9/25	11.1	4.6	173	6.8	49.4	0.00	100	85
5AVP16	Excavate/Restore	4/26/23	11.7	4.7	229	6.8				
5AVP16	Excavate/Restore	4/1/24	5.9	6.3	146	7.0				
5AVP21	Control	4/9/25	12.3	5.2	191	6.9	51.0	4.55	60	185
5AVP21	Control	4/1/24	7.0	6.3	182	7.0				
5AVP22	Amendment	4/9/25	9.9	4.0	127	6.7	52.8	0.15	20	85
5AVP22	Amendment	4/26/23	11.7	1.9	193	6.6				
5AVP22	Amendment	4/1/24	6.8	8.3	111	7.2				
5AVP26	Control	4/9/25	7.5	9.5	90	6.9	44.1	0.86	20	85
5AVP26	Control	4/1/24	5.5	9.1	110	6.8				
5AVP27	Amendment	4/9/25	8.2	5.0	69	6.5	60.7	0.73	20	85
5AVP27	Amendment	4/1/24	5.5	7.5	32	6.7				
5AVP3	Control	4/9/25	0.7	3.7	141	6.5	116.5	30.0	20	85
5AVP3	Control	4/26/23	13.9	3.5	143	6.5				
5AVP3	Control	4/1/24	4.9	6.0	60	6.8				
5AVP4	Excavate/Restore	4/9/25	2.2	3.1	87	6.3	111.8	14.2	20	85
5AVP4	Excavate/Restore	4/1/24	5.8	7.1	91	6.9				
5AVP5	Control	4/9/25	8.9	3.0	107	6.3	44.6	0.00	20	85
5AVP5	Control	4/26/23	10.4	4.0	112	6.2				
5AVP5	Control	4/1/24	5.3	3.7	76	6.5				
5AVP52	Excavate/Restore	4/10/25	7.8	8.6	321	6.9	111.1	0.00	100	85
5AVP52	Excavate/Restore	4/2/24	5.2	5.1	226	7.1				
5AVP55	Control	4/10/25	9.6	3.9	215	6.6	8.3	0.46	210	338
5AVP55	Control	4/2/24	5.5	6.8	221	7.5				
5AVP57	Excavate/Restore	4/10/25	8.6	5.4	222	7.2	25.3	0.18	150	185
5AVP57	Excavate/Restore	4/2/24	5.3	7.5	170	7.6				
5AVP61	Control	4/10/25	5.2	7.6	95	6.9	69.2	0.00	20	85
5AVP61	Control	4/2/24	6.8	4.2	66	7.0				
5AVP7	Excavate/Restore	4/9/25	4.2	3.7	172	6.7	78.7	2.52	60	85
5AVP7	Excavate/Restore	4/1/24	6.2	8.2	132	7.2				
5AVP9	Amendment	4/9/25	3.0	7.7	171	6.8	67.3	0.07	20	185
5AVP9	Amendment	4/1/24	5.6	9.0	125	7.3				

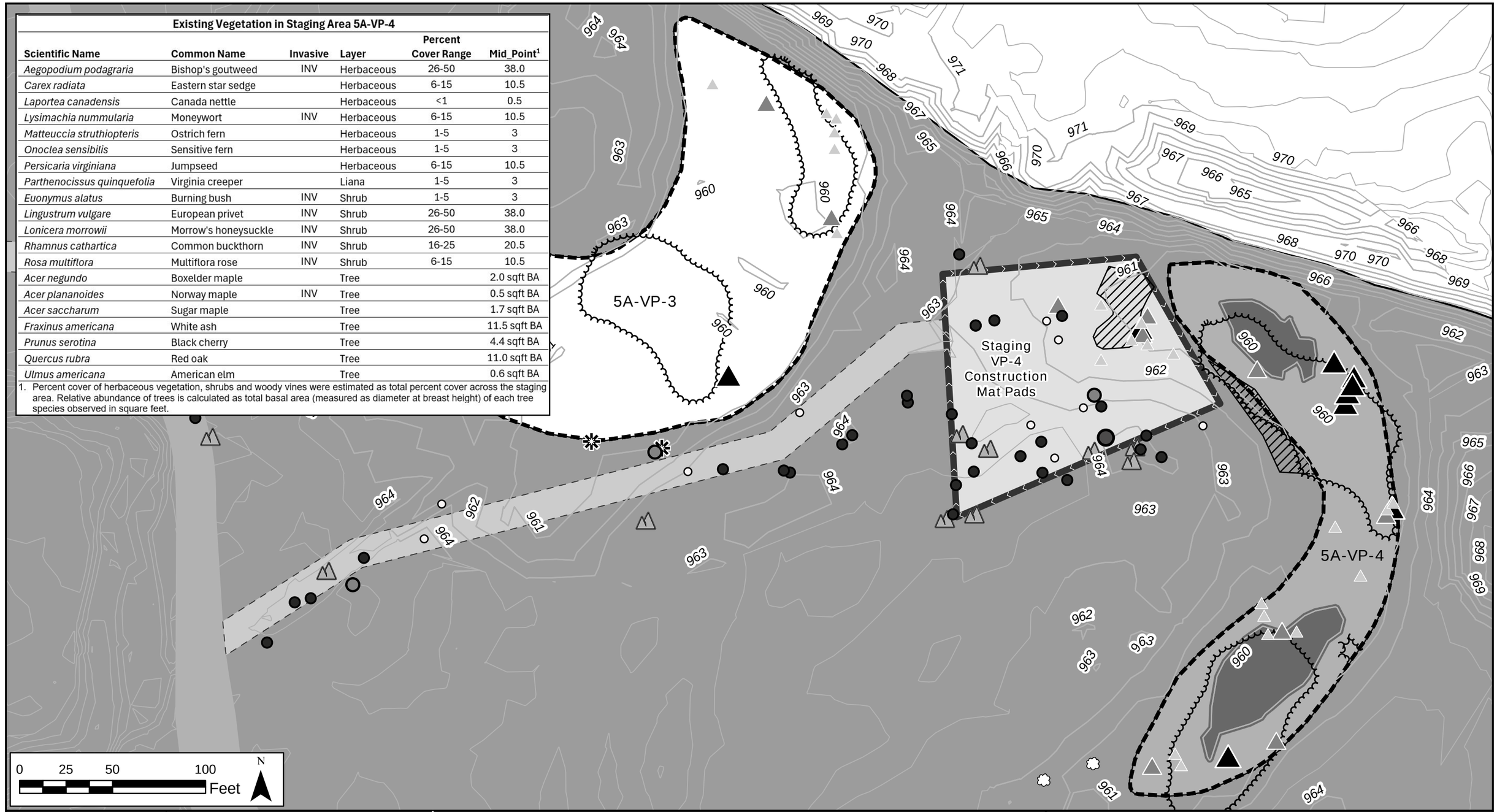
Pool_ID	Percent Moisture	Percent Solids	pH	Total Organic Carbon (mg/Kg)
Amendment				
5AVP9	39.8	60.2	6.4	60000
5AVP12	56.9	43.1	6.1	61000
5AVP15	49.6	50.4	6.2	55000
5AVP22	38.8	61.2	6.2	24000
5AVP27	32.6	67.4	5.9	18000
Excavate/Restore				
5AVP4	35.9	64.1	6.1	19000
5AVP7	46.7	53.3	6.1	53000
5AVP16	40	60	6	33000
5AVP52	46.2	53.8	5.9	51000
5AVP57	42.1	57.9	6.2	34000
Control				
5AVP3	31.8	68.2	6.1	15000
5AVP5	41.1	58.9	5.7	33000
5AVP10	26.8	73.2	5.9	20000
5AVP21	No Data			
5AVP26	39.9	60.1	6	38000
5AVP55	52.5	47.5	6.5	50000
5AVP61	No Data			

Appendix J-1
Adjacent Area Vegetation Inventory

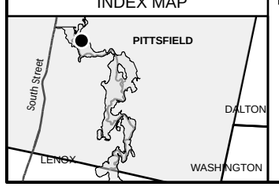
Existing Vegetation in Staging Area 5A-VP-4

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Aegopodium podagraria	Bishop's goutweed	INV	Herbaceous	26-50	38.0
Carex radiata	Eastern star sedge		Herbaceous	6-15	10.5
Laportea canadensis	Canada nettle		Herbaceous	<1	0.5
Lysimachia nummularia	Moneywort	INV	Herbaceous	6-15	10.5
Matteuccia struthiopteris	Ostrich fern		Herbaceous	1-5	3
Onoclea sensibilis	Sensitive fern		Herbaceous	1-5	3
Persicaria virginiana	Jumpseed		Herbaceous	6-15	10.5
Parthenocissus quinquefolia	Virginia creeper		Liana	1-5	3
Euonymus alatus	Burning bush	INV	Shrub	1-5	3
Lingustrum vulgare	European privet	INV	Shrub	26-50	38.0
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	26-50	38.0
Rhamnus cathartica	Common buckthorn	INV	Shrub	16-25	20.5
Rosa multiflora	Multiflora rose	INV	Shrub	6-15	10.5
Acer negundo	Boxelder maple		Tree		2.0 sqft BA
Acer plananoides	Norway maple	INV	Tree		0.5 sqft BA
Acer saccharum	Sugar maple		Tree		1.7 sqft BA
Fraxinus americana	White ash		Tree		11.5 sqft BA
Prunus serotina	Black cherry		Tree		4.4 sqft BA
Quercus rubra	Red oak		Tree		11.0 sqft BA
Ulmus americana	American elm		Tree		0.6 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.



INDEX MAP



DBH (inch)
- 4-10
- 10-24
- 24-36
- 36-48

Multi-Trunk Trees

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF

Individual Native Shrub

Standing Dead Snag

Canopy Cover

1-Foot Contour

Native Shrub Patch

Pilot Pool Boundary

Deeply Flooded Pocket

Limits of Seasonal Flooding

Secondary Access Roads

Primary Access Roads

Construction Mats

Reach 5A

Reach 5A Existing Conditions
Staging Area 5A-VP-4
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:600	6/18/2026	60778161

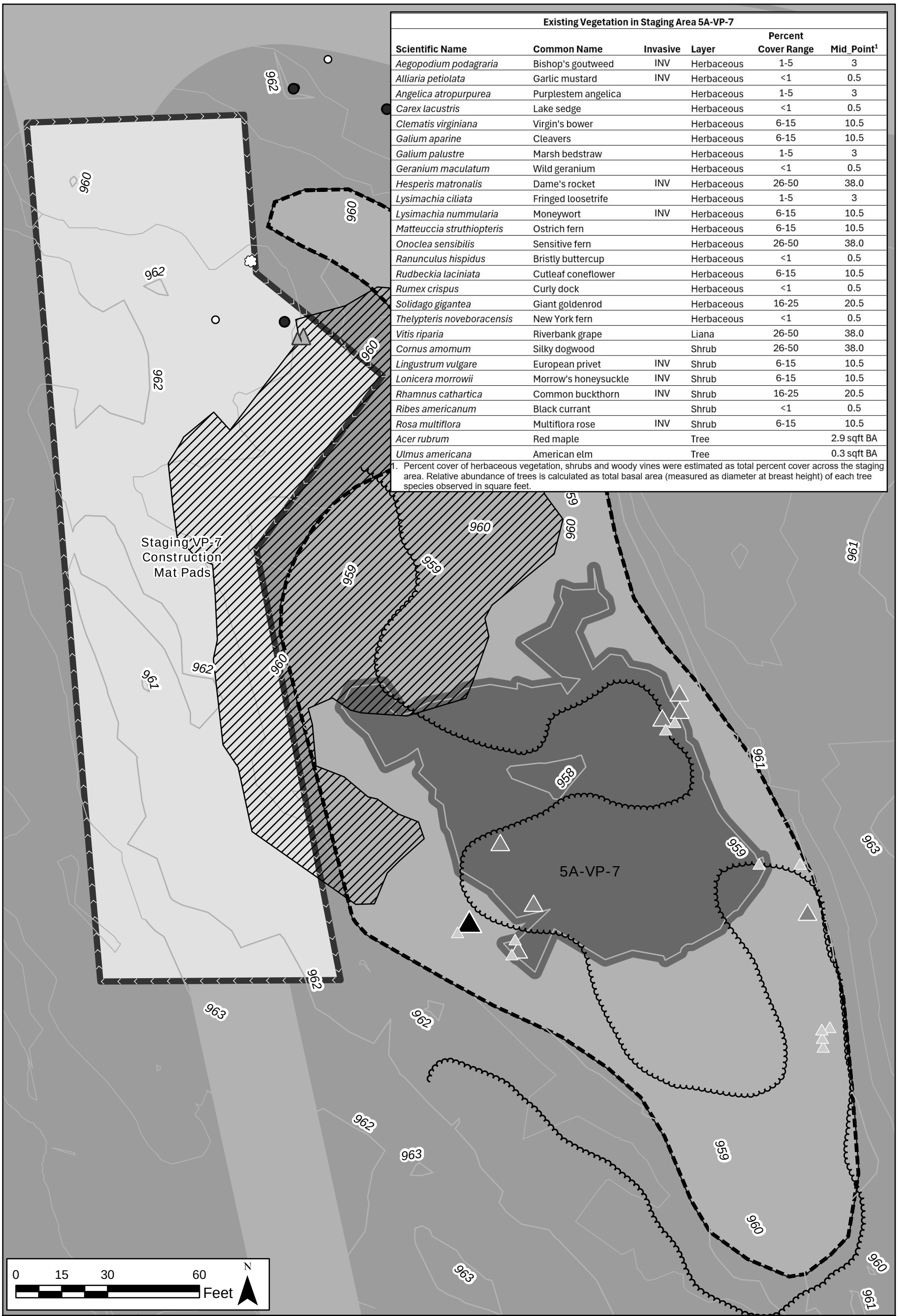
AECOM

Figure 1
Map Sheet 1 of 8

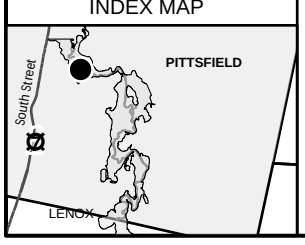
Existing Vegetation in Staging Area 5A-VP-7

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Aegopodium podagraria	Bishop's goutweed	INV	Herbaceous	1-5	3
Alliaria petiolata	Garlic mustard	INV	Herbaceous	<1	0.5
Angelica atropurpurea	Purplestem angelica		Herbaceous	1-5	3
Carex lacustris	Lake sedge		Herbaceous	<1	0.5
Clematis virginiana	Virgin's bower		Herbaceous	6-15	10.5
Galium aparine	Cleavers		Herbaceous	6-15	10.5
Galium palustre	Marsh bedstraw		Herbaceous	1-5	3
Geranium maculatum	Wild geranium		Herbaceous	<1	0.5
Hesperis matronalis	Dame's rocket	INV	Herbaceous	26-50	38.0
Lysimachia ciliata	Fringed loosestrife		Herbaceous	1-5	3
Lysimachia nummularia	Moneywort	INV	Herbaceous	6-15	10.5
Matteuccia struthiopteris	Ostrich fern		Herbaceous	6-15	10.5
Onoclea sensibilis	Sensitive fern		Herbaceous	26-50	38.0
Ranunculus hispidus	Bristly buttercup		Herbaceous	<1	0.5
Rudbeckia laciniata	Cutleaf coneflower		Herbaceous	6-15	10.5
Rumex crispus	Curly dock		Herbaceous	<1	0.5
Solidago gigantea	Giant goldenrod		Herbaceous	16-25	20.5
Thelypteris noveboracensis	New York fern		Herbaceous	<1	0.5
Vitis riparia	Riverbank grape		Liana	26-50	38.0
Cornus amomum	Silky dogwood		Shrub	26-50	38.0
Lingustrum vulgare	European privet	INV	Shrub	6-15	10.5
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	6-15	10.5
Rhamnus cathartica	Common buckthorn	INV	Shrub	16-25	20.5
Ribes americanum	Black currant		Shrub	<1	0.5
Rosa multiflora	Multiflora rose	INV	Shrub	6-15	10.5
Acer rubrum	Red maple		Tree		2.9 sqft BA
Ulmus americana	American elm		Tree		0.3 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.



INDEX MAP



DBH (inch)
- 4-10
- 10-24
- Standing Dead Snag
- Individual Native Shrub

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF
- 1-Foot Contour

- Pilot Pool Boundary
- Canopy Cover
- Native Shrub Patch
- Deeply Flooded Pocket

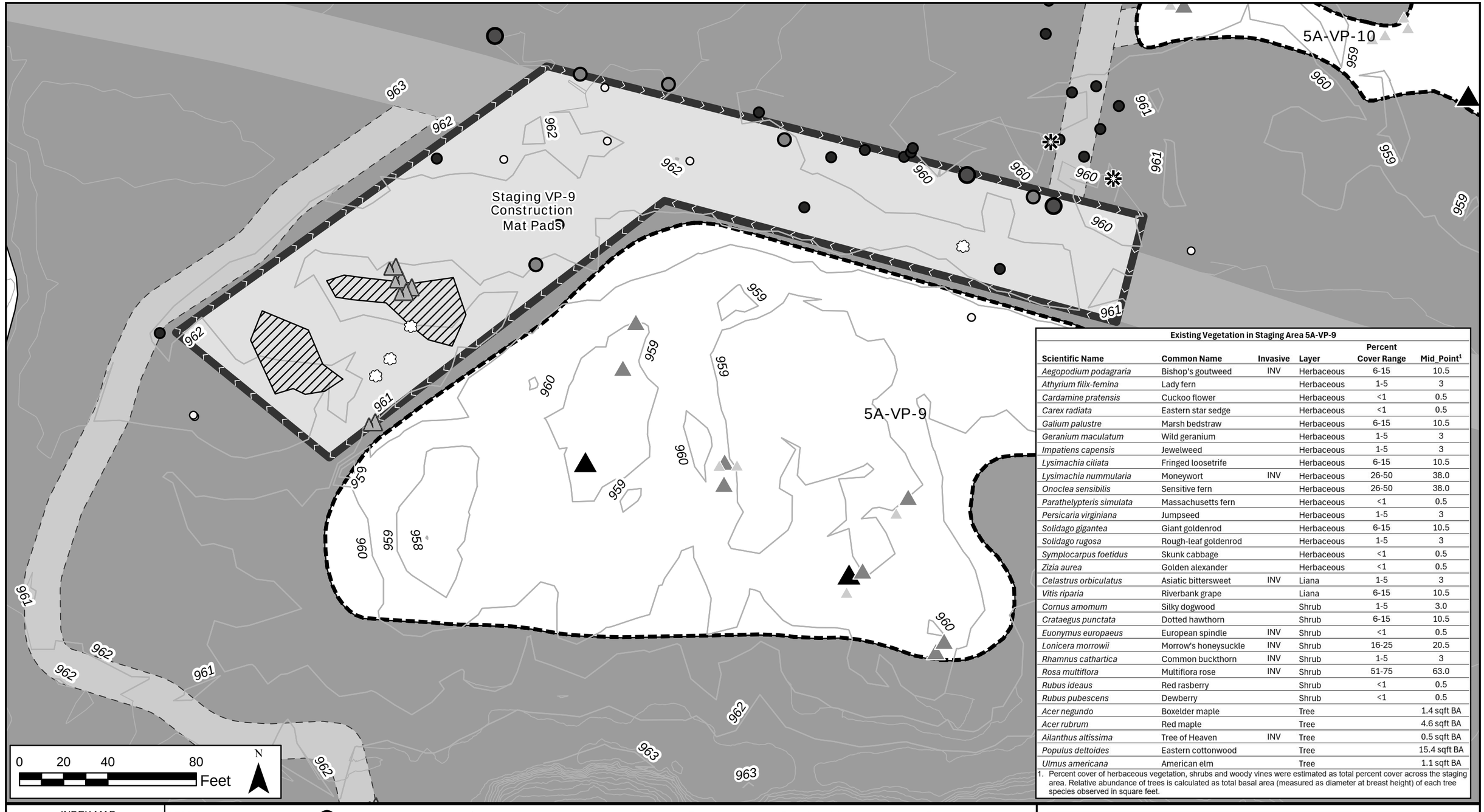
- Limits of Seasonal Flooding
- Primary Access Roads
- Construction Mats
- Reach 5A

Reach 5A Existing Conditions
5A-VP-7
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:350	4/22/2026	60778161

AECOM

Figure 2
Map Sheet 2 of 8

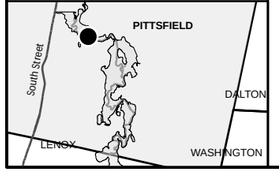


Existing Vegetation in Staging Area 5A-VP-9

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Aegopodium podagraria	Bishop's goutweed	INV	Herbaceous	6-15	10.5
Athyrium filix-femina	Lady fern		Herbaceous	1-5	3
Cardamine pratensis	Cuckoo flower		Herbaceous	<1	0.5
Carex radiata	Eastern star sedge		Herbaceous	<1	0.5
Galium palustre	Marsh bedstraw		Herbaceous	6-15	10.5
Geranium maculatum	Wild geranium		Herbaceous	1-5	3
Impatiens capensis	Jewelweed		Herbaceous	1-5	3
Lysimachia ciliata	Fringed loosetrife		Herbaceous	6-15	10.5
Lysimachia nummularia	Moneywort	INV	Herbaceous	26-50	38.0
Onoclea sensibilis	Sensitive fern		Herbaceous	26-50	38.0
Parathelypteris simulata	Massachusetts fern		Herbaceous	<1	0.5
Persicaria virginiana	Jumpseed		Herbaceous	1-5	3
Solidago gigantea	Giant goldenrod		Herbaceous	6-15	10.5
Solidago rugosa	Rough-leaf goldenrod		Herbaceous	1-5	3
Symplocarpus foetidus	Skunk cabbage		Herbaceous	<1	0.5
Zizia aurea	Golden alexander		Herbaceous	<1	0.5
Celastrus orbiculatus	Asiatic bittersweet	INV	Liana	1-5	3
Vitis riparia	Riverbank grape		Liana	6-15	10.5
Cornus amomum	Silky dogwood		Shrub	1-5	3.0
Crataegus punctata	Dotted hawthorn		Shrub	6-15	10.5
Euonymus europaeus	European spindle	INV	Shrub	<1	0.5
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	16-25	20.5
Rhamnus cathartica	Common buckthorn	INV	Shrub	1-5	3
Rosa multiflora	Multiflora rose	INV	Shrub	51-75	63.0
Rubus ideaus	Red rasberry		Shrub	<1	0.5
Rubus pubescens	Dewberry		Shrub	<1	0.5
Acer negundo	Boxelder maple		Tree		1.4 sqft BA
Acer rubrum	Red maple		Tree		4.6 sqft BA
Ailanthus altissima	Tree of Heaven	INV	Tree		0.5 sqft BA
Populus deltoides	Eastern cottonwood		Tree		15.4 sqft BA
Ulmus americana	American elm		Tree		1.1 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.

INDEX MAP



DBH (inch)
- 4-10
- 10-24
- 24-36
- 36-48
- Multi-Trunk Trees

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF
- Individual Native Shrub
- Standing Dead Snag
- 1-Foot Contour
- Piloot Pool Boundary
- Certified Vernal Pools
- Native Shrub Patch
- Primary Access Roads
- Secondary Access Roads
- Construction Mats
- Reach 5A

Reach 5A Existing Conditions
Staging Area 5A-VP-9
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:500	6/18/2026	60778161

AECOM

Figure 3
Map Sheet 3 of 8

5A-VP-12

Staging VP-12
Construction
Mat Pads

Existing Vegetation in Staging Area 5A-VP-12

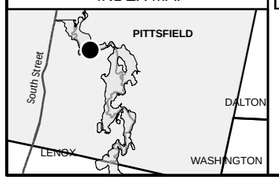
Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Carex stricta	Tussock sedge		Herbaceous	6-15	10.5
Hesperis matronalis	Dame's rocket	INV	Herbaceous	1-5	3
Iris pseudacorus	Yellow flag iris	INV	Herbaceous	1-5	3
Lysimachia nummularia	Moneywort	INV	Herbaceous	1-5	3
Matteuccia struthiopteris	Ostrich fern		Herbaceous	26-50	38
Myosotis scorpioides	Water forget-me-not	INV	Herbaceous	1-5	3
Onoclea sensibilis	Sensitive fern		Herbaceous	6-15	10.5
Rudbeckia laciniata	Cutleaf coneflower		Herbaceous	6-15	10.5
Symplocarpus foetidus	Skunk cabbage		Herbaceous	1-5	3
Crataegus punctata	Dotted hawthorn		Shrub	1-5	3.0
Acer saccharinum	Silver maple		Tree		13 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.

0 15 30 60 Feet

N

INDEX MAP



DBH (inch)
- 4-10
- 10-24
- 36-48

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF
- Standing Dead Snag
- Canopy Cover

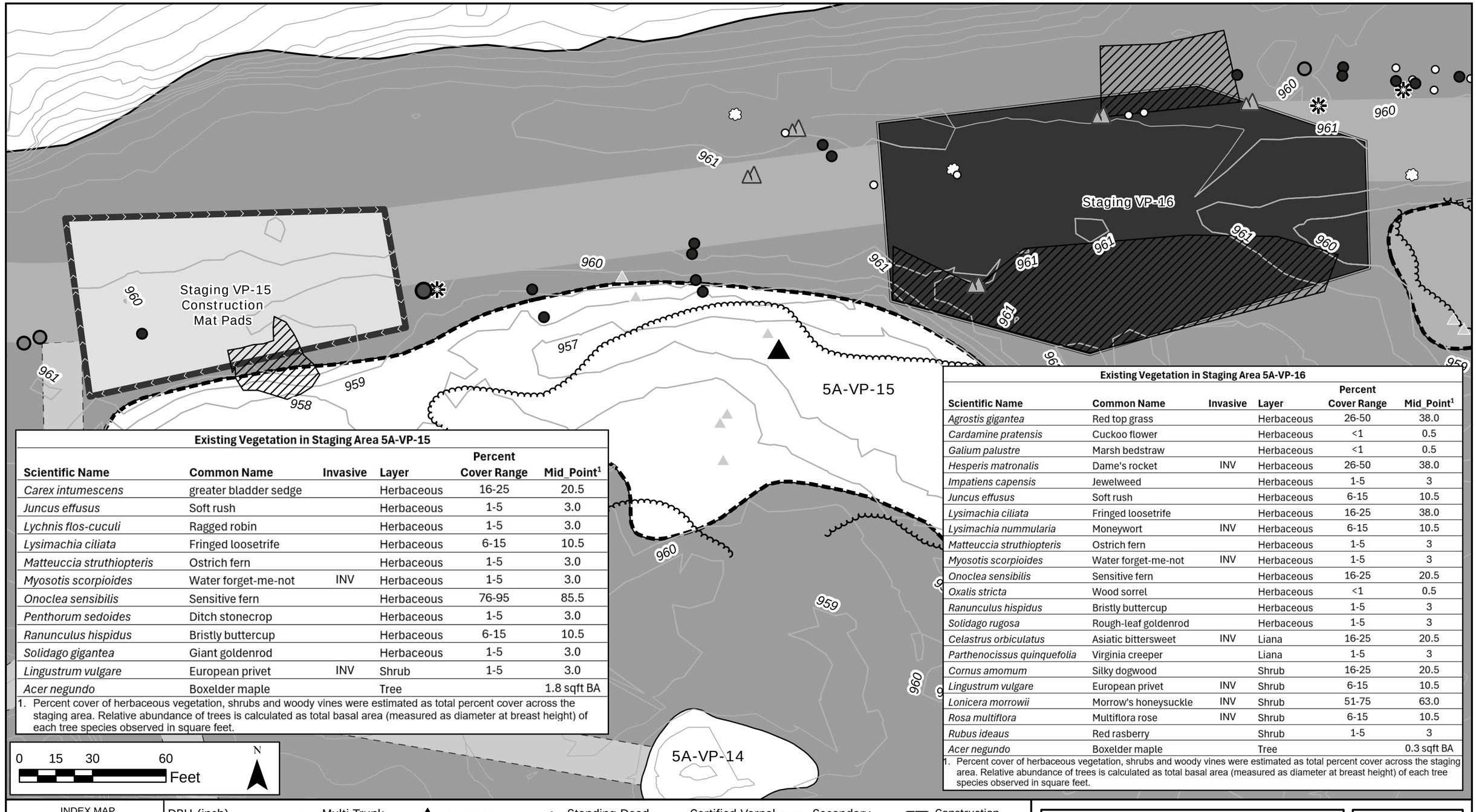
- 1-Foot Contour
- Pilot Pool Boundary
- Certified Vernal Pools
- Secondary Access Roads
- Primary Access Roads
- Native Shrub Patch
- Construction Mats
- Reach 5A

Reach 5A Existing Conditions
5A-VP-12
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:400	6/18/2026	60778161

AECOM

Figure 4
Map Sheet 4 of 8



Existing Vegetation in Staging Area 5A-VP-15

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Carex intumescens	greater bladder sedge		Herbaceous	16-25	20.5
Juncus effusus	Soft rush		Herbaceous	1-5	3.0
Lychnis flos-cuculi	Ragged robin		Herbaceous	1-5	3.0
Lysimachia ciliata	Fringed loosetrife		Herbaceous	6-15	10.5
Matteuccia struthiopteris	Ostrich fern		Herbaceous	1-5	3.0
Myosotis scorpioides	Water forget-me-not	INV	Herbaceous	1-5	3.0
Onoclea sensibilis	Sensitive fern		Herbaceous	76-95	85.5
Penthorum sedoides	Ditch stonecrop		Herbaceous	1-5	3.0
Ranunculus hispidus	Bristly buttercup		Herbaceous	6-15	10.5
Solidago gigantea	Giant goldenrod		Herbaceous	1-5	3.0
Lingustrum vulgare	European privet	INV	Shrub	1-5	3.0
Acer negundo	Boxelder maple		Tree		1.8 sqft BA

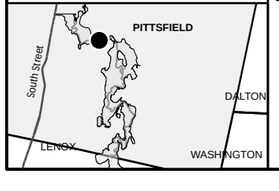
1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.

Existing Vegetation in Staging Area 5A-VP-16

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Agrostis gigantea	Red top grass		Herbaceous	26-50	38.0
Cardamine pratensis	Cuckoo flower		Herbaceous	<1	0.5
Galium palustre	Marsh bedstraw		Herbaceous	<1	0.5
Hesperis matronalis	Dame's rocket	INV	Herbaceous	26-50	38.0
Impatiens capensis	Jewelweed		Herbaceous	1-5	3
Juncus effusus	Soft rush		Herbaceous	6-15	10.5
Lysimachia ciliata	Fringed loosetrife		Herbaceous	16-25	38.0
Lysimachia nummularia	Moneywort	INV	Herbaceous	6-15	10.5
Matteuccia struthiopteris	Ostrich fern		Herbaceous	1-5	3
Myosotis scorpioides	Water forget-me-not	INV	Herbaceous	1-5	3
Onoclea sensibilis	Sensitive fern		Herbaceous	16-25	20.5
Oxalis stricta	Wood sorrel		Herbaceous	<1	0.5
Ranunculus hispidus	Bristly buttercup		Herbaceous	1-5	3
Solidago rugosa	Rough-leaf goldenrod		Herbaceous	1-5	3
Celastrus orbiculatus	Asiatic bittersweet	INV	Liana	16-25	20.5
Parthenocissus quinquefolia	Virginia creeper		Liana	1-5	3
Cornus amomum	Silky dogwood		Shrub	16-25	20.5
Lingustrum vulgare	European privet	INV	Shrub	6-15	10.5
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	51-75	63.0
Rosa multiflora	Multiflora rose	INV	Shrub	6-15	10.5
Rubus ideaus	Red rasberry		Shrub	1-5	3
Acer negundo	Boxelder maple		Tree		0.3 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.

INDEX MAP



DBH (inch)
- 4-10
- 10-24
- 24-36
- 36-48

Multi-Trunk Trees

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF

Pilot Pool Boundary

Canopy Cover

1-Foot Contour

Standing Dead Snag

Individual Native Shrub

Native Shrub Patch

Certified Vernal Pools

Limits of Seasonal Flooding

Secondary Access Roads

Primary Access Roads

Gravel Pad/Soil Stockpile Area

Construction Mats

Reach 5A

Reach 5A Existing Conditions
5A-VP-15 and 5A-VP-16
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:450	6/18/2026	60778161

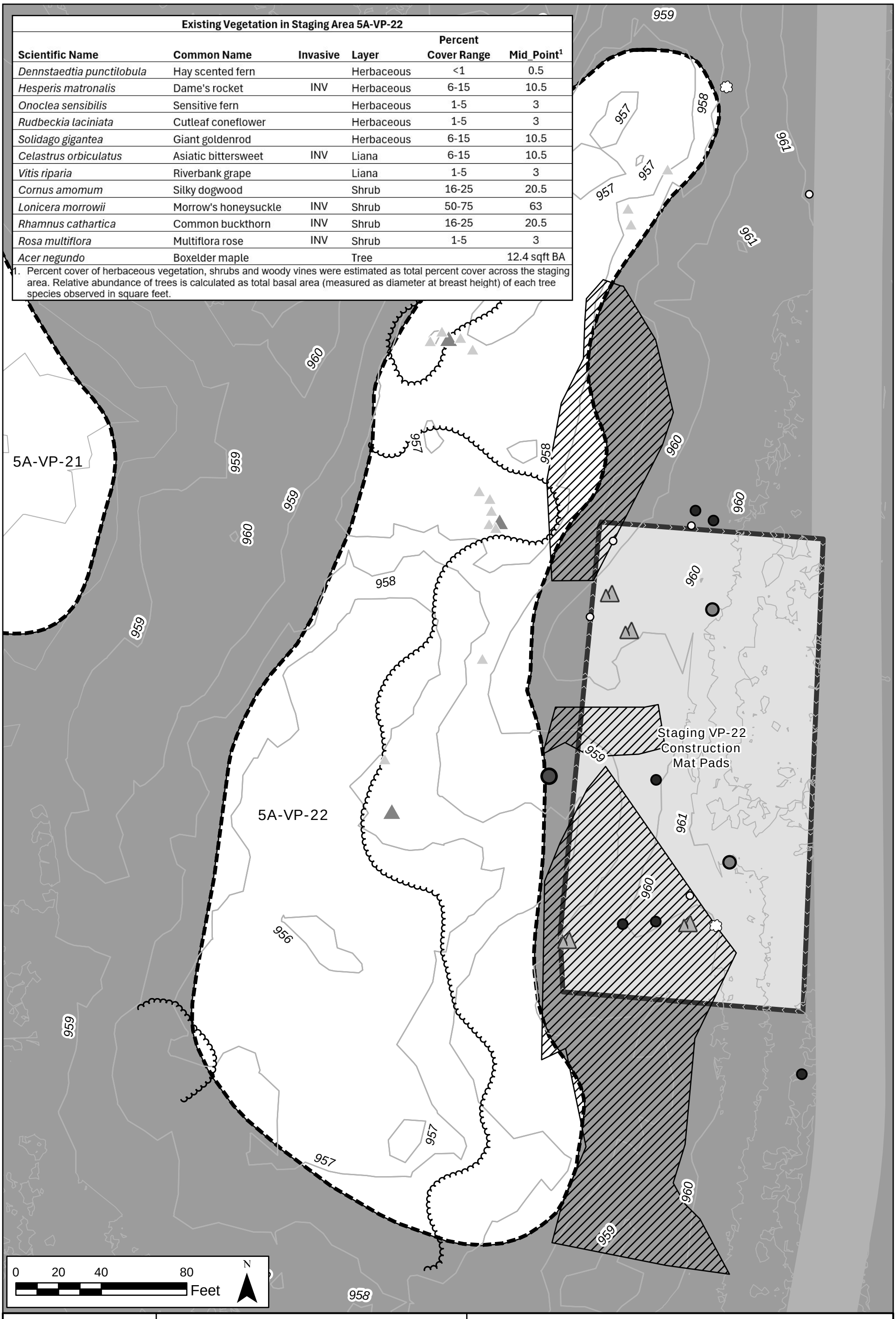
AECOM

Figure 5
Map Sheet 5 of 8

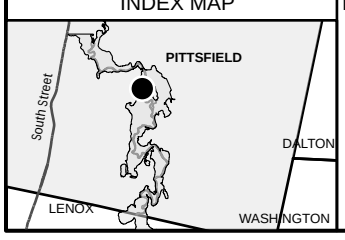
Existing Vegetation in Staging Area 5A-VP-22

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Dennstaedtia punctilobula	Hay scented fern		Herbaceous	<1	0.5
Hesperis matronalis	Dame's rocket	INV	Herbaceous	6-15	10.5
Onoclea sensibilis	Sensitive fern		Herbaceous	1-5	3
Rudbeckia laciniata	Cutleaf coneflower		Herbaceous	1-5	3
Solidago gigantea	Giant goldenrod		Herbaceous	6-15	10.5
Celastrus orbiculatus	Asiatic bittersweet	INV	Liana	6-15	10.5
Vitis riparia	Riverbank grape		Liana	1-5	3
Cornus amomum	Silky dogwood		Shrub	16-25	20.5
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	50-75	63
Rhamnus cathartica	Common buckthorn	INV	Shrub	16-25	20.5
Rosa multiflora	Multiflora rose	INV	Shrub	1-5	3
Acer negundo	Boxelder maple		Tree		12.4 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.



INDEX MAP



DBH (inch)
- 4-10
- 10-24
- 24-36
- 36-48

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF

Pilot Pool Boundary

1-Foot Contour

Canopy Cover

Standing Dead Snag

Individual Native Shrub

Native Shrub Patch

Certified Vernal Pools

Construction Mats

Primary Access Roads

Reach 5A

Reach 5A Existing Conditions
5A-VP-22
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:500	6/18/2026	60778161

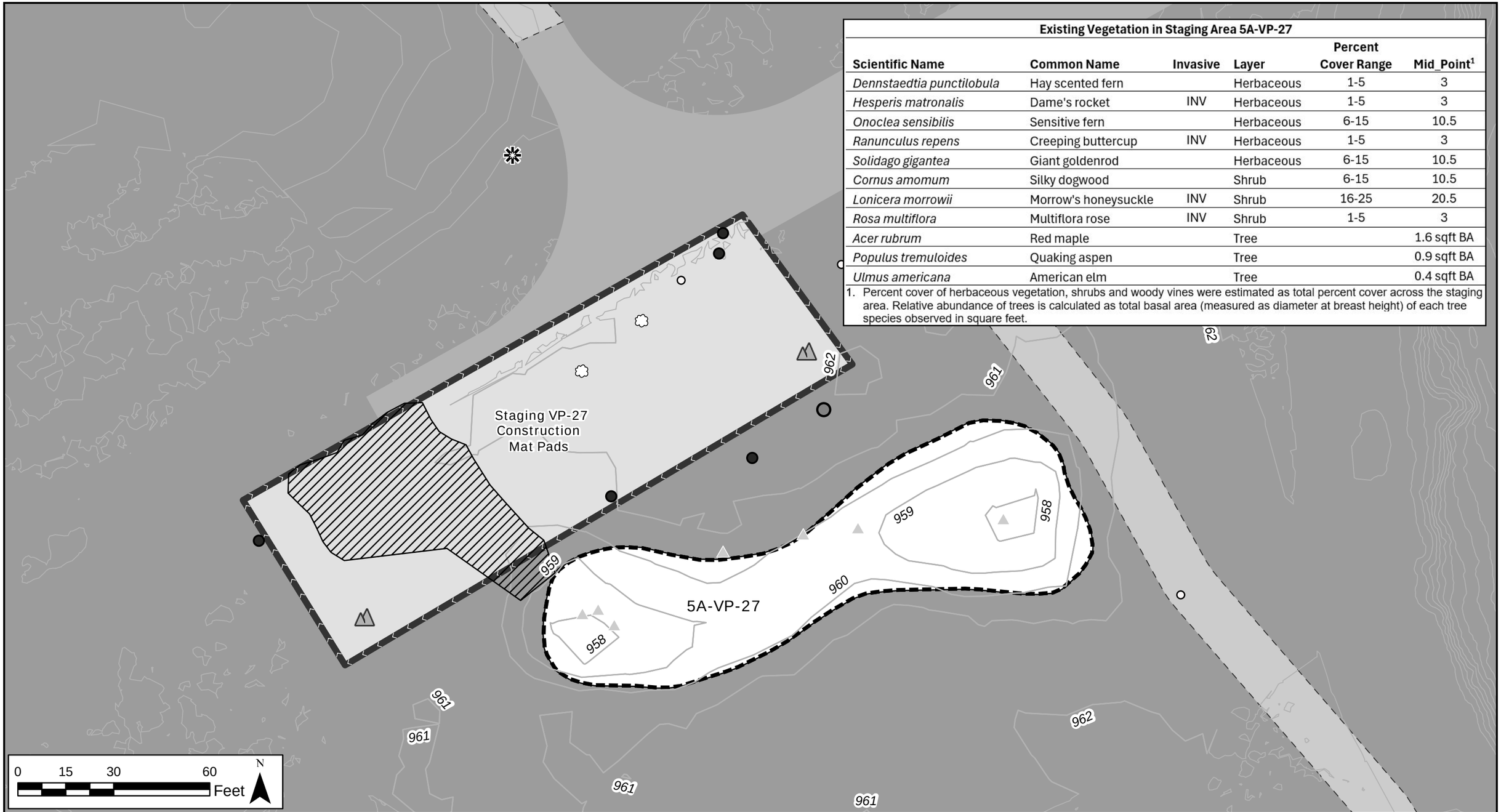
AECOM

Figure 6
Map Sheet 6 of 8

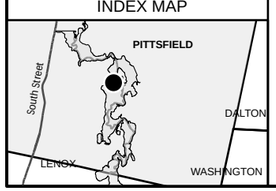
Existing Vegetation in Staging Area 5A-VP-27

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Dennstaedtia punctilobula	Hay scented fern		Herbaceous	1-5	3
Hesperis matronalis	Dame's rocket	INV	Herbaceous	1-5	3
Onoclea sensibilis	Sensitive fern		Herbaceous	6-15	10.5
Ranunculus repens	Creeping buttercup	INV	Herbaceous	1-5	3
Solidago gigantea	Giant goldenrod		Herbaceous	6-15	10.5
Cornus amomum	Silky dogwood		Shrub	6-15	10.5
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	16-25	20.5
Rosa multiflora	Multiflora rose	INV	Shrub	1-5	3
Acer rubrum	Red maple		Tree		1.6 sqft BA
Populus tremuloides	Quaking aspen		Tree		0.9 sqft BA
Ulmus americana	American elm		Tree		0.4 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.



INDEX MAP



DBH (inch)
- 4-10
- 10-24
- 24-36
- Multi-Trunk Trees

Existing Coarse Woody Debris
- <1-10 SF

1-Foot Contour

Pilot Pool Boundary

Canopy Cover

Standing Dead Snag

Individual Native Shrub

Native Shrub Patch

Certified Vernal Pools

Secondary Access Roads

Primary Access Roads

Construction Mats

Reach 5A

Reach 5A Existing Conditions
5A-VP-27
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:350	6/18/2026	60778161

AECOM

Figure 7
Map Sheet 7 of 8

5A-VP-54

Staging VP-54
Construction
Mat Pads

Existing Vegetation in Staging Area 5A-VP-54

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Lysimachia ciliata	Fringed loosetrife		Herbaceous	6-15	10.5
Plantago lanceolata	English plantain		Herbaceous	26-50	38.0
Silene flos-cuculi	Ragged robin		Herbaceous	<1	0.5
Solidago gigantea	Giant goldenrod		Herbaceous	26-50	38.0
Parthenocissus quinquefolia	Virginia creeper		Liana	1-5	3.0
Cornus amomum	Silky dogwood		Shrub	6-15	10.5
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	26-50	38.0
Rhamnus cathartica	Common buckthorn	INV	Shrub	26-50	38.0
Rhus typhina	Staghorn sumac		Shrub	<1	0.4
Syringa vulgaris	Common lilac		Shrub	<1	0.5
Acer saccharinum	Silver maple		Tree		1.2 sqft BA
Ulmus americana	American elm		Tree		0.2 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.

5A-VP-55

Staging VP-57
Construction
Mat Pads

Staging VP-57

5A-VP-57

Existing Vegetation in Staging Area 5A-VP-57

Scientific Name	Common Name	Invasive	Layer	Percent Cover Range	Mid_Point[1]
Lysimachia ciliata	Fringed loosetrife		Herbaceous	26-50	38
Plantago lanceolata	English plantain		Herbaceous	26-50	38
Ranunculus repens	Creeping buttercup	INV	Herbaceous	1-5	3
Silene flos-cuculi	Ragged robin		Herbaceous	16-25	20.5
Solidago gigantea	Giant goldenrod		Herbaceous	26-50	38
Cornus amomum	Silky dogwood		Shrub	1-5	3.0
Crataegus punctata	Dotted hawthorn		Shrub	1-5	3.0
Lonicera morrowii	Morrow's honeysuckle	INV	Shrub	26-50	38.0
Rhamnus cathartica	Common buckthorn	INV	Shrub	16-25	20.5
Salix sp.	Willow		Shrub	1-5	3
Fraxinus americana	White ash		Tree		0.2 sqft BA
Ulmus americana	American elm		Tree		0.4 sqft BA

1. Percent cover of herbaceous vegetation, shrubs and woody vines were estimated as total percent cover across the staging area. Relative abundance of trees is calculated as total basal area (measured as diameter at breast height) of each tree species observed in square feet.

0 25 50 100 Feet

N

INDEX MAP

PITTSFIELD

South Street

LENOX

DBH (inch)
- 4-10
- 10-24
- Multi-Trunk Trees

Existing Coarse Woody Debris
- <1-10 SF
- 11-20 SF
- 21-50 SF
- Standing Dead Snag
- Individual Native Shrub
- Pilot Pool Boundary

- Canopy Cover
- 1-Foot Contour
- Certified Vernal Pools
- Native Shrub Patch
- Deeply Flooded Pocket
- Limits of Seasonal Flooding

- Primary Access Roads
- Secondary Access Roads
- Gravel Pad/Soil Stockpile Area
- Construction Mats
- Reach 5A

Reach 5A Existing Conditions
Staging Areas 5A-VP-54 and 5A-VP-57
Housatonic River - Pittsfield, MA

SCALE	DATE	PROJECT NO.
1:650	6/18/2026	60778161

AECOM

Figure 8

Map Sheet 8 of 8

Appendix J-2
Staging Area Planting Tables

Appendix J-2 Staging Area Planting Tables

Planting table for centralized staging area located adjacent to 5A-VP-15.

Cover type	Scientific Name	Common Name	Size	Total Num Plantings
Staging Area Adjacent to 5A-VP-15 (0.16 acres)				
Herbaceous[1]	*Matteuccia struthiopteris*	Ostrich fern	2” plug	10
	Cardamine pensylvanica	Pennsylvania Bittercress	2” plug	6
	Cardamine diphylla	Two-leaved toothwort	2” plug	3
Shrubs[2]	*Cornus amomum*	Silky dogwood	18 to 24”	26
	Sambucus canadensis	Elderberry	18 to 24”	8
	Spiraea alba	White Meadowsweet	18 to 24”	14
Trees[3]	*Acer negundo*	Boxelder maple	3-4’	2
	Acer saccharinum	Silver maple	3-4’	1
	Carpinus caroliniana	American hornbeam	3-4’	2
			Total Pounds Needed	
Seed Mix[4]	*Native seed mix*		3	

1. Plugs planted approximately 6 feet OC (total 120 plants / acre).
2. Shrubs 12x12 spacing for a total of 302 shrubs / acre.
3. Trees planted on 40X40-foot grid (27 trees per acre).
4. Seeding rate of 18 pounds / acre.

Planting table for centralized staging area located adjacent to 5A-VP-57.

Cover type	Scientific Name	Common Name	Size	Total Num Plantings
Staging Area Adjacent to 5A-VP-57 (0.07 acres)				
Herbaceous[1]	*Matteuccia struthiopteris*	Ostrich fern	2” plug	4
	Cardamine pensylvanica	Pennsylvania Bittercress	2” plug	3
	Cardamine diphylla	Two-leaved toothwort	2” plug	1
Shrubs[2]	*Cornus amomum*	Silky dogwood	18 to 24”	10
	Sambucus canadensis	Elderberry	18 to 24”	4
	Spiraea alba	White Meadowsweet	18 to 24”	6
	Hamamelis virginiana	American witch hazel	18 to 24”	2
Trees[3]	*Acer negundo*	Boxelder maple	3-4’	1
	Acer saccharinum	Silver maple	3-4’	1
	Prunus serotina	Black cherry	3-4’	2
			Total Pounds Needed	
Seed Mix[4]	*Native seed mix*		1	

1. Plugs planted approximately 6 feet OC (total 120 plants / acre).
2. Shrubs 12x12 spacing for a total of 302 shrubs / acre.
3. Trees planted on 40X40-foot grid (27 trees per acre).
4. Seeding rate of 18 pounds / acre.

Appendix J-2 Staging Area Planting Tables

Seed mixes suitable for centralized staging area restoration, secondary access roads and other disturbed areas.

New England Wetland Plants “WetMix”

Botanical Name	Common Name	Indicator
Carex vulpinoidea	Fox Sedge	OBL
Carex scoparia	Blunt Broom Sedge	FACW
Carex lurida	Lurid Sedge	OBL
Carex lupulina	Hop Sedge	OBL
Poa palustris	Fowl Bluegrass	FACW
Bidens frondosa	Beggar Ticks	FACW
Scirpus atrovirens	Green Bulrush	OBL
Asclepias incarnata	Swamp Milkweed	OBL
Carex crinita	Fringed Sedge	OBL
Vernonia noveboracensis	New York Ironweed	FACW
Juncus effusus	Soft Rush	FACW
Symphyotrichum lateriflorum	Starved/Calico Aster	FACW
Iris versicolor	Blue Flag	OBL
Glyceria grandis	American Mannagrass	OBL
Mimulus ringens	Monkey Flower	OBL
Eutrochium maculatum	Spotted Joe Pye Weed	OBL

New England Conservation/Wildlife Mix

Botanical Name	Common Name
Elymus virginicus	Virginia Wild Rye
Schizachyrium scoparium	*Little Bluestem*
Andropogon gerardii	*Big Bluestem*
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Chamaecrista fasciculata	Partridge Pea
Desmodium paniculatum	Panicledleaf Tick Trefoil
Sorghastrum nutans	Indian Grass
Verbena hastata	Blue Vervain
Asclepias tuberosa	Butterfly Milkweed
Rudbeckia hirta	Black Eyed Susan
Helenium autunale	Common Sneezeweed
Symphyotrichum pilosum	Heath Aster
Solidago juncea	Early Goldenrod
Agrostis perennans	Upland Bentgrass

Appendix K
Contractor's Health and Safety Plan

Project Health and Safety Plan

GE VERNAL POOLS PILOT STUDY

VERNAL POOL PILOT STUDY CONSTRUCTION

HOUSATONIC RIVER WORK AREAS
PITTSFIELD, BERKSHIRE COUUNTY, MASSACHUSETTS

Submitted to

Anchor QEA

Prepared by:

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Professional Group

2749 Lockport Road
Niagara Falls, NY 14305

June 2026
Revsion 1

Table of Contents

1.0 Introduction....1

1.1 Plan Objective....1
1.2 Safety and Health Policy Statement....1
1.3 Drug and Alcohol Policy....1
1.4 Project Safety and Health Expectations....2
1.5 Project Safety and Health Compliance Program....2
1.6 References....3
1.7 Project Safety Incentive Program....3
1.8 Site Safety and Health Plan Revisions....4

2.0 Organization and Responsibilities....6

2.1 Officer In Charge....6
2.2 Project Manager....6
2.3 Project Superintendent....7
2.4 Safety and Health Manager (SHM)....7
2.5 Site Safety and Health Officer (SSHO)....7
2.6 Employees....8
2.6.1 Employee Responsibility....8
2.6.2 Employee Authority....9
2.7 Visitors....9
2.8 Subcontractors....9

3.0 Hazard/Risk Analysis....9

3.1 Site Tasks and Operations....10
3.2 Hazards....10
3.2.1 Safety/Physical Hazards....10
3.2.1.1 Electrical....10
3.2.1.2 Underground Utilities....11
3.2.1.3 Heavy Equipment/Vehicle Traffic....12
3.2.1.4 Material Handling....13
3.2.1.5 Hand and Power Tools....13
3.2.1.6 Noise Exposure....14
3.2.1.7 Excavation/Trenching Hazards....14
3.2.1.8 Slip/Trip/Fall....14
3.2.1.9 Heat Stress....15
3.2.1.10 Cold Stress....17
3.2.1.11 Falls from Elevation....19
3.2.1.12 Wastewater Treatment Plant....20
3.2.2 Chemical Hazards....20
3.2.3 Biological Hazards....21
3.2.3.1 Needle stick Injuries....21
3.2.3.2 Ticks....21
3.2.3.3 Rodents and Wildlife....21
3.2.3.4 Poisonous Plants....22
3.2.3.5 Snakes....23
3.2.3.6 Flying Insects....23
3.2.3.7 Spiders....23
3.3 Engineering Controls....23

3.3.1 Dust Control 24
3.3.2 Noise Control 24

4.0 Safety and Health Training 24

4.1 Site-Specific Training 24
4.2 General HAZWOPER Training 25
4.3 Periodic Sessions 25
4.4 Safety Meetings 26
4.5 Hazard Communication Training 26
4.6 First Aid/CPR Training 26

5.0 Personal Protective Equipment (PPE) 26

5.1 PPE Hazard Assessment 27
5.1.1 Head Protection 27
5.1.2 Hand Protection 27
5.1.3 Eye/Face Protection 28
5.1.4 Footwear 28
5.1.5 Respiratory Protection 28
5.2 Levels of Protection 29
5.2.1 Level D 29
5.2.2 Modified D 29
5.2.3 Level C 29
5.3 Initial Levels of Protection 30

6.0 Medical Surveillance Program 30

6.1 Baseline Medical Monitoring 30
6.2 Periodic Monitoring 31
6.3 Exposure/Injury/ Medical Support 31
6.4 Medical Records 31

7.0 Air Monitoring 31

7.1 Real Time Air Monitoring 32
7.1.1 PCBs and Dust 32
7.1.2 Decision Making for Real Time Data 32
7.2 Exposure Monitoring 32

8.0 Accident Prevention Procedures/Practices 33

8.1 Medical and First Aid Requirements 33
8.2 Hazardous Substances 33
8.3 Fall Protection 34
8.4 Electrical 35
8.5 Lockout and Tagout 37
8.6 Motor Vehicles and Mechanized Equipment 37
8.7 Hand and Power Tools 39
8.8 Fire Protection and Prevention 41
8.9 Sanitation 42
8.10 Confined Space Entry 43
8.11 Welding and Cutting 44
8.12 Stairways and Ladders 45
8.13 Materials Handling, Storage, Use, and Disposal 46

8.14 Signs, Signals, and Barricades 47
8.15 Housekeeping....48

9.0 Site Control Measures 49

9.1 Work Zones....49
9.1.1 Exclusion Zone.... 49
9.1.2 Contamination Reduction Zone.... 49
9.1.3 Support Zone 50
9.2 Site Entry and Control Log....50

10.0 Personal Hygiene and Decontamination....50

10.1 Personal Decontamination 50
10.2 Respirator Decontamination 51
10.3 Equipment Decontamination....51
10.4 Decontamination Log....51
10.5 Decontamination Residue 51
10.6 Personal Hygiene and Sanitation 51

11.0 Emergency Contingency Plan....52

11.1 Pre-Emergency Planning....52
11.2 Personnel Responsibilities 53
11.3 Evacuation Routes and Procedures 53
11.4 Emergency Decontamination Procedures 53
11.5 Medical Treatment/First Aid....54
11.6 Emergency Alarms/Notifications and Procedures 54
11.7.1 Conditions for Implementation 60
11.7.1.1 Fire or Explosion 61
11.7.1.2 Material Spills.... 61
11.7.1.3 Severe Weather.... 61
11.7.2 Initial Action.... 61
11.7.3 Corrective Action 62
11.7.4 Follow-Through.... 62
11.8 Spill Response and Control Plan....62
11.8.1 Prevention.... 62
11.8.2 Reporting 63
11.8.3 Spill Response Equipment.... 63
11.8.4 Confinement and Containment.... 63
11.8.5 Cleanup.... 63
11.9 Report/Review 64

12.0 Inspection and Reporting....64

12.1 Safety and Health Inspections....64
12.2 Weekly Safety Reports....65
12.3 Certification of Worker/Visitor Acknowledgment 65
12.4 Incident Reports 65
12.5 Daily Air Monitoring Report 66
12.6 Daily Toolbox Talks 66
12.7 Job Safety Enhancement Program (JSEP) 66

FIGURES

Figure 1 – Site Location Map (All Work Areas) 4
Figure 2 – Site Location Map (Northwestern Work Area) 4
Figure 3 – Site Location Map (Southwestern and Northeastern Work Areas) 5
Figure 4 – Site Location Map (Southeastern Work Area) 5
Figure 5 – Route to– Berkshire Medical Center (Northwestern Work Area) 56
Figure 6 – Route to– Berkshire Medical Center (Southwestern Work Area) 57
Figure 7 – Route to– Berkshire Medical Center (Southeastern Work Area) 58
Figure 8 – Route to– Berkshire Medical Center (Northeastern Work Area) 59

TABLES

Table 1 – Minimum Clearance From Energized Overhead Electrical Lines 11
Table 2 – Frequency of Physiological Monitoring 16
Table 3 – Wind Chill Index 18
Table 4 – Maximum Daily Time Limits for Exposure at Low Temperatures 18
Table 5 – Work/Warm-up Schedule 19
Table 6 – Initial Levels of Protection 30
Table 7 – Operational Action Levels 32
Table 8 – Occupational Air Sampling 33
Table 9 – Emergency Contact List 60

APPENDICIES

Appendix A – Job Safety Hazard Analysis
Appendix B – Health and Safety Forms
Appendix C – Chemical Information Sheets
Appendix D – Respiratory Protection Program
Appendix E– Hazardous Communication Program
Appendix F – Fall Protection Program
Appendix G – Control of Hazardous Energy Program
Appendix H – Confined Space Program
Appendix I – Excavation and Trenching Program

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists'
CFR	Code of Federal Regulation
CIH	Certified Industrial Hygienist
CPR	Cardiopulmonary resuscitation
dB(A)	Decibels A level
DEET	N-Diethyl-m-toluamide
EMS	Emergency Medical Service
GE	General Electric
GFCI	Ground Fault Circuit Interrupter
HEPA	High Efficiency Particulate Air
HIV	Human Immunodeficiency Virus
HPS	Hanta Virus Pulmonary Syndrome
IDLH	Immediately Dangerous to Life and Health
JSHA	Job Safety Hazard Analysis
JSEP	Job Safety Enhancement Program
lb	Pound
LEL	Lower Explosive Limit
m	Meter
ml	Milliliter
mph	Miles per hour
MassDEP	Massachusetts Department of Environmental Protection
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
OU 4	Operable Unit 2
O_2	Oxygen gas
PHASP	Project Health and Safety Plan
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
ROPS	Roll Over Protective Structure
SDS	Safety Data Sheet
SHM	Safety and Health Manager
SOPs	Standard Operating Procedures
SSHO	Site Safety and Health Officer
TBD	To Be Determined
TLV	Threshold Limit Value
USEPA or EPA	United States Environmental Protection Agency

1.0 Introduction

Sevenson Environmental Services, Inc. is under contract to General Electric to perform remediation activities at the Housatonic River Work Areas located in Pittsfield, Berkshire County, Massachusetts. A site location map is attached as Figure 1.

The work primarily consists of mobilization/demobilization; traffic control; surveying; installation of temporary facilities and site controls; installation of erosion, storm water, and sediment controls; excavation of impacted sediments; stabilization of prepared excavated sediments for transportation and disposal to an approved off-site facility; restoring the site; restoring site surfaces and features to pre-work conditions; managing and protecting underground and overhead utilities; protecting, removing as necessary and restoring improvements including, but not limited to, utilities, signs, and landscaping within the work areas. All aspects of the work are described in the Remedial Action Work Plan submitted under separate cover.

1.1 Plan Objective

The objective of this Project Health and Safety Plan (PHASP) is to define the requirements and designate protocols to be followed during work at the Site. Applicability extends to Sevenson personnel, Sevenson's subcontractors, and visitors inclusive of engineers and subcontractors. Work performed under this contract will comply with applicable Federal, State, and Local Safety and Occupational Health laws and regulations. Through careful planning and implementation of corporate and site-specific safety protocols, Sevenson will strive for project free of accidents and incidents by promoting zero at risk behavior approach.

1.2 Safety and Health Policy Statement

Sevenson's management is committed to the safety of each and every employee. It should not be assumed just because no injury, accident, or illness occurred during a task that 'at risk' behaviors will be acceptable. There is no place at Sevenson for an employee who will not work safely or who will endanger the safety of his fellow workers. It is essential that all Managers and Supervisors insist on the maximum safety performance and awareness of all employees under their direction by consistently administering all safety rules and regulations as well as at risk behaviors. It is Sevenson's policy to take the necessary actions in engineering, planning, designing, assigning, and supervising work operations, to create a safe worksite. Sevenson will:

- Maintain safe and healthful working conditions.
- Provide and assure the use of all necessary personnel protection equipment to ensure the safety and health of site employees and the public at large.
- Require that site work be planned to provide a range of protection based on the degree of hazards encountered under actual working conditions.
- Provide site workers with the information and training required to make them fully aware of known and suspected hazards that may be encountered, and of the appropriate methods for protecting themselves, their co-workers, and the public at large.

1.3 Drug and Alcohol Policy

Sevenson is committed to providing a safe, efficient, and productive work environment for all employees. Using or being under the influence of drugs or alcohol on the job may pose serious safety and health risks. To help ensure a safe and healthful working environment, employees will be asked to provide body substance samples (such as urine and/or blood) to determine the illicit or illegal use of drugs and alcohol before starting work. Refusal to submit to drug testing will result in disciplinary action, up to and including termination of employment.

Subcontractors shall be made aware of the Substance Abuse Program requirements when working at the Site. Subcontractor personnel believed to be under the influence of a control substance or alcohol will be subjected to For Cause testing. If a subcontractor refuses to submit to For Cause testing, they will be denied access to the Site.

1.4 Project Safety and Health Expectations

The safety and health of workers, clients, the public, and the protection of the environment are fundamental responsibility assumed by Sevenson under this contract. Sevenson will:

- Promote project safety with an objective of no accidents, illnesses, or injuries by promoting and enforcing the zero at risk behavior policy.
- Manage activities in a proactive way that effectively increases the protection of site workers, the public, and the environment.
- Reduce safety and health risk by identifying and eliminating hazards from site activities.
- Carry out site activities in a manner that complies with all applicable safety, health, and environmental laws and regulations.

1.5 Project Safety and Health Compliance Program

Compliance with the requirements of applicable Federal, State, and local laws will be accomplished through a combination of written programs, employee training, workplace monitoring, and system enforcement. Continued and regular inspections by supervisors and safety personnel, as well as upper management with total involvement in the safety program will produce an atmosphere of voluntary compliance. However, disciplinary action for violations of project requirements will be taken, when necessary.

All site personnel and visitors entering a Contamination-Reduction Zone or Exclusion Zone at the site will be required to read and verify compliance with the provisions of this SSHP and specific appendices. In addition, visitors will be expected to comply with relevant Occupational Safety and Health Administration (OSHA) requirements such as medical surveillance, training, and personal protective equipment. In the event that a person does not adhere to the provisions of the PHASP, he/she will be requested to leave the work area. All nonconformance incidents will be recorded in the Daily Safety and Inspection Log.

The Site Safety and Health Officer (SSHO) will conduct impromptu surveillance on a daily basis of all work areas and subcontractor's activities to ensure that safety and health is properly implemented. In addition, any reports from employees concerning unsafe conditions will be investigated promptly. These conditions include, but are not limited to, work practices, equipment, materials, and the environment. Within 48 hours of the observation, corrective actions will be instituted and documented by the SSHO. If corrective actions cannot be feasibly implemented within this time frame, the Construction Manager will be notified. Unsafe acts, practices, or conditions will be reported to the responsible supervisor at the time of inspection.

The safe and efficient work practices of this company require a spirit of teamwork and cooperation from all employees. Also required are uniform standards of expected behavior. Employees who refuse or fail to follow the standard set forth by this plan, the Sevenson Corporate Health, and Safety Plan and/or regulatory standards; will subject themselves to disciplinary action up to and including discharge. In cases not specifically mentioned, employees are expected to use good judgment and refer any questions to their supervisors.

1.6 References

During development of this PHASP, consideration was given to current safety and health standards defined by the United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and the National Institute for Occupational Safety and Health (NIOSH). Specifically, the following reference sources have been utilized in the development of this PHASP:

- OSHA Regulations: 29 CFR 1910 and 1926.
- ANSI, Part A10.6 Safety Requirements for Demolition Operations
- NFPA, Flammable and Combustible Liquids Code, NFPA 30
- USEPA, 40 CFR, 260: Hazardous Waste Management System: General
- USEPA, 40 CFR, 261: Identification and Listing of Hazardous Wastes.
- USEPA Standard Operating Safety Guides, June 1992.
- NIOSH Pocket Guide to Chemical Hazards, August 2007.
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for Chemical Substances and Chemical Agents, 2018.
- NIOSH Publication No. 85-115 – "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities".
- ANSI Z358.1, Emergency Eyewash and Shower Equipment
- ANSI Z88.2 Practices for Respirator Protection.
- ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection.
- DHHS, "Manual of Analytical Methods", 3rd edition Volumes I and II, DHS (NIOSH) Publication 84-100.
- NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS/PHS/CDC/NIOSH, October 1985.
- USEPA, Health and Safety Requirements for Personnel Engaged in Field Activities, USEPA Order No. 14402.
- DOT Standards and Regulation, 49 CFR 171 and 49 CFR 172.
- General Electric's Life Saving Rules.
- Contract 40 Division 1 Specifications, January 2026.
- Corporate Health and Safety Plan, January 2026.

In addition to the above-referenced documents, Sevenson has established a comprehensive and realistic Safety, Health, and Environmental Program based on past experience, sound engineering practice, employee training, and enforcement of safety and health regulations to prevent unreasonable safety and health risks. For specific procedures/programs associated with this project, refer to the Sevenson Corporate Health and Safety Plan. A copy of the Sevenson Corporate Health and Safety Plan will be maintained in the Sevenson offices.

1.7 Project Safety Incentive Program

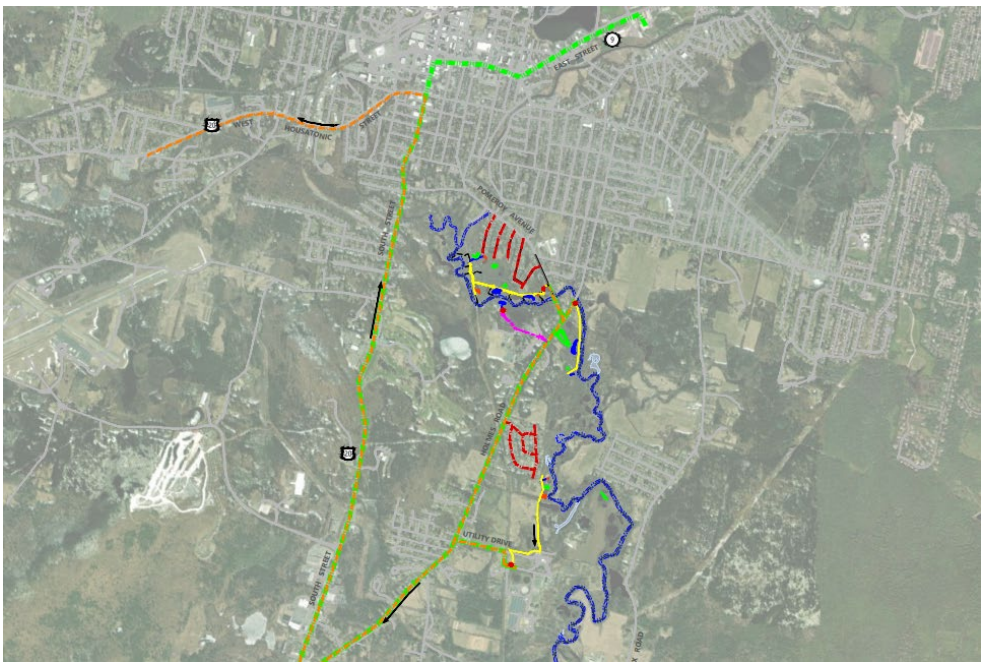
It is expected that all employees perform their assigned tasks in a safe and healthy manner. Therefore, safe work performance is a key element in an employee's review of their suitability for continued employment.

Employees will be encouraged to complete Job Safety Enhancement Program (JSEP) form. This form gives the worker a mechanism to provide management with concerns, observations, or suggestions to enhance safety, productivity, and quality for the project. A periodic award may be given to a worker who submits an outstanding JESP Form. This incentive will be determined by the Site Safety and Health Officer (SSHO) and Project Manager.

1.8 Site Safety and Health Plan Revisions

The development and preparation of this PHASP has been based on site-specific information provided to Sevenson. Should any unforeseen hazard become evident during the performance of the work, the SSHO will bring any such hazard to the attention of the Client's Representative both verbally and in writing for resolution as soon as possible, Sevenson will take necessary actions to maintain safe working conditions to safeguard on-site personnel, visitors, the public, and the environment. Modifications of any portion or provision of the PHASP will be requested in writing from the SSHO and authorized in writing by the Construction Manager. No changes to the PHASP will be allowed until the item has been reviewed and an addendum prepared and approved by Safety and Health Manager and Construction Manager.

Figure 1 – Site Location Map (All Work Areas)



Note: For Figures 2-4, laydown and stockpile area outlined in yellow dash marks. This will be the location of first aid kit, water, and sign-in or sign-outs.

Figure 2 – Site Location Map (Northwestern Work Area)

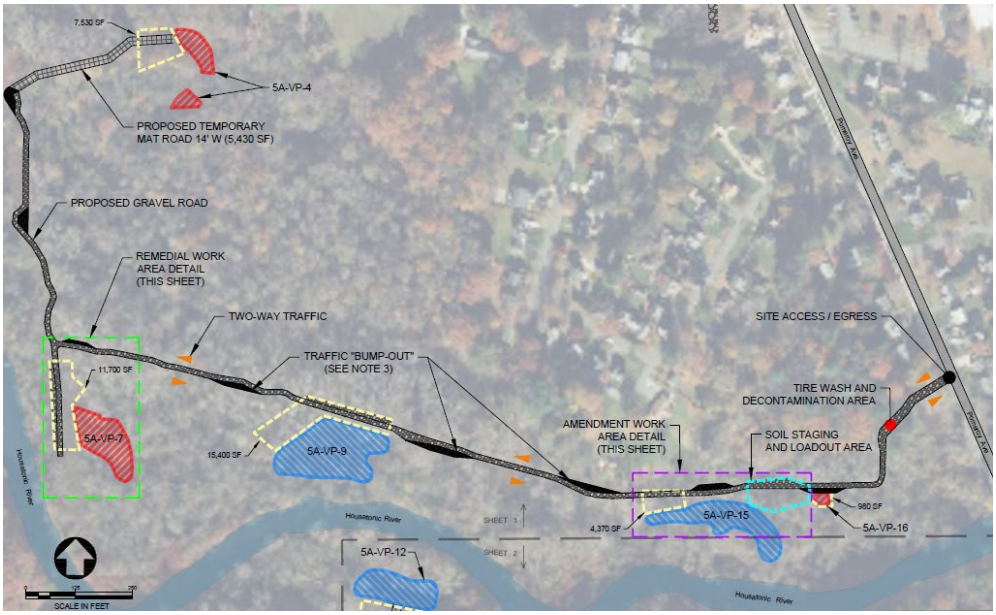


Figure 3 – Site Location Map (Southwestern and Northeastern Work Areas)

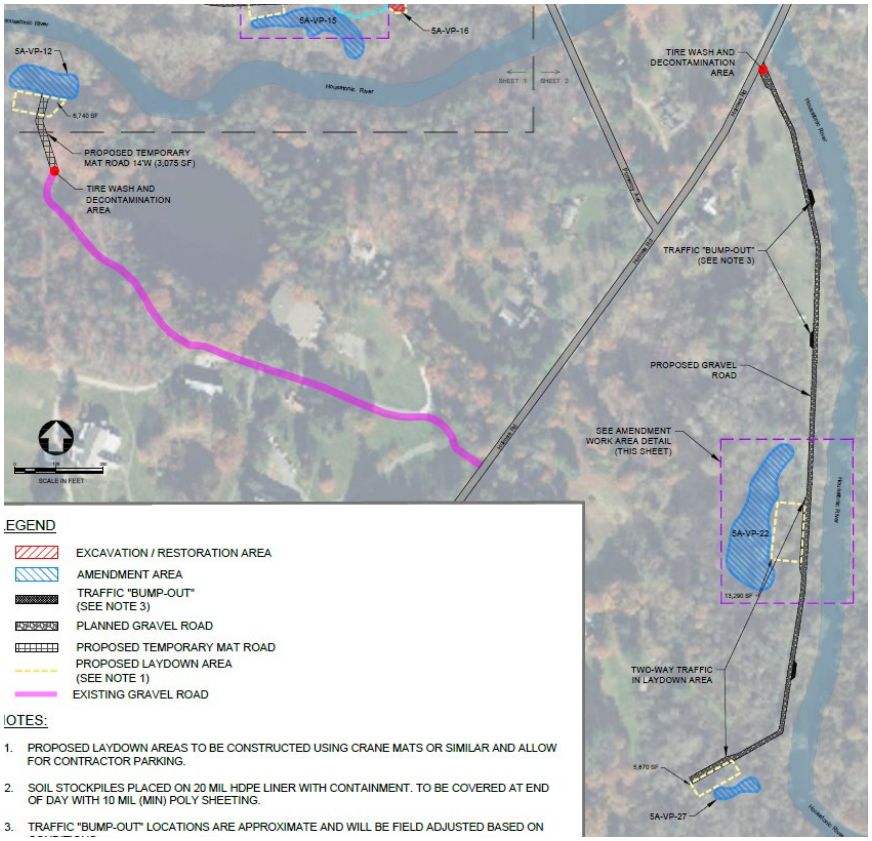
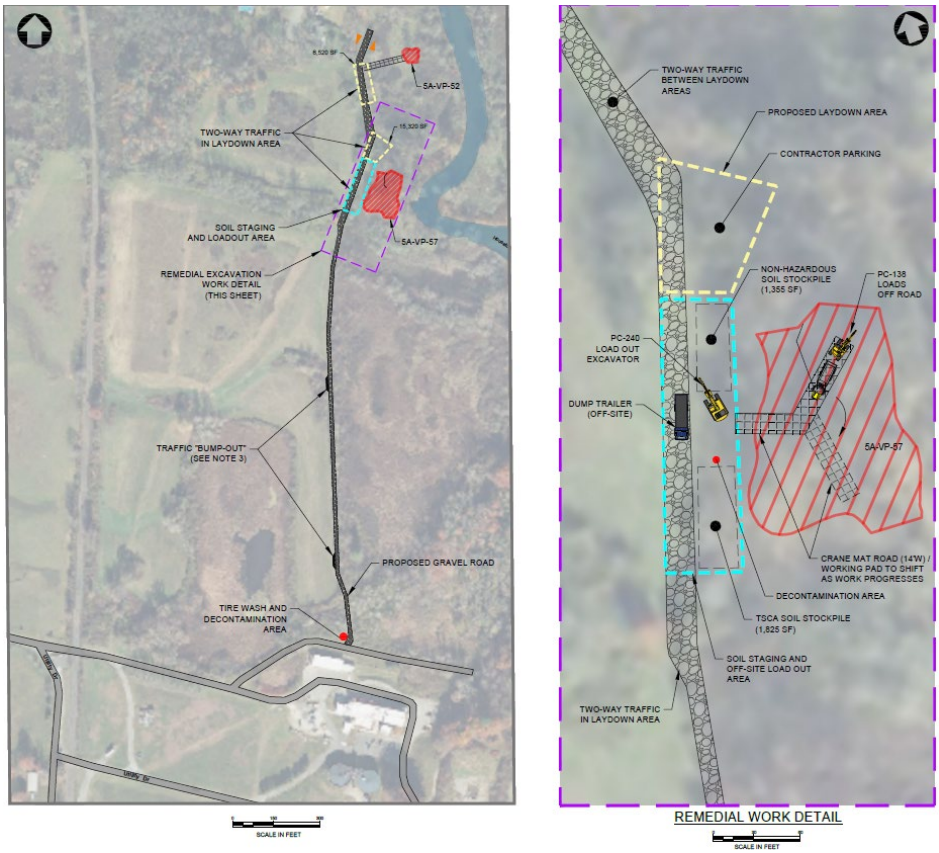


Figure 4 – Site Location Map (Southeastern Work Area)



2.0 Organization and Responsibilities

While the Sevenson Safety and Health Department directs and supervises the overall Safety, Health and Environmental Program, the responsibility for Safety and Health extends throughout our organization from top management to every employee. For this reason, it is each person's duty to notify the management personnel if a hazardous condition is identified and to make a "stop work" call if the condition represents an immediate danger to life or health, until the SSHO can make a further determination. The following are the Sevenson project personnel positions and responsibilities for this project.

- Officer In Charge: Michael Welch
- Project Manager: Joseph Casper, EIT
- Project Superintendent: Steven Coye
- Safety and Health Manager**:** Paul Jung, CIH, CSP
- Site Safety and Health Officer: Ronald Scarborough, CHST
- Subcontractors**:** TBD

Sevenson has designated a Project Health and Safety Officer (HSO) for the GE Vernal Pool Pilot Project to provide overall oversight of health and safety activities throughout project execution. Due to the presence of multiple active work areas, the HSO will be supported by Sevenson's project management team, including the Quality Control Manager, Superintendent, Project Manager, and Project Foreman, who will serve as Site Safety Representatives. Together, these personnel will monitor field operations, reinforce compliance with the site-specific Health and Safety Plan (HASP), and ensure that all work is performed in a safe manner and in accordance with established project requirements.

Note that at least one Site Safety Representative (SSR) is needed for each 25 workers. At least one SSR must be present per active work area. For example, if there are two active work areas, each with 15 workers, one SSR minimum will be needed at each work area. SSRs are to be individuals with at least 2 years of safety experience, 2 years of similar project experience, up-to-date HAZWOPER training, and competent person training for PPE, machine guarding, and materials handling and storage.

All Site workers, labor and management alike, are expected to participate in safety activities as much as possible. Through observations, inspections, morning meetings, and/or reporting, all personnel on-site are capable of affecting the safety of their coworkers and any visitors to the Site.

2.1 Officer In Charge

The Officer In Charge directs and manages all aspects of the project in compliance with all contract and technical requirements. The Officer In Charge will monitor and control all aspects of the project to achieve optimal performance and ensure safe, high-quality performance that complies with all contract requirements.

2.2 Project Manager

The Project Manager reports to the Officer In Charge. His responsibilities include coordinating project activities with the Project Superintendent and serving as the primary liaison with the Client Representative. The Project Manager prepares all correspondence, submittals, and other documentation required for the project; coordinates schedules; and administers the contract. The Project Manager prepares reports and documentation, supervises inspection personnel, and reviews and approves procurement and subcontract activities. The project manager is also responsible for reporting of any necessary information related to Health and Safety to the Sherwin-Williams Project Manager.

2.3 Project Superintendent

The Project Superintendent supervises and coordinates all construction crew activities relating to site preparation, excavation, shipping, and restoration. The Project Superintendent has the operational responsibility for the implementation of the PHASP on this project. This includes establishing an attitude of concern for safety matters by initiating prompt corrective action of hazards brought to his attention and ensuring that the project safety and health requirements are initiated and observed by all project personnel.

The Superintendent plans and requires that all work be performed in compliance with this PHASP, the Sevenson Corporate Health and Safety Plan, and/ all applicable local, state, and federal regulations. He will impress upon all subcontractors' supervisory personnel a sense of responsibility and accountability of each individual to maintain a safe workplace and to work in a safe manner.

The Superintendent is the primary Emergency Coordinator for all emergencies (fire, utility, equipment) other than medical.

2.4 Safety and Health Manager (SHM)

The Safety and Health Manager formulates, administers, and coordinates programs for the company to reduce the risk of loss due to employee injury, regulatory non-compliance, general liability, fire, theft, or damage and reports directly to the Officer In Charge. The Safety and Health Manager will develop written detailed safety programs as they become necessary for site activities. New safety programs will be communicated to site workers through safety meetings or training sessions. The Safety and Health Manager will:

- Be responsible for the development, implementation, and oversight, of the PHASP.
- Visit the site as needed to audit the effectiveness of the PHASP.
- Provide consultation as needed to ensure that the PHASP is fully implemented.
- Coordinate any modifications to the PHASP with the SSHO and the Client Representative.
- Provide continued support for upgrading/downgrading the level of personal protection for project tasks.

2.5 Site Safety and Health Officer (SSHO)

Under the direction of the Safety and Health Manager, the SSHO will be responsible for the implementation of this PHASP and for the daily coordination of safety activities with the Project Superintendent and the Client Representative to ensure that the planned work objectives reflect adequate safety and health considerations. The SSHO will maintain a complete copy of this plan (and its supplements and addenda) at the site during all field activities and assure that all workers and visitors are familiar with it. He will perform site-specific training and briefing sessions for employee(s) prior to the start of field activities at the site and a briefing session each day before starting work. He will ensure the availability, proper use and maintenance of specified personal protective equipment, decontamination equipment, and other safety and health equipment. He will maintain a high level of safety awareness among team members and communicate pertinent matters to them promptly. The SSHO will:

- Be the Emergency Coordinator for all medical (first aid, heart attack, man down, etc.) events.
- Assist and represent the Safety and Health Manager in on-site training and the day-to-day on-site implementation and enforcement of the accepted PHASP.
- Be assigned to the site on a full-time basis for the duration of field activities.

- Have the authority to ensure site compliance with specified safety and health requirements, Federal, state and OSHA regulations; and all aspects of the PHASP. This includes, but is not limited to, activity hazard analyses, air monitoring, use of PPE, decontamination site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, confined space entry procedures, spill containment program, and preparation of records. This will be accomplished by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log.
- Stop work activities if unacceptable health or safety conditions exist and take necessary action to re-establish and maintain safe working conditions.
- Consult and coordinate any modifications to the PHASP with the Safety and Health Manager, the Site Superintendent, and the Client Representative.
- Conduct accident investigations and prepare accident reports.
- Review results of daily quality control inspections and document safety and health findings in the Daily Safety Inspection Log.
- Coordinate with Site Management and the Safety and Health Manager, recommend corrective actions for identified deficiencies, and oversee the corrective actions.
- Responsible for establishing, designating, or demarcating site work zones as necessary to support site operations. These zones include but are not limited to exclusion zones, contamination reduction zones, and support zones.

2.6 Employees

Personnel working on the site are required to read and acknowledge their understanding of the PHASP and its appendices. Personnel are expected to abide by the requirements of the PHASP and cooperate with supervisory personnel to ensure a safe and helpful work site.

It is each employee's responsibility to be familiar and in compliance with all health and safety practices and to use PPE, air monitoring equipment, and other safety devices, as required. In addition, employees shall:

- Participate in the Job Safety Enhancement Program (JSEP) by completing a JSEP Form for unsafe conditions and acts.
- Report all injuries, illnesses, accidents, and near misses immediately to their supervisor and SSHO.
- Perform work in a safe and efficient manner.
- Perform work without using at risk behaviors.

2.6.1 Employee Responsibility

It is each employee's responsibility to be familiar and comply with all health and safety practices and to use the required PPE, air monitoring equipment, and other safety devices to perform their work. Responsibilities of employees associated with this project include, but are not limited to:

- Complying with the provisions of and following the procedures, policies, rules, and programs defined in the PHASP.
- Providing feedback to health and safety management relating to omissions and modifications in the health and safety program at the site.

- Understanding the policies and procedures specified in the PHASP and health and safety program and clarifying those areas where understanding is incomplete.

2.6.2 Employee Authority

The health and safety authority of each employee assigned to the Site consists of the following:

- Stop work authority if that employee feels is unsafe, or where specified safety precautions are not adequate or understood.
- Stop work or refuse to perform work on any operation where the safety procedures specified in this PHASP are not being followed or implemented.
- The authority to contact the SHM at any time to discuss potential safety concerns.

2.7 Visitors

All visitors requesting access to the site are required to check in at Sevenson's office trailer and meet with the Project Manager and/or SSHO. Visitors must receive a site briefing by the SSHO prior to being escorted by designated person around the site. This briefing shall be documented and the visitor will be required to sign the visitor's log. At no time are visitors permitted to walk around the site unescorted. Visitors requesting permission to enter an exclusion or contamination reduction zone must provide the SSHO with either a 40-hour or 24-hour OSHA HAZWOPER Course certificate and when necessary, a current (within the last twelve months) 8-hour refresher course certificate as well as a medical clearance certificate indicating the visitor is medially qualified under 29 CFR 1910 or 1926.65 requirements within the past twelve months. Visitors are responsible for following any direction given by the designated person providing the escort.

2.8 Subcontractors

Subcontractors utilized during activities at the project are covered by this PHASP and will be provided a copy of the plan prior to commencing work. The SSHO will verify that subcontractor employee training; medical clearance, and respirator fit test records are current. As with all site personnel, subcontractors will be briefed on the provisions of this plan and attend all daily toolbox and weekly safety meetings.

The subcontractor's superintendent or foreman shall be responsible for the safety of their personnel. Sevenson will monitor a subcontractor's safety performance and bring any safety concern to the attention of the subcontractor's superintendent or foreman. The subcontractor will determine and implement necessary controls and corrective actions. The SSHO will note subcontractor work practices on the daily Safety and Health report. If repeat non-compliance/unsafe conditions are not corrected, the subcontractor will be required to stop affected work until adequate corrective measures are implemented.

3.0 Hazard/Risk Analysis

Below is a general summary of the risks that this PHASP addresses during work at this site. This is a summary of the major anticipated risks and is not intended to be a complete listing of all potential risks that may be encountered during the project.

1. Working around heavy equipment (struck by, caught in equipment)
2. Working in residential and commercial neighborhoods
3. Working in close proximity to structures
4. Materials handling and transfer (ergonomic issues)
5. Heavy lifting (strains, sprains)
6. Biological hazards (plants, animals, insects)

7. High noise levels
8. Cuts/lacerations (saws, wire rope, etc.)
9. Exposure to temperature extremes (heat stress, cold stress)
10. Severe weather conditions (high winds, precipitation, lightning)
11. Exposure to chemical contaminants and chemicals brought on site
12. Overhead hazards
13. Community and public roadway motor vehicle traffic

3.1 Site Tasks and Operations

Sevenson has developed a Job Safety and Hazard Analysis (JSHA) for the major phases of the work. A major phase of work is defined as an operation involving a type of activity presenting hazards not experienced in previous operations, or where a new subcontractor or work crew is to perform the specified phase. The analysis defines the activity being performed and identifies the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard. A JSHA will also be prepared by field personnel when new tasks are added; job situations change, or when it becomes necessary to alter safety requirements; refer to ***Appendix A - "Job Safety and Hazard Analysis".*** Work will not proceed on a particular task/work area until the JSHA has been reviewed and site personnel understand the hazards and controls of the activity to be performed.

3.2 Hazards

The following potential hazards may be encountered during the work activities at the Site.

3.2.1 Safety/Physical Hazards

Potential safety hazards include excavation of contaminated soil, and exposure to public traffic, electrical, heavy equipment/vehicle traffic, material handling, hand and power tools, noise exposure, slip/trips/falls, heat and cold stress, and falls from elevation. Safety/Physical hazards associated with the project are presented below.

3.2.1.1 Electrical

Overhead power lines, downed electrical wires, and buried cables all pose a danger of shock or electrocution if contacted or severed during site operations. A minimum distance of 10 feet will be present between overhead wires and equipment. This distance will vary according to voltage, the greater the voltage, the greater the clearance between any part of the equipment and the power line; refer to ***Table 1 - Minimum Clearance from Energized Overhead Electrical Lines***. During periods of limited visibility or working in tight areas, a spotter will be utilized to maintain a safe distance between equipment and overhead wires. The basic rule is, "Don't locate equipment in a position where it can come in contact with overhead power lines." Maintain the required distance from the lines. Overhead electrical power lines will be considered energized unless the person owning such lines, or operating officials of the electrical utility supplying the line, assures that it is not energized and it has been visibly grounded.

Table 1 – Minimum Clearance From Energized Overhead Electrical Lines	
Nominal System Voltage	**Minimum Rated Clearance**
0 to 50 kV	10 Feet (3 m)
51 to 200 kV	15 Feet (4.5 m)
201 to 350 kV	20 Feet (6 m)
351 to 500 kV	25 Feet (7.5 m)
501 to 650 kV	30 Feet (9.1 m)
651 to 800 kV	35 Feet (10.7 m)
801 to 950 kV	40 Feet (12.2 m)
951 to 1100 kV	45 Feet (13.7 m)
Clearance values calculated using: (Initial kV-50kV) x (4 inches/10kV) x (1 foot/12 inches) = increased distance (feet) over 10 feet. Add this value to 10 feet to yield minimum rated clearance	

Table 11-1 USACE EM-385-1-1 (Sept 2008)

There are various means of insulating the wires, as well as barriers and alarms that may be available to reduce the risk of injury to workers, but the use of such devices does not change the requirements of any other applicable standards or laws. In addition, these, and other measures (such as grounding the equipment itself) may not be fully effective and may create a false sense of security. Only the utility company is authorized to de-energize, insulate, or handle the lines. No one else may attempt these operations.

Electrical equipment used on-site may also pose a hazard to workers. Whenever possible, Sevenson will use low-voltage equipment with ground-fault interrupters and watertight, corrosion-resistant connecting cables to help minimize this hazard. No employee will be permitted to work in the proximity of any part of an electrical power circuit unless the person is protected against electric shock by de-energizing the circuit and grounding it, or it has been locked and tagged out. Sevenson's Control of Hazardous Energy Program will be implemented when work has to be performed on energized equipment. Sevenson's Control of Hazardous Energy Program is located in *Appendix G* of this Plan.

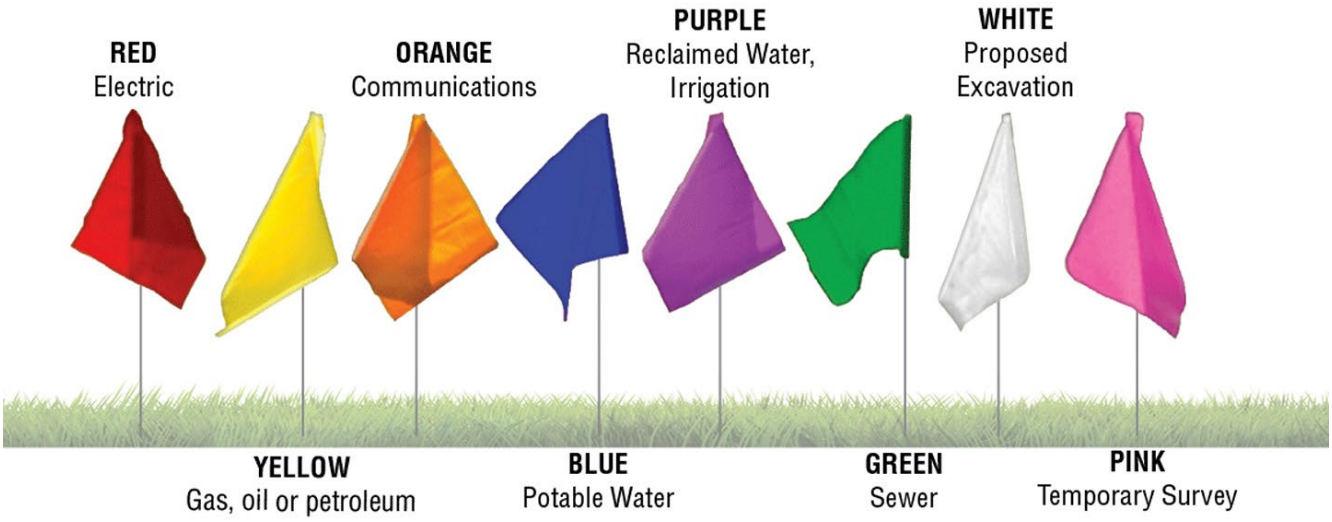
All electrical wiring and equipment will be intrinsically safe for use in potentially explosive environments and atmospheres. Ground-fault circuit interrupters are standard for use at the site.

3.2.1.2 Underground Utilities

There is the potential for numerous underground utilities to be located at the Site. Some of these may be disconnected from service to support remediation, and re-installed during restoration while others will be protected and maintained. Prior to the start of excavation activities, Massachusetts Dig Safe at 811 or 800-344-7233 will be contacted to mark out underground utilities coming into Site area.

The Project Superintendent is Sevenson's excavation and trenching competent person. Massachusetts Dig Safe will be contacted (811 or 800-344-7233) for utility mark out at least three working days prior to the start of excavation activities. Massachusetts Dig Safe dig permits expire after 45 days, so every 40 days the service must be notified of continued excavation activities. Handwork is required within 24-inches of a known utility line or service.

Utilities are marked out with various colors or marking paint or flagging. The following charts identify the Massachusetts Dig Safe color code describing which utility is identified based on the color of the mark out.



3.2.1.3 Heavy Equipment/Vehicle Traffic

Considerations for controlling the movement of personnel and equipment in a construction area are vitally important to any project as injuries may occur while working with or adjacent to such equipment. This category includes all operations that utilize moving heavy equipment: excavators, loaders, dozers, cranes, and trucks. Sevenson will take every precaution necessary to ensure the safety of the public and the on-site personnel during traffic movement operations.

All workers will adhere to all applicable standards and regulations while operating heavy equipment at the site. Operators will be trained and experienced in the use and maintenance of the equipment they are operating. Equipment will be inspected on a daily basis to identify any worn parts, and/or unsafe conditions. Inspections will be documented using the Equipment Checklist. Any unsafe equipment will be removed from service until safety defects can be corrected. Equipment operators will not leave their machine unattended while it is running. All equipment will have electronic backup alarms. Each piece of equipment will be equipped with a 1A:10B:C fire extinguisher. No vehicles or equipment will be operated in a careless or unsafe manner. Personnel will wear high visibility reflective vests when working around equipment/vehicles. All personnel will stay a minimum of four feet clear of the operational area of the equipment.

During construction activities, it is often necessary to have a worker direct the operator. In these cases, close communication between the operator and the laborer is of critical importance. One designated person will give signals to the operator of both equipment and vehicles in the work area. Workers should not take any action unless they have made eye contact with the operator and clearly communicated their intentions. In addition, all machines are equipped with back-up alarms, which are checked daily and repaired immediately. Truck traffic and non-Sevenson vehicles exiting and entering the site will be controlled by a flagger/spotter as necessary.

Maintenance and inspection of vehicles and heavy equipment is a vital part of the overall safety program. Sevenson has a fully staffed equipment maintenance shop that handles all preventative and overhaul work for our entire vehicle and equipment fleet. As part of the preventative maintenance, all equipment is checked for properly functioning safety devices (e.g., backup alarms, brakes, lights, fire extinguishers, etc.). Before each piece of equipment leaves the shop, it must pass a safety checklist. All rental equipment is subjected to a similar inspection when delivered to the job site. Any piece of rental equipment that fails the inspection must be repaired by the vendor before it is accepted for use. In addition, all equipment is inspected in the field prior to the start of each day's activities. Equipment inspections shall be documented by the user performing the inspection and shall be returned to the SSHO

once completed. If a superintendent, operator, or safety officer detects a defect, the equipment is taken out of service and a properly qualified mechanic is dispatched from the shop to make the repairs on-site. All heavy equipment used at the site will be equipped with rollover protective structures (ROPS).

3.2.1.4 Material Handling

Various materials and equipment may be handled manually during project operations. Care should be taken when lifting and handling heavy or bulky items to avoid back injuries. The following fundamentals address the proper lifting techniques that are essential in preventing back injuries:

- The size, shape, and weight of the object to be lifted must first be considered. Multiple employees or the use of mechanical lifting devices are required for heavy objects.
- The anticipated path to be taken by the lifter should be considered for the presence of slip, trip, and fall hazards.
- The feet will be placed far enough apart for good balance and stability (typically shoulder width).
- The worker will get as close to the load as possible. The legs will be bent at the knees.
- The back will be kept as straight as possible and abdominal muscles should be tightened.
- Twisting motions should be avoided when performing manual lifts.
- To lift the object, the legs are straightened from their bending position.
- A worker will never carry a load that cannot be seen over or around.

When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered. When two or more workers are required to handle the same object, workers will coordinate the effort so that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, will face the direction in which the object is being carried. In handling bulky or heavy items, the following guidelines will be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather gloves will be used if necessary.
- The hands and object will be free of oil, grease, and water which might prevent a firm grip and the fingers will be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- The item will be inspected for metal slivers, jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

3.2.1.5 Hand and Power Tools

Hand and power tools are used for various site activities. Procedures for using hand and power tools are as follows:

- Persons using power tools will be trained in their use.
- Ground Fault interrupters will be used on all electrical tools.
- Only tools in good condition will be used.
- Tools will be kept clean.
- Guards and shields will be kept on all tools.
- Air couplings will be secured.
- Non-sparking tools will be used in hazardous areas.

- Proper eye protection is critical when using power tools. At a minimum, safety glasses will be required during site operations. Where appropriate, full-face shields will be utilized in addition to the glasses.

3.2.1.6 Noise Exposure

Noise is generated during construction activities in such operations as transportation of materials and operation of heavy construction equipment. Noise has been defined as unwanted sounds. The human ear can tolerate a certain amount of sound without any harmful effects. Personnel will be provided protection against the effects of hazardous noise exposure whenever sound-pressure levels exceed 85 dB(A) steady-state expressed as a time-weighted average (TWA) or 140 dB(A) impulse.

Compliance with these guidelines will be verified through the use of a calibrated sound level meter. Individual dosimetry is not anticipated to be required, but will be made available if there is reason to believe provided hearing protection devices are insufficient.

It is usually safe to assume that if you need to shout to be heard at arms-length, the noise level is at 90 dB (A) or above. Personnel operating or working around construction equipment will utilize hearing protection. Sevenson personnel participate in a Hearing Conservation Program that meets the requirements of OSHA regulation 29 CFR 1910.95.

3.2.1.7 Excavation/Trenching Hazards

The main hazard encountered during soil excavation is the cave in of excavation sides with possible burial or crushing of workers. Causes of cave in may include (a) absence of shoring, (b) misjudgment of stability, (c) defective shoring, and (d) undercut sides. Other potential hazards include falling during access/egress, while monitoring or dismounting equipment, or stumbling into excavation. An overhead hazard can result from material, tools, rock, and/or soil falling into the excavation. Flammable atmospheres may also be encountered in excavation. Trenches and excavations greater than four feet in depth shall be designated as confined spaces. Excavations and trenches shall be evaluated to determine if they are to be classified as a Permit Required Confined Space by the SSHO prior to any person being allowed to enter an excavation or trench.

Sevenson will provide adequate shoring or sloping of sides of the excavation. Excavation/trenches will be inspected daily for changing conditions. Excavation/trenches, regardless of the depth or width, will be barricaded. The use of raised berms, caution signs, and caution tape will be instituted to protect personnel on the site. The excavation area will be delineated with caution tape during operations and barricaded/secured with safety fence at the end of each workday. Adequate means of exit, such as ladders, steps, ramps, or other safe means of egress, will be provided and be within 25 feet of lateral travel. At least two means of exit will be provided for personnel working in excavations. Where the width of the excavation exceeds 100 feet, two or more means of exit will be provided on each side of the excavation.

Heavy equipment tracks shall be kept a minimum of 36-inches away from any building foundation. Hand excavation is the only acceptable method of removing soil around building foundations.

Sevenson's Excavation and Trenching Program can be found in Appendix J.

The Project Superintendent is Sevenson's excavation and trenching competent person. Massachusetts Dig Safe will be contacted (811 or 800-344-7233) for utility mark out at least three working days prior to the start of excavation activities. Massachusetts Dig Safe dig permits expire after 45 days, so every 40 days the service must be notified of continued excavation activities. Handwork is required within 24-inches of a known utility line or service.

3.2.1.8 Slip/Trip/Fall

Slip/trip/hit/fall injuries are the most frequent of all injuries to workers. They occur for a wide variety of reasons, but all injuries can be prevented by the following prudent practices:

- Spot-check the work area to identify hazards.
- Establish and utilize a pathway, which is most free of slip and trip hazards.
- Beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain.
- Carry only loads that you can see over.
- Keep work areas clean and free of clutter, especially in storage rooms and walkways.
- Communicate hazards to on-site personnel.
- Secure all loose clothing, ties, and remove jewelry while around machinery.
- Report and/or remove hazards.
- Keeps a safe buffer zone between workers using equipment and tools.

3.2.1.9 Heat Stress

Heat stress may be a hazard for workers wearing protective clothing even if the temperature is moderate. The same protective materials that shield the body from chemical exposure prevent heat and moisture from dissipating. Personal protective clothing can therefore create a hazardous condition. Depending on the ambient temperature and the work being performed, heat stress can occur very rapidly - within as little as 15 minutes.

In its early stages, heat stress can cause discomfort and inattention, resulting in impaired functional abilities that can threaten the safety of both the individual and his co-workers. Personnel will be instructed to recognize the symptoms of the onset of heat stress. Frequency of heat stress monitoring and checks for symptoms of heat stress will increase with rises in air temperature, humidity, and the degree of exposure to high temperature areas.

The guidance for workers is specified in the current version of the ACGIH Threshold Limit Values for Heat Stress. If actual clothing differs from the ACGIH standard ensemble in insulation value and/or wind and vapor permeability, changes should be made to the monitoring requirements and work rest period to account for these differences. ***Table 2 – "Frequency of Physiological Monitoring***" provides the suggested frequency of physiological monitoring for fit and acclimatized workers.

Table 2 – Frequency of Physiological Monitoring		
Adjusted Temperature Calculation	**Normal Work Clothing**	**Impermeable Clothing**
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5 - 90.0°F (30.8 – 32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5 - 87.5°F (28.1 – 30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5 - 82.5°F (25.3 - 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5 - 77.5°F (22.5 - 25.3°C)	After each 150 minutes of work	After each 120 minutes of work

The following parameters will be used when monitoring workers (any monitoring shall be documented and stored by the H&SO):

Heart rate - Count the radial pulse as early as possible in the rest period to ensure a more accurate reading. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period at the same length. If, at the end of the following work period, the heart rate still exceeds 110 beats per minute, shorten the work period again by one-third.

Oral Temperature - The utilization of oral temperature applies to the time immediately after the worker leaves the contamination reduction zone. Using a clinical thermometer, take the temperature for three minutes. If the oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third, without a change to the rest period. If the oral temperature still exceeds 99.6°F (37.6°C) at the end of the following work period, shorten the next work cycle by one-third. Do not permit a worker to perform duties requiring a semi permeable or impermeable garment if the oral temperature exceeds 100.6°F (38.1°C). Ear canal readings are a valid method to monitor the temperature of workers.

The oral temperature shall not exceed 100.4° F. If an employee's pulse rate exceeds the maximum age-adjusted heart rate (0.7(220-AGE)), and/or the oral temperature exceeds 100.4º F, the employee shall be required to stop work and rest at the work site or move to an air-conditioned room after proper decontamination. The affected employee may be allowed to return to work after his/her pulse rate has dropped below 100 beats per minute. The SSHO in consultation with the affected employee, and medical personnel, if necessary, shall determine whether an employee is ready to return to work. Fluids shall be provided and rest breaks will be taken. The frequency of breaks will increase with the temperature. Such things as cooling vests, portable fans, and breaks in air-conditioned areas shall be used if necessary.

When practicable, the most labor-intensive tasks should be carried out during the coolest part of the day. If necessary, a work/rest regimen will be instituted. The work/rest regimen consists of alternating periods of work and rest. The duration of these alternating periods will depend on the environmental conditions at the job site, such as, the Wet Bulb Globe Temperature, duration, and type of activities performed.

A worker who becomes irrational or confused or collapses on the job should be considered a heat stroke victim and medical help should be called immediately. Early recognition of symptoms and prompt emergency treatment is the key to aiding someone with heat stroke. While awaiting the ambulance, begin efforts to cool the victim down by performing the following:

- Move the victim to a cooler environment and remove outer clothing.
- Wet the skin with water, and fan vigorously or repeatedly apply cold packs or immerse the victim in a tub of cool (no ice) water.
- If no water is available, fanning will help promote cooling.

Any individual showing susceptibility to heat stress will be referred to a physician for evaluation. In addition, the use of prescription drugs can also contribute to the effects of heat stress and will be considered during the assignment of work. Cool (50°-60°F) water or a sport drink, such as Gatorade, will be made available to workers and encourage them to drink small amounts frequently, (e.g., one cup every 20 minutes). Ample supplies of liquids will be placed close to the work area.

3.2.1.10 Cold Stress

Cold injury (frostbite and hypothermia) and impaired ability to work are hazards to persons working outdoors in low temperatures at or below freezing. Extreme cold for a short time may cause severe injury to exposed body surfaces (frost nip or frostbite), or result in profound generalized cooling (hypothermia). Areas of the body which have high surface area-to-volume ratio such as fingers, toes, and ears, are the most susceptible to frost nip or frostbite.

Two factors influence the development of a cold weather injury: ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration soaked. The wind chill factor is the cooling effect of any combination of temperature and wind velocity or air movement. ***Table 3 – Wind Chill Index*** should be consulted when planning for exposure to low temperatures and wind. The wind chill index does not take into account the specific part of the body exposed to cold; the level of activity, which affects body heat production; or the amount of clothing being worn.

When practicable, the most sedentary tasks should be carried out during the warmest part of the day. If necessary, a light-work rotation schedule should be instituted or the work area heated. Heavy work that will cause heavy sweating resulting in wet clothing must also be monitored. The work/rest regimen consists of alternating periods of work and rest. The duration of these alternating periods will depend on the environmental conditions at the job site, (i.e., the Wind Chill Temperature, duration, and type of activities performed).

Table 3 – Wind Chill Index													
Wind (mph)	Actual Temperature (°F)												
	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25
	Equivalent Temperature (°F)												
5	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40
10	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47
15	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51
20	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55
25	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58
30	22	16	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60
35	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62
40	20	13	6	-1	-8	-15	-22	-29	-36	-42	-50	-57	-64
Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V0.16) + 0.4275T(V0.16) T = Air Temperature (°F) V = Wind Speed (mph)							Frostbite occurs in 15 minutes or less						

Table 4 - Maximum Daily Time Limits for Exposure at Low Temperatures gives the recommended time limits for working in various low temperature ranges.

Table 4 – Maximum Daily Time Limits for Exposure at Low Temperatures	
Temperature Range (°F)	Maximum Daily Exposure
30 to 0	No limit, providing that the person is properly clothed.
0 to -30	Total work time: 4 hours. Alternate 1 hour in and 1 hour out of the low-temperature area.
-30 to -70	Two periods of 30 minutes each at least 4 hours apart. Total low temperature work time allowed is 1 hour.
-70 to -100	Maximum permissible work time is 5 minutes during an 8-hour working day. At these extreme temperatures, completely enclosed headgear, equipped with a breathing tube running under the clothing and down the leg to preheat the air, is recommended.

Table 5 - Work/Warm-up Schedule applies to any 4-hour work period with moderate to heavy work activity, warm-up periods of ten (10) minutes in a warm location and an extended break (e.g., lunch) at the end of the 4-hour period in a warm location. For light-to-moderate work (limited physical movement) apply schedule one step lower. For example, at -35°C (-30°F) with no noticeable wind, a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period.

<table>
<tr><th colspan="12">Table 5 –
Work/Warm-up Schedule</th></tr>
<tr><td colspan="2">Air Temperature - Sunny Sky</td><td colspan="2">No Noticeable Wind</td><td colspan="2">5 mph Wind</td><td colspan="2">10 mph wind</td><td colspan="2">15 mph wind</td><td colspan="2">20 mph wind</td></tr>
<tr><td>°C (approx.)</td><td>°F (approx.)</td><td>Max Work Period</td><td>No. of Breaks</td><td>Max Work Period</td><td>No. of Breaks</td><td>Max Work Period</td><td>No. of Breaks</td><td>Max Work Period</td><td>No. of Breaks</td><td>Max Work Period</td><td>No. of Breaks</td></tr>
<tr><td>-26° to -28°</td><td>-15° to -19°</td><td colspan="2">(Norm. Breaks) 1</td><td colspan="2">(Norm. Breaks) 1</td><td>75 min</td><td>2</td><td>55 min</td><td>3</td><td>40 min</td><td>4</td></tr>
<tr><td>-29° to -31°</td><td>-20° to -24°</td><td colspan="2">(Norm. Breaks) 1</td><td>75 min</td><td>2</td><td>55 min</td><td>3</td><td>40 min</td><td>4</td><td>30 min</td><td>5</td></tr>
<tr><td>-32° to -34°</td><td>-25° to -29°</td><td>75 min</td><td>2</td><td>55 min</td><td>3</td><td>40 min</td><td>4</td><td>30 min</td><td>5</td><td colspan="2" rowspan="5">Non-Emergency Work Should Cease</td></tr>
<tr><td>-35° to -37°</td><td>-30° to -34°</td><td>55 min</td><td>3</td><td>40 min</td><td>4</td><td>30 min</td><td>5</td><td colspan="2" rowspan="4">Non-Emergency Work Should Cease</td></tr>
<tr><td>-38° to -39°</td><td>-35° to -39°</td><td>40 min</td><td>4</td><td>30 min</td><td>5</td><td colspan="2" rowspan="3">Non-Emergency Work Should Cease</td></tr>
<tr><td>-40° to -42°</td><td>-40° to -44°</td><td>30 min</td><td>5</td><td colspan="2" rowspan="2">Non-Emergency Work Should Cease</td></tr>
<tr><td>-43° & below</td><td>-45° & below</td><td colspan="2">Non-Emergency Work Should Cease</td></tr>
</table>

To guard against cold injuries, workers should wear appropriate clothing and use warm shelters for removing personal protective equipment. The personnel decontamination trailer will be used as a warm shelter when required. The SSHO may periodically monitor (documented) workers' physical conditions, specifically checking for symptoms of frostbite.

3.2.1.11 Falls from Elevation

To prevent falls and injuries when employees work in areas where fall hazards cannot be eliminated by reasonable means, personnel will be required to use a full body harness and shock-absorbing lanyard. Personnel will make maximum use of primary fall protection systems, such as scaffolding or scissors lifts instead of utilizing personal fall arrest systems. These systems will be equipped with standard guardrails and safe means of access/egress.

Before any employee attempts to work in an area where a risk of falls exists, suitable fall prevention or fall protection shall be implemented. Construction fencing or other sufficient barrier system shall be utilized to prevent personnel from falling into excavations. Restraining devices shall be utilized for personnel that are required to work near the edge of the excavation inside the construction fencing. The restraining device shall be capable of preventing the worker from falling into the excavation instead of arresting their fall if they do fall into the excavation. Personnel riding on or working from a scissors lift or aerial lift must secure their safety lanyards to the basket at all times.

The fall protection equipment will be properly fitted and will not restrict the movements of the worker. Full-body harnesses are required for any work performed over six (6) feet in elevation unless work is being performed from a ladder or a fall prevention system is in place. Work from portable ladders or fixed ladders less than 24 feet in height that are set up and properly used do not require fall protection. However, if fall protection can be properly utilized, it will be.

The use of self-retractable lifelines (SRL) shall be utilized when possible. If SRLs cannot be utilized, lanyards of the shortest workable length must be attached to a secure point in the vicinity of the work area. The line will be long enough not to restrict the worker's movements, but short enough to prevent tripping over the line and falls beyond the worker's extended reach for self-rescue; in any case, not over six feet.

Refer to Sevenson's Fall Protection Program in Appendix F for information regarding training, equipment, and inspections.

3.2.1.12 Wastewater Treatment Plant

The wastewater treatment plant presents employees with a variety of potential hazards. Three of the major safety concerns are confined-space entry; control of hazardous energy; and contact with contaminants. The SSHO shall determine what levels of PPE employees need to use based on a review of SDSs prior to processing contaminated water. Activities requiring lockout/tagout are applications that require the setup or de-energizing of an electrical source, equipment that can move water, injection pumps (if required), etc. These might include pumps, electrical motors, valves, and mixing systems. All electrical work will be performed by a qualified electrician. The remaining activities include lockout/tagout of pipelines and systems, and valves in which the energized source of potential danger may be high water pressure, and high air pressures.

If it becomes necessary to enter frac tanks or vessels to clean or perform maintenance, entries will follow Section 8.10 Confined Space Entry Applicable Standards. Other hazards that may be encountered include but are not limited to:

- Fall From Heights.
- Walking/Working Surfaces.
- Ladder use.
- Fall Protection.
- Severe weather.
- Spills.
- Contact with process chemicals.

3.2.2 Chemical Hazards

Operational chemicals may be brought to the project site for use in activities supporting the construction activities. These chemicals are used for fuels in operating heavy equipment, glues for welding pipes, etc. The use of operational chemicals is regulated by OSHA under the Hazard Communication Standard (29 CFR 1910.1200). Safety Data Sheets (SDSs) for operational chemicals are maintained onsite and are located in the SSHO's office trailer. An inventory list of the anticipated operational chemicals (Hazardous Chemical Inventory List) for use at the site will be maintained at the site and updated as new material is received. This list is reviewed and updated, as needed, at the start of each project and periodically during the project.

Prior to bringing a new chemical to the Site, a GE New Chemical Introduction Form must be completed, and approval for the chemical must be gained from GE. This form does not replace SDSs or standard inventorying practices, but is integral to starting the inventory process.

After reviewing the environmental sampling results, it has been determined that the primary contaminants of concern are PCBs. A worker protection program and air monitoring program for the chemicals of concern can be found in other sections of this plan. The following list identifies the major contaminants of concern at the Site. Chemical Information Sheets for the listed contaminants of concern can be found in Appendix C.

3.2.3 Biological Hazards

There is a potential for encountering biological hazards such as bites from ticks, spiders, rodents, snakes, and exposure to giant hogweed, poison ivy, and sumac. Biological hazards and controls are presented below.

3.2.3.1 Needle stick Injuries

A needle stick injury occurs when a carelessly discarded hypodermic needle penetrates your skin, for example, through stepping on a syringe and/or needle that has been discarded at the site. Needle stick injuries transmit infectious diseases, especially blood-borne viruses. Accidental punctures by contaminated needles can inject hazardous fluids into the body through the skin. There is potential for injection of drugs, but injection of infectious fluids, especially blood, is by far the greatest concern. Accidental injection of blood-borne viruses is the major hazard of needle stick injuries, especially the viruses that cause AIDS (the HIV virus), hepatitis B, and hepatitis C.

General Universal Precautions (no unnecessary handling, proper PPE [nitrile or latex gloves]) will be observed to prevent contact with hypodermic needles. Work practice controls will be used to eliminate or minimize employee exposure (i.e. inspect area prior to work). If you are stuck by a discarded needle, immediately report it to the SSHO. Following a report of an exposure incident, the employer will immediately make available to the exposed employee medical evaluation counseling, treatment, and post-exposure prophylaxis, when medically indicated.

Based on past work experience in this area the chance of encountering a discarded used hypodermic needle is better than average. Only the SSHO will be permitted to collect used hypodermic needles. Collected hypodermic needles shall be placed in a clearly marked biohazard sharps container. Collected sharps shall be properly disposed of as regulated medical waste.

3.2.3.2 Ticks

Ticks are highly active in and around Pittsfield, MA, particularly in wooded areas, leaf litter, and tall grass. Black-legged (deer) ticks are prevalent and can transmit serious diseases like Lyme, Babesiosis, and Anaplasmosis.

Working in tall grass, especially in or at the edge of wooded areas, increases the potential for ticks to affect workers. Ticks are vectors of many different diseases including Lyme Disease, Babesiosis, and Anaplasmosis. They attach to their host's skin and intravenously feed on its blood creating an opportunity for disease transmission. Covering exposed areas of the body and the use of commercially prepared tick repellent, such as N, N-Diethyl-m-toluamide (DEET), help prevent tick bites. Please note that there are some concerns with the use of DEET on skin and associated potential adverse health effects. Periodically during the workday, employees working in tall grass will inspect themselves for the presence of ticks and notify the SSHO of any tick bites as soon as possible.

3.2.3.3 Rodents and Wildlife

During site operations, animals such as mice, larger rodents, and stray animals may be encountered. Workers will use discretion and avoid all contact with animals. If these animals are interfering with site operations, or if dead animals are observed, the SSHO should be contacted immediately for assistance and advice.

Hantavirus Pulmonary Syndrome (HPS) is a disease that may be contracted when a person comes into contact with Hantavirus-infected rodents, their nesting materials, droppings, urine, or saliva. HPS may develop when virus particles are inhaled, absorbed through broken skin or the eyes, or when bitten by an infected animal. The majority of HPS cases have been reported in the southwest; however, there is the potential for Hantavirus transmission in most regions with rodent populations. Risk to workers at the site is considered to be low; however, the severity of disease is high. Therefore, field personnel should be aware of the potential for exposure and should avoid coming into contact with rodents or their burrows or dens.

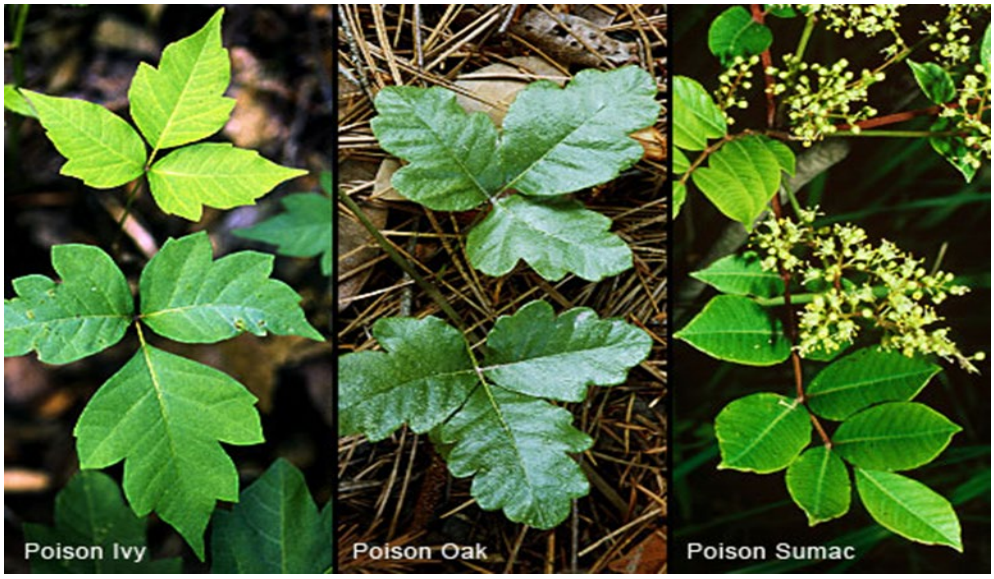
Rabies is an acute, infectious, often fatal viral disease transmitted to humans by the bite of warm-blooded, infected animals. This disease affects the central nervous system of humans. A rabid animal may be recognized by signs of raging, uncontrollable movement and possible foaming near or at the mouth. The best control method is avoidance of animals that could be rabid. If bitten by a potentially rabid animal, contact the SSHO immediately. The animal in question must be captured or trapped so that it can be tested for rabies. The bitten individual will seek medical attention immediately.

Any wildlife shall be reported to the SSHO or Superintendent immediately. The SSHO or Superintendent shall evaluate the situation and if needed notify Pittsfield Police Animal Control at 413-448-9750 for guidance.

3.2.3.4 Poisonous Plants

Poison ivy is identified by three or five leaves radiating from a single stem. Poison ivy is in the form of a vine while oak and sumac are bush-like with 7-13 leaflets per stem. Giant hogweed can be differentiated by their height of up to 15 feet, an "umbrella" of white buds, and coarse white hairs on the stem. All of these plants can produce a delayed allergic reaction. The plant tissues have an oleoresin, which is active in live, dead, and dried parts. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Symptoms usually occur 24 to 48 hours after exposure resulting in rashes that itch and blister. Should exposure to any of these plants occur, wash the affected area with mild soap and water within one-half hour, but do not scrub the area. The best preventative measure for poisonous plants is recognition and avoidance.

Photographs of Poisonous Plants





3.2.3.5 Snakes

The degree of toxicity resulting from snakebites depends on the potency of the venom, the amount of venom injected, and the size of the person bitten. Poisoning may occur from injection or absorption of venom through cuts or scratches. The most effective way to prevent snakebites is to avoid snakes in the first place. Personnel should avoid walking at night or in high grass and underbrush. Visual inspection of work areas should be carried out prior to activities taking place. The primary snake of concern near the work area is the Timber Rattlesnake, which is also endangered. The use of leather boots and long pants will be required, since more than half of all bites are on the lower part of the leg. No attempts at killing snakes should be made; many people are bitten in such an attempt. Personnel will not put their hands in areas where they cannot be seen.

3.2.3.6 Flying Insects

Flying insects such as mosquitoes, wasps, hornets, and bees may be encountered while project activities occur. Mosquito bites can be effectively prevented by using insect repellants containing DEET. Please note that there are some concerns with the use of DEET on skin and associated potential adverse health effects. Treatment for insect bites and bee stings can be affected by the use of commercially prepared ointments. Personnel working on the project will be asked to voluntarily complete an emergency contact information sheet that includes a list of allergies. The SSHO will maintain those files in a locked cabinet.

3.2.3.7 Spiders

Personnel will be alert to the potential for spider bites. Spiders sometimes establish residence in stored clothing and PPE. It is advisable for personnel to inspect clothing and PPE for spiders prior to donning. Immediate reporting and medical evaluation is necessary if personnel suspect being bitten by the Brown Recluse or Black Widow spider. If a spider bite occurs, personnel will report it to the SSHO.

3.3 Engineering Controls

The use of engineering controls for the protection of personnel is the first means of mitigation. This involves the elimination of hazards and the isolation of the workers from the hazards. Implementation of engineering controls can reduce the need for personal protective equipment by separating the worker from the contaminated material. During excavation and stockpiling dust may be generated. The SSHO

will be constantly alert to the possibility of unacceptable dust levels by both visual and real time instrument monitoring techniques.

3.3.1 Dust Control

Control measures will be implemented for all operations where dust is likely to be generated. Careful planning and implementation of controls will reduce potential dust concentrations. There are a number of specific construction practices, which will reduce levels of airborne particulates. These include:

- Providing for a misting spray during material handling activities.
- Applying water on access roads.
- Cover stockpiles with tarps or natural cover such as straw or seed.

See Table 7 for Operational Action Levels for fugitive dust emissions at the Site. Additional details regarding monitoring and action levels can be found in Section 7.2 of this Plan.

3.3.2 Noise Control

Noise is generated during construction activities in such operations as transportation of materials and operation of heavy construction equipment. Noise has been defined as unwanted sounds. The human ear can tolerate a certain amount of sound without any harmful effects. Personnel will be provided protection against the effects of hazardous noise exposure whenever sound-pressure levels exceed 85 dB(A) steady-state expressed as a time-weighted average (TWA) or 140 dB(A) impulse.

It is usually safe to assume that if you need to shout to be heard at arms-length, the noise level is at 90 dB (A) or above. Personnel operating or working around construction equipment will utilize hearing protection. Sevenson personnel participate in a Hearing Conservation Program that meets the OSHA requirements Noise levels will be controlled to meet the applicable OSHA standards for workers as well as for the off-site community. Construction noise will be kept to a minimum during work hours to minimize the impact on the community. Noise complaints will be evaluated and if possible and practical, additional noise controls will be implemented.

Surrounding communities will also be protected from excessive noise at the Site through observing Quality of Life Standards depending on the time of day. These standards will be compared as hourly averages, on a daily basis using a calibrated sound level meter. The QOL Standards are shown in the following table:

Type	Standard (Maximum Hourly Average)
Notification Level: Residential Daytime (0700-2100)	75 dBA
Action Level: Residential Daytime (0700-2100)	80 dBA
Action Level: Residential Nighttime (2100-0700)	65 dBA
Action Level: Non-Residential (All Hours)	80 dBA

4.0 Safety and Health Training

4.1 Site-Specific Training

All personnel working at the site during construction activities will review this PHASP with the SSHO. Personnel will sign an acknowledgment form to document their review and agreement to comply with the provisions of the PHASP. All visitors must sign the visitor's log and wait in the Sevenson field office for a briefing before entering the Site.

The SSHO will be responsible for ensuring site visitors are trained in the hazard associated with the site, to explain emergency procedures, and instruct them in the use of protective gear required during the visit.

As a minimum the site-specific training will include:

- Explanation of the overall PHASP
- Project management and roles
- Health effects of chemicals at the site
- Physical hazards associated with the project
- Selection, use, and limitations of available safety equipment and proper procedures for its use
- Personal hygiene and decontamination for chemicals used at the site
- Site rules and regulations
- Site communication and the "Buddy System"
- Emergency preparedness procedures
- Fall Protection Equipment
- Disciplinary action
- PCB awareness
- Site Specific Hazard Communication
- Safe Plans of Action and Job Safety Enhancement Programs

4.2 General HAZWOPER Training

Sevenson will be responsible for certifying that the employees meet the requirements of pre-assignment training, consistent with OSHA 29 CFR 1926.65 paragraph (e)(3). Sevenson will provide documentation certifying that each general Site worker entering an exclusion zone or has the potential to be exposed to site contaminants at or above the permissible exposure limit has received a minimum of 40 hours of instruction off site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. Personnel that are not assigned to the Site full time and are only entering an exclusion zone to perform inspections, maintenance or repair must have a minimum of 24 hours of instruction off site and at least one day of actual field experience under the direct supervision of a trained, experienced supervisor. All HAZWOPER personnel must also receive 8 hours of refresher training annually. Consistent with OSHA 29 CFR 1926.65 paragraph (e)(4), individuals designated as Site Supervisors require an additional 8 hours of training. A certificate of Worker/Visitor Acknowledgement will be completed and submitted for each site worker and visitor who will enter the contamination reduction zone, and/or exclusion zone. Any deviation from these requirements will first be reviewed and approved by the CM.

4.3 Periodic Sessions

Periodic training will be provided at least weekly and prior to each change of operation. The training will address safety and health procedures, work practices, any changes to PHASP, review activity hazard analysis, work task or schedule, and review of safety discrepancies and accidents. These sessions shall be documented and attached to the Daily Health and Safety Report.

4.4 Safety Meetings

A well-ordered flow of information is essential to a good safety program. Sevenson, through a program of safety meetings at all levels, intends to accomplish the goals of safety awareness, education, and participation. Upper management, i.e. project managers, will participate in safety activities on a minimum biweekly basis. Safety meetings are considered a part of this responsibility.

The SSHO will conduct daily safety meetings with ALL on-site personnel. An opportunity will be provided for employees to voice safety-related concerns. A synopsis of each meeting including topics covered, safety-related concerns, action items to be addressed, status of previous items, and a signed attendance list shall be attached to the Daily Health and Safety Report.

4.5 Hazard Communication Training

OSHA's standard for hazard communication requires that all workers be informed of potentially hazardous materials used in their work area. Sevenson provides employees with information and training on hazardous chemicals at their work site at the time of their initial assignment, annually, and whenever a new chemical is introduced into their work site that could present a potential hazard. Personnel are briefed on the general requirements of the OSHA hazard communication standard and duty-specific hazards by their immediate supervisor before they begin any duties on the work site. Personnel transferred from another site are also briefed on the duty-specific hazards by their immediate supervisor before they begin any duties on the work site. The Hazard Communication Program as well as SDSs will be maintained in the SSHO's office trailer. For multiple work areas, the designated laydown area will have a copy of the Hazard Communication Program and SDSs. Additional copies of the program and SDSs will be made available upon request.

Sevenson's Hazardous Communication Program is located in Appendix E of this Plan.

4.6 First Aid/CPR Training

Members of Sevenson's site management team will maintain current CPR and First Aid certifications. In addition, Sevenson will make reasonable efforts to utilize personnel from the local Laborers' and Operating Engineers' unions who also possess CPR and First Aid training. While trained personnel will be available on site to provide an initial response, emergency medical services will be immediately contacted in the event of any incident requiring CPR or advanced medical assistance. At least two people in each active work area will be required to complete first aid and cardiopulmonary resuscitation (CPR) training and receive the appropriate certification. First aid/CPR training will be American Red Cross, American Heart Association, or National Safety Council endorsed. Additionally, First Aid/CPR qualified personnel will have received bloodborne pathogen training as required by 29 CFR 1910.1030. An updated list of qualified individuals shall be maintained at the site on the employee bulletin boards area and trailers with first aid kits.

5.0 Personal Protective Equipment (PPE)

This section provides an outline of the PPE and guidelines that will be implemented to minimize chemical, physical, and biological exposures and accidents during construction activities. Where engineering controls and job hazard analyses do not eliminate all job hazards, employees will (where appropriate) wear PPE.

These include items such as hard hats, face shields, safety goggles, glasses, hearing protection, foot guards, gloves, etc. The SSHO will ensure that equipment selected will meet the following requirements:

- It will be appropriate for the particular hazard.
- It will be maintained in good condition.
- It will be properly stored when not in use to prevent damage or loss.

- It will be kept clean, fully functional, and sanitary.
- Must meet all applicable ANSI standards.

Personal clothing and jewelry can present additional safety hazards. Supervisors will ensure that workers wear appropriate clothing, which will not interfere with the PPE. All PPE will be selected in accordance with 29 CFR 1910.132. Sevenson will provide proper PPE to all employees (except prescription safety glasses and primary safety shoes). SSHO will ensure sufficient types and quantities of PPE are available for workers at the Site. In the event hazards arise which require an adjustment to the level of PPE used, the SSHO, in conjunction with the Superintendent, will make the determination as to the new level and who the affected persons are. This directive will be issued verbally and in writing to the Site. All protective clothing will be properly used, stored, selected, and maintained.

Failure to follow the PPE directives outlined above will result in disciplinary action. Discipline may include but is not limited to verbal and written warnings, write-ups, removal from the job, or termination.

5.1 PPE Hazard Assessment

Selection of the appropriate PPE is a complex process, which should take into consideration a variety of factors. Key factors involved in this process are identification of the hazards, or suspected hazards, routes of potential exposure to employees (inhalation, skin absorption, ingestion, and eye or skin contact), and the performance of the PPE materials (and clothing seams) in providing a barrier to these hazards. The amount of protection provided by PPE is material-hazard specific. That is, protective equipment materials will protect well against some hazardous substances and poorly, or not at all, against others. In many instances, protective equipment materials cannot be found that will provide continuous protection from the particular hazardous substance. In these cases, the breakthrough time of the protective material should exceed the work duration.

Other factors in this selection process to be considered are matching the PPE to the employee's work requirements and task-specific conditions. The durability of PPE materials, such as tear strength and seam strength, should be considered in relation to the employee's tasks. The effects of PPE in relation to heat stress and task duration are a factor in selecting and using PPE. In some cases, layers of PPE may be necessary to provide sufficient protection, or to protect expensive PPE inner garments, suits, or equipment.

Personal Protective Equipment alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound work practices.

5.1.1 Head Protection

All personnel will wear a hard hat that meets the requirements and specifications in ANSI Safety Requirements for Industrial Head Protection Z89.1. Exceptions to this requirement are personnel in the site office, rest and eating areas, or in equipment or vehicles equipped with a falling object protection system. Hard hats will be inspected daily by the user to confirm they meet the manufacture’s specifications and/or recommendations. The SSHO shall perform periodic inspections of workers’ hard hats to confirm workers are properly inspecting their hard hats and replacing them as necessary.

5.1.2 Hand Protection

Outer gloves used on the Site for construction activities will be either chemical resistant or general purpose. The appropriate glove will be determined by the SSHO for a specific work task. Chemical resistant gloves will be selected using appropriate chemical degradation guides. Cut resistant work gloves will be worn when work activities require the handling of sharp and rough-surfaced objects.

5.1.3 Eye/Face Protection

Eye protection will be worn by all personnel. A face shield will be required when power-washing equipment or any other operation that can cause flying debris or material e.g., grinding, chainsaw operations, etc. All eye protection worn or provided will be ANSI Z87 compliant.

5.1.4 Footwear

Footwear will be steel/composite-toed safety boots/shoes and will be worn for all field activities. All safety boots/shoes will be ASTM F2413 compliant.

5.1.5 Respiratory Protection

To control and or minimize the threat of occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective of this program will be to prevent atmospheric contamination. This will be accomplished as far as feasible by accepted engineering control measures (for example, dust suppression). When effective engineering controls are not feasible, or while they are being instituted, appropriate respiratory protection will be used. A respiratory protection program will be implemented that is compliant to the requirements of 29 CFR 1910.134, "Respiratory Protection." Respiratory protection equipment will be NIOSH-approved, and respirator use will conform to ANSI Z88.2.

Respirators will be provided when such equipment is necessary to protect the health of the employee. Sevenson will:

- Provide the respirators and cartridges, which are applicable and suitable for the purpose intended.
- Be responsible for maintaining a written Respiratory Protective Program in accordance with 29 CFR 1910.134. The employee will use the provided respiratory protection in accordance with instructions and training received.
- Respirators will be selected on the basis of hazards to which the worker is exposed.
- The user will be instructed and trained in the proper use of respirators and their limitations.
- Respirators will be regularly cleaned and disinfected.
- Respirators will be stored in a convenient, clean, and sanitary location.
- Respirators used routinely will be inspected during cleaning. Worn or deteriorated parts will be replaced. Respirators for emergency use, such as self-contained devices, will be thoroughly inspected at least once a month and after each use.
- Appropriate surveillance of work area conditions and degree of employee exposure or stress will be maintained.
- There will be regular inspections and evaluations to determine the continued effectiveness of the program.
- Employees will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A physician will determine whether an individual is physically fit to wear a respirator. The physician's clearance allows the worker to don a respirator and work in conditions of high ambient temperatures. Heat stress will be closely monitored.

Each respirator will be individually assigned and not interchanged between workers without cleaning and sanitizing. The cartridges/filters will be changed at the first sign of breakthrough based on contaminant warning properties or if the user experiences excessive breathing resistance. Respirators

will be cleaned and stored in an uncontaminated atmosphere after each use. Used cartridges will be disposed in the trash.

All employees working at the Site during construction activities who have the potential of wearing a respirator will be fit-tested to ensure they utilize the proper size respirator. Sevenson will arrange for fit testing. The fit test is conducted according to the manufacturer's suggestions. The test will consist of an odorous vapor qualitative test. In accordance with OSHA regulations, personnel that are unable to pass a fit test will not enter a work area when respiratory protection is required. In addition, facial hair is prohibited from the respirator seal area. Any person with facial hair will not be permitted to enter a work area where respiratory protection is required, regardless of the fit test results. Documentation of the fit testing will be maintained on-site.

Sevenson Respiratory Protection Program is included as Appendix D.

5.2 Levels of Protection

The level of protection must correspond to the level of hazards known or suspected for the specific work activity. The anticipated level of protection for work in which there will be no contact with contaminated soil or water is Level D. Where there is potential for contact with contaminated sediment or soil, Modified D level of protection will be used. Where there is the potential for inhalation of contaminated material above the action limit (Table 7), Level C PPE will be used.

5.2.1 Level D

Level D PPE consists of the following:

- Hard hat
- Appropriate eye protection for the task (i.e., safety glasses, goggles, etc.)
- High visibility clothing (ANSI Class 2 reflective apparel required when exposed to public traffic or conditions of limited visibility from rain, fog, or lighting)
- Steel toe/composite work boot
- Face shield/goggles (when required)
- Chain saw chaps (when required)
- Leather or cut resistant work glove (condition/task appropriate)

5.2.2 Modified D

Level D Modified consists of Level D and the following:

- Protective coverall such as Tyvek (must be a low-profile color other than white or yellow)
- Chemical resistant outer glove
- Chemical resistant inner glove (when required)
- Over-boots

5.2.3 Level C

Level C equipment, used as appropriate, is as follows:

Level C consists of Level D Modified and the following:

- Air purifying respirator with HEPA/Organic vapor cartridge
- Appropriate eye protection must be worn with half face respiratory protection

5.3 Initial Levels of Protection

Table 6 outlines the initial level of protection for the various tasks.

Table 6 – Initial Levels of Protection	
Task	Level
Mobilization	D
Site Preparation	D
Installation of temporary facilities	D
Clearing, grubbing, erosion controls	D
Sediment excavation	D/Modified D
Construction water management	D/Modified D
Material management and stabilization	D/Modified D
Waste loading	D/Modified D
Decontamination	D/Modified D
Backfilling and Restoration	D
Demobilization	D

6.0 Medical Surveillance Program

The Medical Surveillance Program is designed to track the physical condition of employees on a regular basis as well as survey pre-employment or baseline conditions prior to potential exposures. The Medical Surveillance Program is a part of the overall Sevenson Safety and Health program.

6.1 Baseline Medical Monitoring

Each employee must receive a baseline physical, which can be part of an annual medical monitoring program, prior to being permitted to enter the Exclusion Zone or Contamination Reduction Zone. The content of the physical has been determined by Sevenson's Occupational Physician as suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities. The minimum medical monitoring requirements for work at the Site are as follows:

- Complete medical and work histories
- Physical examination
- Pulmonary function tests (FVC and FEV1)
- Blood chemistry (CBC & SMAC 24)
- Urinalysis with microscopic examination
- Audiometric Testing
- Eye examination and visual acuity
- Chest X-Ray (as directed by the Occupational Physician)
- Electrocardiogram (as directed by the Occupational Physician)
- Other Biological testing as prescribed by the Occupational Physician
- Drug Screen

The medical surveillance provided to the employee includes a judgment by the medical examiner of the ability of the employee to use either positive- or negative-pressure respiratory protection equipment. Any individual found to have a medical condition, which could directly or indirectly be aggravated by exposure to these site contaminants, will not be employed for the project. Individuals not capable of satisfying the project requirements for wearing respiratory protection equipment will be evaluated on a case-by-case basis. A copy of the medical examination is provided at the employee's request.

The employees will be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites. A certificate of Worker/Visitor Acknowledgement will be completed and submitted for each site worker and visitor who will enter the contamination reduction zone and/or exclusion zone.

6.2 Periodic Monitoring

In addition to a baseline physical, all employees require a physical every 12 months unless the advising physician believes a shorter interval is appropriate. The Occupational Physician has prescribed an adequate medical evaluation, which fulfills OSHA 29 CFR 1910.120 requirements. The pre-assignment medical outlined above is applicable.

All personnel working on the Site that enter an active Exclusion or Contamination Reduction Zone will verify currency (within 12 months) with respect to medical monitoring. Sevenson will obtain a copy of the physician's written opinion detailing the employee's ability to perform hazardous waste site work.

At termination of employment or reassignment to an activity or location that does not represent a risk of exposure to hazardous substances; an employee may be required to take an exit physical. A HAZWOPER exit physical is required for workers if the most current HAZWOPER physical is more than six months old. If his/her last physical was within the last six months, Sevenson's medical consultant has the responsibility to determine adequacy and necessity of an exit exam.

6.3 Exposure/Injury/ Medical Support

As a follow-up to an injury all employees are entitled to and encouraged to seek medical attention and physical testing. Any employee, who develops a time loss illness exceeding one working day, or injury during the period of the contract, must be evaluated by the occupational health physician. A written statement indicating the employee's fitness, signed by the occupational physician must be submitted prior to the employee entering the work site.

For injuries and illnesses that are not immediately life threatening or require the services of local emergency medical services, Work-Care Injury Intervention (888-449-7787) will be utilized by the SSO to help assess the injury or illness. Work-Care Injury Intervention is staffed by registered nurses and doctors that specialize in occupational injury and illness. Work-Care Injury Intervention will interview the affected employee over the phone and will recommend the next course of action for the employee.

6.4 Medical Records

The results of medical testing and full medical records will be maintained in accordance with 29 CFR Part 1910.1020. A copy of the medical certification will be kept in a locked file on the Site by the SSHO for each person entering the Contamination Reduction Zone and Exclusion Zone.

7.0 Air Monitoring

This air-monitoring plan will serve to outline procedures to identify and quantify airborne contaminants at the Site. Both real-time monitoring and air sampling will be conducted throughout the duration of the project to establish the maximum levels of personal protection required, as well as to verify that worker exposure levels and respiratory protection are adequate.

Available site information indicates that the primary concerns with respect to contamination at the site are related to inhalation of particulates. As a result, engineering controls will be utilized to the maximum extent possible to control the production of dusts during the project. Engineering controls may include the use of tarps or coverings, water misting or dust control additives. A portable meteorological station will be installed in conformance with the EPA Ambient Monitoring guidelines for the measurement of wind speed, wind direction ambient air temperature, atmospheric pressure, humidity, solar insulation, and precipitation. The station will be installed in an area relatively free of trees and houses. The station

will include a continuous readout temperature gauge and a rainfall gauge and will produce a 24-hour average figure for each parameter so that the weather influences on the air samples can be characterized. In addition, visual wind direction indicators will be established in a central location at each active work area. Meteorological monitoring results will be documented in the daily safety log.

7.1 Real Time Air Monitoring

7.1.1 PCBs and Dust

There is no direct reading instrument for the determination of airborne PCBs. However, through the use of a real-time air monitor for dust we can develop a dust action level that will prevent workers from being exposed to contaminants over the permissible exposure limit. Real time dust monitoring will be performed in the breathing zone of workers during activities that can cause dust emissions. Air monitoring will be performed at the work area using a Dust Trak Particulate Monitor. Real-time air monitoring equipment calibration will be performed in accordance with the manufacturer's recommendation prior to field use. Calibration information will be recorded on the Daily Air Monitoring Report. Maintenance and calibration procedures for all air monitoring devices will be maintained on site. A conservative real time dust action level for PCB exposure is illustrated by the following equation.

$$\text{PCB } DAL = \frac{(1{,}000{,}000 mg/kg) * (0.001 mg/m^3)}{PCBs\ in\ the\ material (mg/kg)}$$

Note: 0.001 mg/m^3 is equal to the NIOSH REL for PCBs.

The Dust Exposure Calculation utilizes the average soil concentrations for PCBs at the Site. The calculated real time dust action level (DAL) for the Site workers is 2.27 mg/m^3 with a safety factor of one applied to the highest concentration of PCBs identified in the Pre-Design Investigation Evaluation Report and Final (100%) Remedial Design Report Dated September 2023, by Anchor QEA and Arcadis U.S. However, the Site DAL will be set at 1.0 mg/m^3 as an action level. In the event the real time DAL is exceeded, engineering and administrative controls shall be implemented prior to the use of PPE to control worker exposure.

7.1.2 Decision Making for Real Time Data

A decision-making protocol for an upgrade in levels of protection and/or withdrawal of personnel from an area based on atmospheric hazards determined by real time data is outlined in ***Table 7 – "Operational Action Levels".***

Table 7 – Operational Action Levels

Active Work Area

Air Monitoring Instrument	Monitoring Location	Action Level	Site Action	Reason
Dust Meter (PCBs)	Breathing Zone	< 1.0 mg/m^3	Continue work	Less than calculated action level.
		>1.0 mg/m^3	Implement dust controls	Fugitive dust emissions higher than desired.
		> 2.0 mg/m^3 sustained for greater than 15 minutes	Cease activity, until dust controls can maintain dust generation to less than 2.0 mg/m^3.	Potential to exceed exposure limit to PCBs.

7.2 Exposure Monitoring

In addition to the real-time monitoring performed during excavation and material handling activities, the personal air-monitoring program will provide the negative exposure assessment of worker's airborne exposure levels to PCBs via NOISH 5503 GC/ECD. Such a determination will be made from laboratory

analysis of air samples collected from workers during an 8-hour work shift. The selection of the workers monitored for occupational exposure will be done by the SSHO. This decision is based on his professional judgment regarding the physical characteristics of the job and contamination levels in each work area. Personal sampling will be conducted in a manner representative of exposure to workers at those locations or jobs where the potential for maximum exposure is predicted. Personal air monitoring results will be used to verify personnel exposure during the project.

It may become necessary to perform silica sampling on workers performing stabilization of sediments. The SDS for the capping/cover product shall be reviewed by the SSHO and SHM to determine if silica is present in the material. If the percent silica in the material exceeds 1 percent, silica monitoring will be performed to determine the amount of respirable silica in the air during stabilization activities.

Sevenson's Silica Exposure Control Plan is in Appendix I of the Plan.

Table 8 – Occupational Air Sampling				
Contaminant	**Task/Activity**	**Type of Sample**	**Sampling Method**	**Analysis Method**
PCBs	Excavation and Soil Handling PCB impacted material	Breathing Zone	Personal sampling	NIOSH 5503
Frequency for Occupational Sampling				
Contaminant	**Initial**		**Periodic**	
PCBs	First three days of handling PCB contaminated soils		Once monthly and at the discretion of the SSHO or Health and Safety Manager	

8.0 Accident Prevention Procedures/Practices

8.1 Medical and First Aid Requirements

Applicable Standards:

OSHA 29 CFR 1926.23, & 1926.50

First-aid kits/stations and required contents are maintained in a serviceable condition. Unit-type kits have all items in the first-aid kit individually wrapped, sealed, and packaged in comparable sized packages. First-aid stations will be located as close as practicable to the highest concentration of personnel. First-aid stations will be well-marked and available to personnel during all working hours. First-aid stations will be equipped with a first-aid kit, the size of which will be dependent upon the number of personnel normally employed at the work site. In the event of multiple active work areas at the same time, the designated laydown area for each active work area will have a first aid kit available to all employees.

An automatic external defibrillator (AED) will be kept near the work areas east of Holmes Road due to its relatively remote location. Other work areas are expected to contact EMS in the event a worker is incapacitated and help to effectively guide the responders through the worksite.

Emergency telephone numbers and route to the local hospital will be clearly posted and easily visible at all times. OSHA posters will be prominently displayed and warning signs posted for any known or potential hazard(s) present. SDSs must always be available on the job site.

8.2 Hazardous Substances

Applicable Standards:

OSHA 29 CFR 1926.53 & 1910.1200

When hazardous substances are used in the workplace, the hazard communication program dealing with SDSs, labeling, and employee training will be in operation. SDS will be located in the SSHO field office and made readily available for each hazardous substance at the Site. A training program, plus regular

question and answer sessions on dealing with hazardous materials will be given to keep employees informed. The program will include an explanation of what an SDS is and how to use and obtain one; SDS contents for each hazardous substance or class of substances; explanation of the "Right to Know"; identification of where employees can see the employer's written hazard communication program and where hazardous substances are present in their work area; the health hazards of substances in the work area, how to detect their presence, and specific protective measures to be used; as well as informing them of hazards of non-routine tasks and unlabeled pipes.

Special precautions must be taken to ensure the use of acids, strong oxidizers, and halogens are not brought onto the jobsite without putting controls in place to prevent the production of arsine gas.

Sevenson's Hazardous Communication Program is in Appendix E.

8.3 Fall Protection

Applicable Standards:

OSHA 29 CFR 1926.500, 501, 502, 503; 1926.106

Working at unprotected heights is not anticipated for this work. However, to protect employees when they are exposed to fall hazards, some form of fall protection must be used. The most common forms of fall protection are guardrails, personal fall arrest systems, hole covers, and safety nets. Any one or all these forms of fall protection may be used on construction worksites. The current OSHA standards also require that employees receive training regarding fall protection issues, and that the training is documented. An alternate fall arrest program may be implemented in cases where none of the traditional methods of fall protection are feasible. Components of our fall protection plans are listed below:

Personal Fall Arrest System - The three main parts of a personal fall arrest system are the body belt or harness, the lanyard/lifeline, and a suitable anchorage. Particular attention must be paid to the anchorage point(s) to ensure that they can support 5,000 lb. (22.2 kN) or two times the maximum load on an engineered system.

Guardrail Systems - Guardrail systems consist of a top-rail, mid-rail, and if necessary, a toe-board. Guardrail systems can be made of various materials.

Training - All employees must receive training on the nature of the fall hazards at the site and on how to avoid falls. Employees should be familiar with the use of all personal fall arrest systems and must wear the equipment when necessary.

The requirements of all applicable OSHA regulations notwithstanding, the minimum fall protection requirements on our projects may include the following:

- All fall protection systems must meet the requirements of Part 1926, Subpart M.
- For situations where lifelines are interrupted, double lanyards are necessary to ensure that the worker is continuously protected from falling by attaching one lanyard ahead of the discontinuity prior to unhooking the trailing lanyard.
- Climbing on forms, false work, or the structure to gain access to work areas is expressly prohibited. However, it is not intended to prohibit the use of ladders for access to work areas, provided the operation follows OSHA Part 1926 Subpart X and other relevant requirements.
- Where scaffolds are necessary to provide temporary access to work areas, they must be in compliance with §1926.451. Scaffolds must include a top-rail, mid-rail, and toe-board in compliance with 1926.451, on all open sides and ends. Personal fall arrest systems meeting the criteria of Part 1926 Subpart M are required to protect workers during installation and removal of the railings, and in situations where physical restrictions preclude installation of a standard railing.

- All workers in approved personnel aerial lifts must use a personal fall arrest system meeting the criteria of Part 1926 Subpart M, with the lanyard attached to the boom or basket, as required by OSHA 1926.556.

There are no specific plans for fall protection at this time. A Fall Protection Program has been developed to capture specific events with a quick and easy Fall Protection Plan with a fall risk analysis and Rescue Plan needs to be prepared to support miscellaneous site work. The SSHO shall complete a Fall Protection Plan when work at heights is required.

Sevenson's Fall Protection Program is in Appendix F.

8.4 Electrical

Applicable Standards:

OSHA 29 CFR 1926.400 through 449, 1910.301 through 399, 1926.550(a)(15)

Electricity is a serious workplace hazard that must be respected at all times. It is important to remember that exposure to even a little electric current can kill! The best protection around electricity is distance -- ample distance between the worker and the conductive materials. The following safe work practices and procedures will help prevent electrical accidents on the jobsite.

Workers should observe and strictly obey all warning and danger signs around electrical apparatus. They should never close a switch that has a danger tag on it signed by or placed there by someone else. Untrained people must not open any electrical enclosures. The one exception is that the door on a circuit breaker panel board may be opened to operate the switches, but other types of electrical enclosures should not be opened.

Extension cords as well as any power tools or equipment are to be properly grounded and rated for outdoor use. The gauge of the electrical cord shall be of sufficient size (i.e., 12- gauge wire for 20- amp service) for the electrical demand (amperage), Cords must not be used when they are frayed, worn out, or the wires are bare. Defective equipment shall be reported to the supervisor and turned in for repair. Report all unguarded or broken light bulbs. Do not hang lights by their cords unless the light was designed to be suspended in that manner.

Installation Safety Requirements: Live parts of electrical equipment operating at 50 volts or more must be guarded against accidental contact. Entrance to rooms and other guarded locations containing exposed live parts must be marked with conspicuous warning signs forbidding unqualified persons from entering. All pull boxes and breaker boxes must be labeled to indicate the equipment they switch. Electric installations that exceed 600 volts and that are open to unqualified people must be made with metal-enclosed equipment or enclosed in a vault or area controlled by a lock. In addition, equipment must be marked with appropriate caution signs.

Conductors and equipment must be protected from overcurrent in accordance with their ability to safely conduct current, and the conductors must have sufficient current carrying capacity to carry the load. Fuses and circuit breakers must also be located or shielded so that employees will not be burned or otherwise injured by their operation.

All wiring components and utilization equipment in hazardous locations must be maintained in an explosion-proof condition without loose or missing screws, gaskets, threaded connections, seals, or other impairments to a tight condition. Unless identified for use in the operating environment, no conductors or equipment can be located:

- In damp or wet locations.
- Where exposed to gases, fumes, vapors, liquids, or other agents having a deteriorating effect on the conductors or equipment.

- Where exposed to excessive temperatures.

Ground Fault Circuit Interrupters To ensure electrical safety from shocks on all construction sites, all 120-volt, single-phase, 15- and 20-amp receptacle outlets must be protected by ground fault circuit interrupters (GFCIs), or assured equipment grounding conductor program must be established. In an assured equipment-grounding program, one or more **competent persons** must be designated to implement and enforce the following assured equipment grounding safety procedures at all construction jobsites.

Each 120-volt extension cord, tool, piece of equipment, and receptacle needs to be inspected and tested before first use, before equipment is returned to service following repairs, and before equipment is used after any incident that can be reasonably suspected to have caused damage.

Each extension cord, tool, or piece of equipment should be visually inspected by the user before each day's use to determine signs of damage. Equipment found to be damaged or defective (frayed or damaged insulation, crushed cable, loose, or missing covers or screws, and missing ground prong on plugs, etc.) must not be used until repaired by a qualified electrician. Equipment suspected to be damaged or defective should be inspected and tested prior to use.

Overhead Transmission and Distribution Lines - A significant hazard on construction jobsites is the accidental contact of moving equipment with live overhead power distribution and service lines. Where work must be done near live lines, the movement of all equipment such as cranes, excavators and other equipment must be guided by an observer who can observe the clearance of the equipment from energized lines and give timely warning to equipment operators. The minimum clearance between live lines and any jobsite equipment is 10 feet (3.0 m), and the clearance increases with increasing line voltages.

See the table below, also provided in 29 CFR 1926.140, for clearance distances for voltages greater than 50 kV.

TABLE A—MINIMUM CLEARANCE DISTANCES

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

In addition, as an added safety precaution, signs will be added at locations of overhead lines in order to identify their existence. These will most notably be installed at or near any work area, and at any exit / entrance to the site. Signs reading "Lower Truck Bed" will be installed at all site exit points to notify truck drives to make sure the bed of their trucks are lowered prior to leaving the site, especially at locations where overhead lines exist. Site rules will be given to trucking companies in advance to inform

their drivers of rules before their arrival. Upon arrival, the driver will be met by Site supervision, and their knowledge of Site rules will be verified.

8.5 Lockout and Tagout

Applicable Standards:

OSHA 29 CFR 1926.417 & 1910.147

Whenever maintenance, servicing, or repairs are done to equipment, tools and machinery, there is a potential for injury from the accidental energization or movement of the equipment. Prior to beginning any work on equipment, steps must be taken to identify the energy sources present in the equipment, and to ensure that the energy sources are neutralized.

Hazardous energy sources fall into categories such as electrical, pneumatic, hydraulic, and potential (gravity, springs, etc.). One simple control in the construction industry has been to unplug cord-connected equipment. Vehicles and other motorized equipment can be protected from accidental starting by disconnecting the battery. Other controls include the use of identifiable padlocks on disconnects, breaker switches, and valves. Stored energy has the potential for release with great kinetic force and potential for injury.

All machinery or equipment capable of movement must be de-energized or disengaged and blocked or locked out during cleaning, servicing, adjusting or setting up operations, whenever required. The lockout procedure requires that stored energy (i.e. mechanical, hydraulic, air) be released or blocked before equipment is locked out for repairs. Appropriate employees are provided with individually keyed personal safety locks. Employees are required to keep personal control of their key(s) while they have safety locks in use. Employees must check the safety of the lockout by attempting a start up after making sure no one is exposed. Where the power disconnector does not also disconnect the electrical control circuit, the appropriate electrical enclosures must be identified. The control circuit can also be disconnected and locked out.

Temporary electrical service installation will be performed by a qualified electrician. Work may only be performed on de-energized equipment. Lockout/Tagout procedures will be implemented to assure the safety of personnel during electrical work activities.

Underground electric lines will be located and clearly marked. These utilities will be protected, removed, or relocated as needed to do the work safely. The excavation work will not be allowed to endanger the underground utility or the people doing the work. Barricades, shoring, or other supports as needed, will protect utilities left in place that are exposed by the excavation.

Sevenson's Control of Hazardous Energy Program is in Appendix G.

8.6 Motor Vehicles and Mechanized Equipment

Applicable Standards:

OSHA 29 CFR 1926.600 through 606, 1926.1000 through 1003

Many potential hazards are associated with the use of motor vehicles and mechanized equipment on construction projects. Motor vehicles may be involved in accidents due to mechanical failures or operator errors, resulting in injuries to operators themselves or to bystanders. To minimize accidents resulting from the use of motor vehicles, the following safety procedures need to be implemented and enforced on all company projects:

- All equipment left unattended at night, adjacent to highways or construction areas should have lights, reflectors, and/or barricades to identify location of the equipment.

- Supervisory personnel will ensure that all machinery and equipment is inspected prior to each use to verify that it is in safe operating condition.
- Rated load capacities and recommended rules of operation must be conspicuously posted on all equipment at the operator's station.
- Wire rope must be taken out of service when one of the following conditions exist:
- In running ropes, six random distributed broken wires in one lay or three broken wires in one strand or one lay.
- Wear of one-third the original diameter or outside individual wires.
- Kinking, crushing, hoist caging, heat damage, or any other damage resulting in distortion of the rope structure.
- In standing ropes, more than two broken wires in one lay in sections beyond connections, or more than one broken wire at an end connection.
- A fire extinguisher of 1A:20B:C rating or higher should be available at all operator stations. Where ordinary combustible materials (wood, paper, plastics) are present, an extinguisher suitable for Class A fires will be available for use.
- When vehicles or mobile equipment are stopped or parked, the parking brake must be set. Equipment on inclines must have the wheels chocked as well as the parking brake set.
- All vehicles or combinations of vehicles must have in operable condition at least:
- Two headlights.
- Two taillights.
- Brake lights.
- Audible warning device at operator's station.
- Seat belts properly installed.
- Appropriate number of seats for occupants.
- Service, parking, and emergency brake system.
- Operators should not travel in reverse with motor equipment having an obstructed rear view unless:
- The vehicle is equipped with an audible, functioning reverse signal alarm.
- The vehicle is backed up only under the guidance of an observer who says that it is safe to do so.
- Only those trained in the use of a specific type of machinery should be allowed to operate the machinery. Operators of heavy equipment and trucks greater than 26,001 lbs. (11,794 kg) gross vehicle weight used in traffic must have a commercial driver’s license.
- Materials handling equipment such as scrapers, front-end loaders, dozers, and similar equipment must be provided with Rollover Protective Structures (ROPS).
- Accessible areas within the swing radius of cranes, backhoes, and other rotating machinery need to be barricaded to prevent employees from being struck or crushed by the rotating parts of the machinery or their loads.
- Employees should not ride on or in motor vehicles unless seats with seat belts are provided.

- Upon initial delivery to the site all job site vehicles, heavy equipment or machinery will be inspected (documented) by a competent person and shall be in good working order.
- Prior to use of any job site vehicle, heavy equipment or machinery, the operator must complete a daily equipment inspection checklist. The checklist will be submitted to and maintained by the SSHO. The superintendent and SSHO are to be notified immediately in the event any deficiency (red line item) is found prior to its use.

8.7 Hand and Power Tools

Applicable Standards:

OSHA 29 CFR 1926.300 through 307

Tools are such a common part of construction work that it is difficult to remember that they may pose hazards. Workers must learn to recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent injuries from those hazards. To prevent accidents resulting from the use of hand- and power-operated hand tools, management personnel need to implement and enforce the following safe work procedures on all construction jobsites.

Broken, defective, burned, or mushroomed tools should not be used. They should be reported and turned in for replacement. The proper tool and equipment should be selected and used for each task. For example, a wrench should not be used as a hammer or a screwdriver as a chisel. Leaving tools on scaffolds, ladders, or any overhead working surfaces is hazardous because they may fall. Racks, bins, hooks, or other suitable storage space must be provided to permit convenient arrangement of tools. Striking two hardened steel surfaces together is hazardous because pieces of metal may break off (i.e., two hammers, or a hammer and hardened steel shafts should not be struck together). The practice of throwing tools from one location to another, from one employee to another, or dropping them to lower levels will be prohibited. When it is necessary to pass tools or material under the above conditions, suitable containers and/or ropes must be used.

Wooden tool handles must be sound, smooth, in good condition and securely fastened to the tool. Sharp-edged or pointed tools should never be carried in employees' pockets. Only non-sparking tools will be used in locations where sources of ignition may cause a fire or explosion. Tools requiring heat-treating should be tempered, formed, dressed, and sharpened by workmen experienced in these operations. Tools designed to accommodate guards must be equipped with such guards when in use.

All rotating, reciprocating or moving parts of equipment (belts, gears, shafts, flywheels, etc.) must be guarded to prevent contact by employees using such equipment. Guarding must meet requirements set forth in ANSI B15.1-1953. All hand-held power tools (e.g., circular saws, chain saws, and percussion tools) without a positive accessory holding means must be equipped with a constant pressure switch that will shut off the power when pressure is released. A positive "on-off" control must be provided on platen sanders, grinders with wheels 2-inches in diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks ¼-inch wide or less.

A momentary contact "on-off" control must be provided on all hand-held powered drills, tapers, fasteners drivers, horizontal, vertical and angle grinders with wheels greater than 2-inches in diameter. Besides safety hazards, the use of power tools sometimes creates potential health hazards as well. The use of jackhammer and chiseling equipment often results in silica and nuisance dust exposures that can sometimes be controlled by wetting the work surfaces. Many times, however, the use of dust/mist respirators is required to prevent overexposures.

In addition to dust hazards, the hand vibration inherent in the use of some power tools may result in a restriction of blood flow to the hands and fingers, causing numbness or tingling. If workers consistently experience these symptoms after the use of power tools, they should contact their supervisor so that steps

may be taken to prevent further harm to the nerves and blood vessels in their hands. The use of a different tool, changes to the offending tool to reduce vibrations, and/or the use of special gloves may be recommended to deal with the vibration problems.

Electric Tools - Electric tools present several dangers to the user; the most serious is the possibility of electrocution. The following safe work procedures for electric tools must be implemented and enforced at all company construction projects. Tools must (1) have a three-wire cord with ground and be grounded, or (2) be double insulated, or (3) be powered by a low-voltage isolation transformer. A Ground Fault Circuit Interrupter (GFCI) must be used or the tool must be double insulated to prevent the worker from electrical shock hazards. Never remove the third prong from the plug. Electric tools should be operated within their design limitations.

In general, gloves and safety footwear are recommended during use of electric tools. However, gloves should not be worn when they are a potential entanglement hazard with reciprocating or rotating tools.

When not in use, tools should be stored in a dry place. Electric tools should not be used in damp or wet locations.

Powered Abrasive Wheel Tools - Power abrasive wheel tools present a special safety problem because they may throw off flying fragments. The following safe work procedures for powered abrasive wheel tools need to be implemented and enforced at all company construction projects. Portable grinding tools must be equipped with safety guards to protect workers from flying fragments as well as the moving wheel surface. Inspecting and sound- or ring-testing abrasive wheels prior to mounting are required to ensure that they are free from cracks or defects. Checking to ensure that the abrasive wheel RPM rating is appropriate for the tool will also help prevent wheel failures. The following work rules are appropriate for using a powered grinder:

- Always use eye protection and a face shield.
- Turn off the power when not in use.
- Never clamp a hand-held grinder in a vise.
- To prevent the wheel from cracking, the user should ensure that it fits freely on the spindle.
- Grinding wheel users should never stand directly in front of the wheel during start-up because there is always a possibility that the wheel may disintegrate (explode) when accelerating to full speed.

Pneumatic Tools - Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. The following safe work procedures for pneumatic tools must be implemented and enforced at all company construction projects. Pneumatic tools that shoot nails, rivets, or staples and operate at pressures more than 100 psi must be equipped with a special device to keep fasteners from being ejected unless the muzzle is pressed against the work surface. Eye protection is required and face protection recommended for employees working with pneumatic tools.

Hearing protection is required when working with noisy tools such as jackhammers. When using pneumatic tools, users should check to see that the tools are fastened securely to the hose to prevent the hose from becoming disconnected. Whip checks will be secured at all connection points. All hoses exceeding ½-inch inside diameter must have a safety device at the supply source or branch line to reduce pressure in the event of hose failure.

Airless spray guns that atomize paints and fluids at high pressures (1,000+ psi) must be equipped with automatic or visual manual safety devices that will prevent pulling the trigger until the safety device is manually released. Workers operating a jackhammer are required to wear safety glasses, safety footwear, and hearing protection. Compressed air guns should never be pointed toward anyone. A safety

clip or retainer must be installed to prevent attachments from being unintentionally shot from the barrel of the tool.

Liquid-Fueled Tools - Liquid-fueled tools are usually powered by gasoline. Vapors that can burn or explode and give off dangerous exhaust gases are the most serious hazards associated with liquid-fuel tools. The following safe work procedures for liquid-fueled tools need to be implemented and enforced at all company construction projects.

Gas or fuel should be handled, transported, and stored in approved flammable liquid containers. These containers, also known as safety cans, are no more than 5 gallons in capacity and have a spring-closing lid and spout cover that will safely relieve internal pressure when subjected to fire exposure. Before refilling the tank for a fuel-powered tool, the user must shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. Effective ventilation and/or personal protective equipment are necessary when using a fuel-powered tool inside a closed area. Fire extinguishers must be readily available in the fueling and work areas. Fueling areas will generally be at the laydown area for the given active work area, as shown in Figures 1-4.

8.8 Fire Protection and Prevention

Applicable Standards:

OSHA 29 CFR 1926.150 through 159

Fire on construction projects is a constant hazard that can cause loss of life, equipment and material. To assist in preventing fires on construction projects, all personnel must comply with the following safe work practices and procedures:

Fire Protection - Access to all available firefighting equipment must be maintained at all times. Firefighting equipment shall be inspected monthly by the SSHO and documented on an inspection log/tag. Firefighting equipment will be maintained in accordance with manufacturer's operating requirements. Any firefighting equipment that does not meet manufacturer's operating requirements will be removed from service and replaced with an in-kind substitute. All firefighting equipment should be conspicuously located at each jobsite. Extinguishers exposed to freezing conditions will be protected from freezing. Employees should not remove or tamper with fire extinguishers installed on equipment or vehicles or in other locations unless authorized to do so or in case of fire. After using a fire extinguisher, it must be recharged or replaced with another fully charged extinguisher. Extinguishers must be selected based on the anticipated fire hazards. To aid in the proper selection of fire extinguishers, the classes of fires are as follows:

- Class A (wood, paper, trash) - use water, dry chemical, or foam extinguisher.
- Class B (flammable liquids, gas, oil, paints, grease) - use foam, carbon dioxide, or dry chemical extinguisher.
- Class C (electrical) - use carbon dioxide or dry chemical extinguisher.
- Class D (combustible metals) - use dry powder extinguisher only.

Fire Prevention - Internal combustion engine-powered equipment should be located so that exhausts are away from combustible materials. Smoking is prohibited at all projects. Signs will be conspicuously posted at the project reading, "No Smoking or Open Flame." Portable battery-powered lighting equipment must be approved for the type of hazardous locations encountered. Combustible materials must be piled no higher than 20 feet (6.1 m). Depending on the stability of the material being piled, this height may be reduced.

When working in densely wooded areas, the risk for brush fires should be considered present at all times. To minimize this risk, care must be taken to isolate hot work operations from leaf or wooden debris. An

area should exist which is maintained free of this type of debris, but if activities in another area pose this fire hazard, the area will be cleared of all potential fuel sources, be them natural or part of the Site work.

Portable fire extinguishing equipment, suitable for anticipated fire hazards on the jobsite, must be provided at convenient, conspicuously accessible locations. Firefighting equipment must be kept free from obstacles, equipment, materials, and debris that could delay emergency use of such equipment. Employees should familiarize themselves with the location and use of the project's firefighting equipment. All oily rags, wastes, and similar combustible materials must be placed in metal containers. The containers must be emptied on a daily basis. Storage of flammable substances on equipment or vehicles should be prohibited unless such unit has adequate storage area designed for such use.

Flammable and Combustible Liquids - Explosive liquids, such as gasoline, will not be used as cleaning agents. Gasoline and similar combustible liquids must be stored, transported, and handled in approved and labeled containers in well-ventilated areas free from heat sources. Approved wooden or metal storage cabinets must be labeled in conspicuous lettering, "Flammable-Keep Fire Away." Storage in an approved storage cabinet should not exceed 60 gallons of flammable, or 120 gallons of combustible liquids. Storage of containers will not exceed 1,100 gallons in any one area. Separate piles or groups of containers by a 5-feet clearance. Never place a pile or group within 20 feet of a building. A 12-feet wide access way must be provided within 200-feet of each container pile to permit approach of fire control apparatus.

The use of flammable liquids and spray finishing needs to conform to the requirements of 1926.66 and 1926.152. Paints and reducers should be stored away from heat sources and out of the sun. Airless spray-painting apparatus should be of a type approved for hazardous locations. Any electrically or fuel-powered equipment used to mix, convey, and spray flammable and combustible liquids must carry an approval from a nationally recognized testing laboratory. Pneumatically operated equipment is usually suitable for use with flammable and combustible finishes.

Fire Extinguishers - Portable fire extinguishers (4A:80B:C) shall be provided in each office trailer, exclusion zone work area, each contamination reduction zone, each flammable materials storage area, and areas throughout the site as determined by the SSHO. Fire extinguishers shall be located in readily accessible locations free from obstructions. Fire extinguishers shall be inspected at least monthly and the date of last inspection noted on their tags. All extinguishers must be fully charged and in their designated places unless in use. All employees are periodically instructed in the use of extinguishers and fire protection procedures.

8.9 Sanitation

Applicable Standard:

OSHA 29 CFR 1926.51

Employees should not be required to perform work under unsanitary conditions. Adequate supplies of potable water will be provided at the jobsite. Containers used for drinking water will be clearly marked and not used for any other purpose. Cups must not be shared by employees. Outlets for non-potable water (i.e., firefighting purposes) are not to be used by employees for drinking, washing, or cooking purposes. There shall be one chemical toilet on the jobsite for every 10 workers. Hand washing facilities in proportion to the toilet count need to be provided in near proximity to the jobsite, generally next to the chemical toilet. Hand washing facilities should also be present when employees are applying paints, coatings, herbicides, and insecticides or in other operations where contaminants may be harmful to the employees.

8.10 Confined Space Entry

Applicable Standards:

OSHA 29 CFR 1910.146, 1926.21(b)(6)

A confined space is a space that is large enough and so configured that an employee can physically enter and perform assigned work, has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits) and is not designed for continuous employee occupancy. Simply working in a confined space is not necessarily a hazard. However, if certain hazardous conditions exist prior to, or are created during entry, then the confined space must be treated with utmost care.

Conditions that make a confined space especially dangerous (i.e., make it a permit-required space) are:

- Contains or has the potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.
- Contains any other recognized serious safety or health hazard.

A hazardous atmosphere includes spaces that may expose employees to flammable gases, vapors, mists, or dusts; to an oxygen deficiency (<19.5 percent) or oxygen enriched environment (>23.0 percent); to air contaminants in excess of the PEL, or to any other atmospheric condition that is an immediate danger to life and health (IDLH).

When a permit-required space is present, the following hierarchy of controls should be used on the space:

- Avoid entry.
- Eliminate the hazards that make the confined space a permit-required space. Ventilation, lockout/tagout, block and bleed, and other procedures can be used to eliminate hazards. Hazard elimination must be verified by air monitoring and other test procedures.
- Eliminate the hazards to the point that only atmospheric hazards remain. Use the "atmospheric hazard only" procedures entry system discussed in 1910.146(c)(5).
- Minimize and control hazards to the fullest extent possible, and enter only after the requirements of a full permit entry have been satisfied.

Employees must receive training on confined spaces so that they will acquire the understanding, knowledge, and skills necessary for a safe entry into the confined space. Confined space training shall be documented.

The only anticipated confined spaces at the site will be excavations and trenches greater than four feet in depth and various tanks across the Site used to store decontamination water. All confined spaces at the site shall be captured on the Confined Space Inventory Sheet located in Sevenson's Confined Space Program. The completed inventory sheet shall be posted on the employee bulletin board area with the other Department of Labor and State of Massachusetts posters and postings.

Sevenson's Confined Space Program is in Appendix H.

8.11 Welding and Cutting

Applicable Standards:

OSHA 29 CFR 1926.350 through 354

Welding and cutting operations present various safety and health hazards. Welding and cutting operations on lead-painted surfaces often create lead fumes by "boiling off" the lead. These lead fumes may cause lead poisoning if inhaled or ingested in excessive amounts. Other metal fumes such as iron oxide, chromium, zinc, manganese, and cadmium may also be present during welding and cutting operations. Safety hazards such as fire may result in fatalities, serious injuries, and/or property damage. Therefore, in an effort to eliminate or reduce the hazards associated with welding and cutting operations, the following rules and procedures should be included and enforced in any welding safety program.

Welding and Cutting - Only qualified welders should be authorized to do welding, heating, or cutting. Inspect work areas for fire hazards and proper ventilation before welding or cutting. Avoid welding or cutting sparks and hot slag. Be alert to hot surfaces and avoid touching metal surfaces until they have cooled. Place compressed gas cylinders in an upright position and secure in place to prevent dropping or falling. Handle with extreme care and do not store near any sources of heat. Remove any combustibles when welding or cutting must be done. If removal is not feasible, cover combustibles with noncombustible material. When welding near any combustible material, another employee must be posted to serve as a fire watch. Make sure this person has a fire extinguisher available and keep him/her in the area after welding/cutting is completed until all danger of fire is past.

When working in the vicinity of welding operations, wear approved eyewear and avoid looking directly at the flash as serious flash burns could result. When opening valves on tanks that have regulators installed, be sure the pressure adjustment screw is all the way out and do not stand in front of the regulator. An internal failure could rupture the regulator and cause the adjustment screw to become a missile.

Primers, paints, and other coatings should be removed, where feasible, from the area to be heated and for at least 4-inches on all sides.

Gas Welding and Cutting - When transporting, moving, and storing compressed gas cylinders, always ensure that the valve protection caps are in place and secured. Secure cylinders on a cradle, sling-board, or pallet when hoisting. Never hoist or transport the cylinders by means of magnet or choker slings. Move cylinders by tilting and rolling them on their bottom edges. Do not allow cylinders to be dropped, struck, or come into contact with other cylinders violently. Secure cylinders in an upright (vertical) position when transporting by powered vehicles. Do not hoist cylinders by lifting on the valve protection caps. Do not use bars under valves or valve protection caps to pry cylinders loose when frozen. Use warm, not boiling, water to thaw cylinders loose.

Remove regulators and secure valve protection caps prior to moving cylinders, unless cylinders are firmly secured on a special carrier intended for transport. Close the cylinder valve when work is finished, when cylinders are empty, or when cylinders are moved at any time. Secure compressed gas cylinders in an upright position (vertical) except when cylinders are actually being hoisted or carried. Oxygen cylinders should be stored at least 20-feet from other combustible materials such as acetylene. Alternatively, oxygen and fuel gas cylinders may be separated by a 5 feet-high non-combustible barrier with at least a 30-minute fire resistance rating.

Arc Welding and Cutting - Use only manual electrode holders that are specifically designed for arc welding and cutting. All current-carrying parts passing through the portion of the holder must be fully insulated against the maximum voltage encountered to ground. All arc welding and cutting cables must be completely insulated, flexible type, and capable of handling the maximum current requirements of the work in progress. Employees should report any defective equipment to their supervisor immediately

and refrain from using such equipment. Shield all arc welding and cutting operations, whenever feasible, by noncombustible or flameproof screens to protect employees and other persons working in the vicinity from the direct rays of the arc.

Fire Prevention - Welders should locate the nearest fire extinguisher in their work area in case of a fire emergency. Fire extinguishing equipment must be immediately available in the work area. Never use matches or cigarette lighters to light torches. Use only friction lighters to light torches. Never strike an arc on gas cylinders. Move objects to be welded, cut, or heated to a designated safe location. If the objects cannot be readily moved, then all movable fire hazards in the vicinity must be taken to a safe place or otherwise protected. Fuel lines should have flashback arrestors. Do not weld, cut, or heat where the application of flammable paints or the presence of other flammable compounds, or heavy dust concentrations creates a hazard. Additional employees must be assigned to guard against fire while the actual welding, cutting, or heating is being performed when the operation is such that normal fire prevention precautions are not sufficient. Prior to applying heat to a drum, containers, or hollow structure, provide a vent or opening to release any built-up pressure during the application of heat. Never cut, weld, or heat on drums, tanks, process lines, or containers that have contained flammable liquids until they have been purged and cleaned.

All hot work will be accomplished under a hot work permit. This permit will be requested at a minimum of 24 hours before the work commences. No work will begin until the permit is approved by GE. There may be circumstances in which providing 24 hours' advance notice for a hot work permit is not practical. In the event of an unexpected equipment malfunction or maintenance issue to equipment requiring hot work, Sevenson may request an expedited hot work permit to perform the necessary repairs and restore operations in a timely manner. Such requests will be made only when warranted and in accordance with applicable site safety requirements and permit procedures.

An example Hot Work Permit can be found in Appendix B – Health and Safety Forms.

8.12 Stairways and Ladders

Applicable Standards:

OSHA 29 CFR 1926.1050 through 1060

Stairways and ladders are a major source of injuries and fatalities among construction workers. Because of the potential hazards involved in using stairways and ladders, the following safety practices and procedures need to be implemented and enforced at all construction projects. Ladders that project into passageways or doorways where they could be struck by personnel, moving equipment, or materials being handled must be secured to prevent accidental displacement or be protected by barricades. Workers should always face the ladder and use both hands when going up and down ladders. Materials and tools should be lowered or raised by a rope or other mechanical means. Hold on to the railing on stairways. The areas around the top and base of ladders must be free of tripping hazards such as loose materials, trash, and electrical cords. The same holds true for the bottom of stairways and on stairway platforms.

Ladders - Ladders must be capable of supporting four times the maximum intended load. Ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced (not less than 10-inches nor more than 14-inches). Do not tie or fasten ladders together to provide longer sections unless they are specifically designed for such use. All stepladders must be equipped with a metal spreader or locking device. Do not paint wooden ladders, except to stencil for identification. Maintain ladders free from oil, grease, and other slipping hazards. Ladders must extend at least 3-feet above the upper landing surface and be secured. The horizontal distance for the base of the ladder should extend 1-foot for every 4-feet in vertical distance. Wood job-made ladders must be used at an angle so that the horizontal distance is one-eighth the working length of the ladder. Do not use ladders on slippery surfaces unless they have been

properly secured or provided with slip-resistant feet. Do not move, shift, or extend ladder while occupied. Never stand on the top step of a stepladder.

A competent person on a periodic basis and after any occurrence that could affect their performance must inspect ladders. Ladders with structural defects must be tagged with "Do Not Use" or similar language and withdrawn from service until repaired. Never use a metal ladder when working on electrical equipment or near electrical equipment where contact is possible. Any employee who uses a ladder or stairway must receive training by a **competent person** in the following areas:

- Types of fall hazards.
- Correct procedures for erecting, securing, maintaining, and disassembling fall protection systems.
- Proper construction (man-made), use, placement, and handling.
- Maximum intended load-carrying capacities.
- Requirements contained within 29 CFR 1926 Subpart X.

Stairways - Stairways that are not permanent parts of the structure must have landings of not less than 30 inches in the direction of travel. A platform must be provided where doors or gates open directly on a stairway. Metal pan landings and metal pan treads must be filled in with wood or other materials if they are to be used prior to being finished. Maintain all parts of stairways free from hazardous projections, such as protruding nails. Eliminate slippery conditions on stairways before the stairways are used to reach other levels.

8.13 Materials Handling, Storage, Use, and Disposal

Applicable Standards:

OSHA 29 CFR 1926.250 through 252

In the handling of materials, employees must know the following: There must be safe clearance for equipment through aisles and doorways. Vehicles must be shut off, and brakes must be set, prior to loading or unloading. Containers of combustibles or flammables, when stacked while being moved, must be separated by dunnage sufficient to provide stability. Trucks and trailers will be secured from movement during loading and unloading operations. Hand trucks must be maintained in safe operating condition. Chutes must be equipped with sideboards of sufficient height to prevent the handled materials from falling off. At the delivery end of rollers or chutes, provisions must be made to brake the movement of the handled materials. Hooks with safety latches or other arrangements will be used when hoisting materials, so that slings or load attachments won't accidentally slip off the hoist hooks. Securing chains, ropes, chokers, or slings must be adequate for the job to be performed. When hoisting material or equipment, provisions must be made to assure no one will be passing under the suspended loads.

Stack, rack, block, interlock, or otherwise secure all materials and supplies to prevent sliding, falling, or collapse. Post the maximum safe load limits for floors within buildings and structures in a conspicuous location. Never exceed the maximum safe load limit. Keep aisles and passageways clear to provide for the free and safe movement of material handling equipment and employees. Use ramps, blocking, or grading when a difference in road or working levels exists to ensure the safe movement of vehicles between the two levels. Do not place material within 6-feet of any hoist way or floor opening inside buildings under construction, nor within 10-feet of an exterior wall that does not extend above the material being stored. Stack bagged materials by stepping back the layers and cross-keying the bags at least every 10 bags high. Do not store materials on scaffolds or runways in excess of supplies needed for immediate operations. Remove all nails from used lumber prior to stacking. Stack lumber on level and solidly supported sills. Do not stack lumber higher than 20-feet (16-feet if handled manually).

Stack and block structural steel, poles, pipe, bar stock, and other cylindrical materials, unless racked, so as to prevent spreading or tilting. Attach handles or holders to the load to reduce the possibility of pinching or smashing fingers. Unload materials close to the point of final use to avoid unnecessary lifting. Do not stack non-compatible materials in the same pile.

Manual Materials Handling - Employees working alone should not attempt to lift or move a load that is too heavy for one person - get help! When working with materials stored in silos, hoppers, tanks, or similar storage areas, be aware that confined spaces may exist. Attach handles or holders to the load to reduce the possibility of pinching or smashing fingers. Wear protective gloves and clothing (i.e., aprons), if necessary, when handling loads with sharp or rough edges. When pulling or prying objects, workers should be properly positioned. Riding loads, slings, the ball, crane hook, or other material hoisting equipment is prohibited.

Engineering Controls - Engineering controls should be used, if feasible, to redesign the job so that the lifting task becomes less hazardous. This includes reducing the size or weight of the object lifted, changing the height of a pallet or shelf, or installing a mechanical lifting aid.

A major portion of material handling operations at the Site will include the supersacks of amendments. Supersacks will arrive on pallets and will be unloaded from the truck using load handling equipment with forks to move the pallets as a hole. The supersacks will be stored on the pallets until they are needed for use. When retrieved for use, a bag handler will be attached to the load handling equipment to eliminate the need for the pallet. Manual handling should not be used for supersacks unless for the purpose of securing rigging. In the event of a spill or drop of material, refer to Section 11.8 of this Plan.

OSHA standard 1926.251 provides guidance about the limitations and uses of slings used in conjunction with other material handling equipment for the movement of material by hoisting. Slings covered by this standard include those made of alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope, and synthetic web (nylon, polyester, and polypropylene). Some general work practices related to rigging include:

- Rigging operations shall only be performed by a qualified rigger.
- Rigging equipment must be inspected prior to use on each shift and during its use to ensure that it is safe. Defective rigging equipment will be removed from service.
- Rigging equipment must not be loaded in excess of its recommended safe working load. Rigging must be equipped with a manufacturer's label that is permanently attached to the rigging and is legible.
- Rigging equipment, when not in use, must be removed from the immediate work area.
- Custom rigging must be marked to indicate the safe working loads and will be proof-tested prior to use to 125 percent of their rated load.

In addition to these general guidelines, the standard has specific requirements related to alloy steel chains, wire rope, natural and synthetic rope, and synthetic webbing. Employees performing rigging work should be adequately trained in the safety and functional aspects of rigging for materials handling operations.

8.14 Signs, Signals, and Barricades

Applicable Standards:

OSHA 29 CFR 1026.200 – 203

The use of signs, signals, and barricades is essential to make employees aware that an immediate or potential hazard exists. Both traffic and health hazards such as airborne lead are examples of hazards on

bridge renovation/demolition sites that require signs and other devices. The following sections discuss the primary ways that employees are made aware of hazards in their work zone areas.

Accident Prevention Signs/Tags - Signs, signals, regulated areas, and barricades must be used on each construction project as appropriate.

Danger Signs are used wherever an immediate hazard (i.e., exposed electrical conductor) exists. The danger signs must have red as the predominant color in the upper panel and a white lower panel for additional sign wording.

Caution/Warning Signs are used to warn against potential hazards or to caution against unsafe practices. The caution signs must have yellow as the predominant color with a black upper panel (yellow lettering of "caution" on the upper panel) and a yellow lower panel for additional sign wording. Caution/warning signs will be used to identify exclusion and contamination reduction zones.

Exit Signs, when required, should be in legible red ¾-inch (1.9 cm) stroke letters, not less than 6-inches (15.2 cm) high, on a white field.

Safety Instruction Signs, when used, must be white with a green upper panel and white lettering to convey the principal message. Any additional wording must be in black lettering on the white background.

Directional Signals must be white with a black panel and a white directional symbol. Any additional wording must be in black lettering on the white background.

The Traffic Control Plan has identified the required traffic signs/controls and their placement around the project site. All traffic control signs or devices must conform to the DOT MUTCD and ANSI D6.1, *Manual on Uniform Traffic Control Devices for Streets and Highways.*

Signaling - Flagmen or other appropriate traffic controls must be provided for operations where signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street. Signaling directions must conform to DOT *Manual on Uniform Traffic Control Devices* (MUTCD) and ANSI D6.1, *Manual on Uniform Traffic Control Devices for Streets and Highways*. Stop/Slow sign paddles must be used by flagmen when hand signaling. Red flags, at least 18 in^2, may be temporarily used in traffic control. Flagmen are required to wear a red or orange reflective warning vest and a hard hat while flagging. Required signs and symbols must be visible at all times when work is being done, and removed or covered promptly when the hazard no longer exists.

Accident Prevention Tags are used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc.

Out of Order Tags are used to designate equipment that requires repair or maintenance. Equipment with such a tag may not be used until the tag is removed.

Refer to the Traffic Control Plan and Site Access Plan for further details on site access and navigation.

8.15 Housekeeping

Applicable Standard:

29 CFR 1910.25

A policy of trash removal and the maintenance of good housekeeping practices should be implemented on all jobsites. The accumulation of construction debris may pose a significant fire hazard in addition to tripping and falling hazards.

Good housekeeping practices are the result of planning and organization. All personnel on the site must work together to maintain a clean worksite. The prompt removal of waste materials will permit a free flow of traffic through the work areas. Daily, or more frequent, inspections will be conducted by the general contractor to verify that the housekeeping controls are in place and being enforced.

Housekeeping activities in themselves may pose health hazards such as exposures to dusts, biological agents, and discarded chemicals. Liquid and solid waste chemicals must be placed in leak-proof containers for proper disposal.

9.0 Site Control Measures

This section outlines site control measures to be implemented to minimize potential exposure to and accidental spread of hazardous substances during construction activities. Listed below are the work zones that will be established. The zone boundaries may be modified as necessary as new information becomes available.

9.1 Work Zones

The Site will be divided into Exclusion, Contamination Reduction, and Support Zones. It should be recognized that the Site control zones will be modified continually. A map showing the work zones will be updated daily, posted in the site office, with copies being made available in the field as well. The SSHO will review the location of work zones at the daily safety briefing.

The SSHO and at least one other person who has completed Supervisor's Training will be present at the Site whenever work is performed in the Exclusion Zone or Contamination Reduction Zone. Similarly, at least two First aid/CPR-trained individuals will be present at the active work area, regardless of the zone being worked in. First aid supplies and water will exist in the laydown area for the given active work area, as indicated in Figures 2-4, while decontamination measures will be provided in the contamination reduction zone(s).

9.1.1 Exclusion Zone

This zone, commonly known as the Hot Zone, is where there will be direct contact with the potentially contaminated material. A minimum of Level D PPE will be required across the Site, though this zone may have increased PPE requirements depending on the work performed and hazards present. The SSHO will enforce these requirements. The level of PPE required will be based on hazard, site condition and air monitoring performed. Modification to the size and boundary of the Exclusion Zone will be made in the field by the SSHO based on operations and wind direction. The Exclusion Zone may be subdivided into different areas of contamination and different levels of PPE may be assigned based upon the expected type and degree of hazard.

All activities in exclusion zone will be conducted using the "buddy system". This involves a buddy who is able to provide his or her partner with assistance, observe for signs of chemical or heat exposure, check integrity of PPE and go for help when needed.

9.1.2 Contamination Reduction Zone

This zone, commonly known as the Warm Zone, is where workers and equipment will be decontaminated. This will minimize the spread of contaminants from the Exclusion Zone into clean areas. The Contamination Reduction Zone will consist of the area located in front of or next to the exclusion zone so that personnel or equipment exiting the Exclusion Zone can be decontaminated and doff the PPE. Emergency equipment to be located in this area will include eye wash stations, fire extinguishers, first aid kits and other appropriate equipment. The Contamination Reduction Zones or personal decontamination stations will be established adjacent to the Exclusion Zones. These stations will provide a means for prompt removal of potentially contaminated outer PPE at a location convenient to operations. Signs shall be posted and delineated to clearly define the Contamination Reduction Zone and the Exclusion Zones.

9.1.3 Support Zone

This zone, commonly known as the Clean Zone, is considered to be uncontaminated. This area will be used as a storage area for operations equipment and where break and toilet facilities will be located.

9.2 Site Entry and Control Log

All site personnel on this project will undergo safety orientation by the SSHO prior to starting work at the site. This training will include general site safety rules, hazardous locations, personal protective equipment guidelines, and onsite emergency procedures. All site personnel will satisfy the following requirements before initiating work onsite within the Exclusion or Contamination Reduction Zones:

- Receive and pass a physical examination, including certification of ability to wear respiratory protection.
- Receive adequate hazardous waste training according to 29 CFR 1910.120 or 29 CFR 1926.65.
- Receive a briefing on all aspects of the PHASP.
- Are properly dressed, equipped, and trained in accordance with all personal protective guidelines.
- Are thoroughly trained regarding decontamination procedures.
- All personnel performing tasks when respiratory protection is needed will comply with the requirements of this plan

All personnel entering and exiting the Exclusion and Contamination Reduction Zones will sign in and out through the Support Zone. The log will indicate the date and time entering and exiting, the location entered, personal protective equipment utilized and decontamination procedures.

10.0 Personal Hygiene and Decontamination

Decontamination (Decon) is the process of removing or neutralizing potentially harmful contaminants that have accumulated on personnel and equipment in order to reduce the spread of contamination outside the work area. Decontamination is critical to the safety and health of Site workers and it protects the community by minimizing the off-site migration of contaminants. One of the most important aspects of controlling contaminated material migration is the prevention of the spread of contamination. Good contamination prevention will minimize employee and public exposure.

All personnel and equipment leaving the Exclusion Zone must be decontaminated in the Contamination Reduction Zone prior to entering the Support Zone. The decontamination process is composed of a series of steps performed in a specific sequence. The basic concept is that more heavily contaminated items will be decontaminated and removed first, followed by decontamination and removal of inner, less contaminated items.

During construction activities at the Site, all items taken into the Exclusion Zone must be considered contaminated and must be carefully inspected and/or decontaminated before leaving the Site. All contaminated vehicles: equipment and material will be cleaned and decontaminated to the satisfaction of the CM prior to leaving the Site. Decontamination procedures will be posted at every decontamination station throughout the project.

10.1 Personal Decontamination

Personnel exiting the Exclusion Zone during construction activities at the Site will follow the procedure below.

Decontamination of personnel and equipment will be performed using mild soap and water, brushes, and pressures washers as applicable.

As the worker leaves the Exclusion Zone, he places his equipment and tools in the Exclusion Zone or Contamination Reduction Zone. After the worker places his equipment and tools down, gross contamination will be removed from outer clothing and boots. Workers will then remove their outer boots and outer gloves and place them in plastic garbage bag-lined containers.

Once outer gloves are removed, workers will remove all outer garments and place them in plastic garbage bag lined containers. Once workers are fully decontaminated and all garments are removed, workers will remove their respirators (applicable to level C) followed by removal of inner gloves. Used cartridges and inner gloves will be placed into plastic garbage bags.

10.2 Respirator Decontamination

If utilized, respirators are to be decontaminated, cleaned and sanitized before reuse. Cartridges and/or filters must be replaced as needed and, as a minimum, changed daily. The respirators are then cleaned with cleaning and sanitizing solutions, wiped dry and placed into sanitary containers or bags and sealed closed. Before departing the change locker facility, respirators are placed into storage compartments for next day use.

10.3 Equipment Decontamination

Nearly all contractor hardware (not consumable) is considered to be recoverable. As such, they will be decontaminated using the proper equipment, (i.e. brushes, sprayers, detergent and, if necessary, other appropriate solvents). Large heavy equipment will be decontaminated with pressure steam wash as required.

The decontamination area for vehicles and equipment leaving the Exclusion Zone will be located within the Contamination Reduction Zone. Scrapers and brushes will be used to remove gross contamination prior to final decontamination. A pressure washer will be used for the final cleaning and decontamination of the equipment. The combination of dry removal with the brushes and use of the steam cleaner will minimize the generation of contaminated liquid. All solids and liquids will be collected for disposal. Efforts will be made to minimize soil (even non-contaminated soil) from being tracked off-site. Dirt and mud will be removed from trucks and vehicles leaving the Site to the extent practicable.

10.4 Decontamination Log

A decontamination log for heavy equipment leaving the exclusion zone will be maintained and will list the equipment name and model number, the equipment I.D. number, the activities the equipment was used for, the method of decontamination, amount of decontamination, date and time of decontamination and names of personnel doing the decontamination. This log will be maintained by the SSHO and included in the Safety and Health Report. Hand tools and other miscellaneous equipment or supplies do not have to be captured on the decontamination log.

10.5 Decontamination Residue

Decontamination residue consists of disposable PPE (such as Tyvek, gloves, tape and cartridges) and settled solids. Decontamination residue will be drummed and stored in the Exclusion Zone until subsequent disposal or for treatment.

10.6 Personal Hygiene and Sanitation

Hands and face will be thoroughly washed before eating, drinking, chewing gum or tobacco.

Smoking is strictly prohibited onsite. Prior to employees going offsite to smoke, the employee must thoroughly wash their hands and face.

When possible, avoid contact with contaminated materials.

Temporary support facilities such as wash facilities, eating areas, changing areas, and portable toilets will be located in the Support Zone. This area will remain "clean" and free of contamination.

An adequate supply of potable water will be provided to the employees working at the Site. Clearly labeled potable containers will be used to dispense drinking water. Containers will be cleaned at the beginning of each day. The containers will be equipped with taps to access the water. Clean disposable cups will be provided daily.

Eating, drinking, smoking, chewing gum or tobacco increases the probability of hand-to-mouth transfer and ingestion of material. Eating, drinking, chewing gum, or any practice that increases the chance of ingestion of contaminated material is prohibited during remediation activities except in designated eating and drinking areas outside the Exclusion and Contaminant Reduction Zones. The use of tobacco products and E-cigarettes/vaping devices is prohibited on site. Sevenson employees, subcontractor employees, and service personnel are required to thoroughly decontaminate themselves prior to entering the Support Zone.

11.0 Emergency Contingency Plan

This section describes the emergency response plan that will be implemented by Sevenson employees to handle emergencies. The nature of the project, the contaminants present and the activities planned for the site are such that there is little potential for an emergency, which would result in a significant release of hazardous substances, and in any way threaten the adjoining community. However, there is always the potential at any construction site for emergency situations to occur which threaten the on-site workers. Possible examples of emergency situations during construction activities include equipment fires or contact of equipment with overhead power lines. In all of these cases, procedures will be implemented to minimize the possibility of an emergency situation. The procedures outlined below are designed to ensure that the workforce reacts quickly and appropriately to emergency situations, thereby protecting the health and well-being of the individual workers. It is expected that modifications may be necessary upon actual site set-up and conditions.

Emergency preparedness tabletop drills will be coordinated with the CM yearly at a minimum. These drills will involve all Site personnel, a review of their responsibilities depending on the circumstances presented, potential conditions, and a performance review based on these understandings.

Physical "simulation" drills, though unlikely, may occur at the CM's discretion. The physical drills will consist of similar aspects, but performance will be based on physical actions, rather than descriptive understanding.

NOTE: In the event of a serious or life-threatening emergency the primary consideration is the immediate health of the individual rather than routine contamination controls. Standard contamination control protocols shall not interfere with the prompt medical attention required for a seriously injured worker.

11.1 Pre-Emergency Planning

During the site safety briefings held daily, all employees will be informed of the location of this plan, the procedures outlined in this plan, and the communication systems and evacuation routes to be used during an emergency.

On a continual basis, individual personnel should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency.

A coordination meeting with local emergency response agencies (fire, police, rescue and medical facility) will be conducted prior to work starting at the Site, led and arranged by GE. The site activities and potential hazards that may be encountered by responders will be reviewed during this meeting.

11.2 Personnel Responsibilities

All on-site employees have a role in mitigating an emergency incident. The Project Superintendent has primary responsibility for responding to and directing emergency response operations to correct emergency situations. This includes taking appropriate measures to ensure the safety of site personnel and the public. He is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The SSHO will assist and advise the Project Superintendent and will direct any emergency medical responses.

The following is an outline of job titles and corresponding responsibilities during an emergency.

- The Site Superintendent directs emergency response activities and serves as liaison with appropriate Client and Client representative's personnel and subcontractors. In the event of an emergency the Project Superintendent will be the Incident Commander.
- The SSHO recommends that work be stopped if any operation threatens worker or public health or safety and advises Site Manager of emergency procedures if necessary. Provides emergency medical care on site. Notifies emergency services. The SSHO will assume the responsibility of Incident Commander if the Project superintendent is off-site.

11.3 Evacuation Routes and Procedures

In the event of an emergency that necessitates an evacuation of the Site, on-site personnel will be notified by hand-held or mobile two-way radios to leave the area by immediate emergency exit. An alternative method of communication will be the use of a portable air horn sounded in regularly spaced, repeated blasts.

During an evacuation, all non-emergency radio transmissions will cease. The SSHO, in conjunction with the Project Superintendent, will control the scene until the appropriate municipal and state agencies arrive. Since site conditions, (i.e., wind direction, precipitation, and work location), change often, the SSHO will determine the appropriate evacuation procedures.

All personnel will assemble/muster at the Contamination Reduction Zone or Support Zone. Access to the site will be restricted.

11.4 Emergency Decontamination Procedures

Decontamination of an injured or exposed worker will be performed if decontamination does not interfere with essential treatment. The objective is to successfully administer first aid without exposing rescue workers and the victim to contaminants. Project personnel, primarily GE, will meet with the local hospital to discuss the possibility of having to treat injured personnel from the site.

If the hazards are low and decontamination can be performed, then a wash, rinse and removal of protective clothing will be performed.

If the hazards are high and decontamination cannot be done, then the following procedures will be performed:

- Wrap the victim in blankets or plastic sheeting to reduce contamination of rescue workers or other personnel.
- Alert emergency and medical personnel to potential contamination. Emergency entry into the exclusion zone will be controlled by the SSHO. The SSHO will determine if the victim can be moved

from the exclusion zone. If entrance into the exclusion zone is required, the SSHO will ensure that the emergency workers don the proper PPE.

- If required, arrange to have the SSHO accompany the victim to the hospital if required.

11.5 Medical Treatment/First Aid

The SSHO will be trained in CPR and First Aid as well as one other person at the site and will have first aid kits for use in a medical emergency. First Aid Kits will be located in the main support area, Contamination Reduction Zone and at the work activity locations. Portable eyewash stations will be available at the Contamination Reduction Zone. Eyewash stations will be of the pressurized, 15-minute discharge type. On-site employees have a basic knowledge of first aid and will assist the Site Superintendent and SSHO. Community emergency services (EMS, Fire, and Police) will be notified immediately if their resources are needed on site.

An AED will be kept at the work areas east of Holmes Road due to its relatively remote location.

For injuries and illnesses that are not immediately life threatening or require the services of local emergency medical services Work-Care Injury Intervention (888-449-7787) will be utilized by the SSHO to help assess the injury or illness. Work-Care Injury Intervention is staffed by registered nurses and doctors that specialize in occupational injury and illness. Work-Care Injury Intervention will interview the affected employee over the phone and will recommend the next course of action for the employee.

If necessary, the injured or sick party will be taken to Berkshire Medical Center. Please refer to Figure 2 for directions to these facilities from the intersection of Holmes Road and Utility Drive. Routes to the medical center will be posted in job site trailers and Sevenson vehicles and will be easily visible at all times.

11.6 Emergency Alarms/Notifications and Procedures

When any emergency occurs on-site the SSHO and Project Superintendent will be notified immediately. The Project Superintendent or the SSHO will notify the client and their onsite representatives. Please refer to the ***Table 9 – "Emergency Telephone Numbers"*** for emergency contact information. Emergency contact information will be posted in all site trailers, bulletin boards, or any vehicle that may be used to transport an injured worker to a medical facility.

To notify any site workers of an emergency, workers can be signaled using handheld or mobile two-way radios or as a backup, the use of an emergency alarm (portable air horn). All emergency communications will flow through the radio network. Outside emergency services will be notified, as necessary. The site evacuation alarm, activated from the primary SSHO trailer, consists of one long blast on a horn, every 10 seconds. Any time the alarm system is activated; on site personnel will be notified immediately. Personnel will extinguish any nearby ignition source and prepare for emergency response activities. This alarm will also be used to alert personnel of a sudden release of hazardous materials.

The observer of the emergency condition will brief the responding personnel as to the nature and location of the incident. When they have assessed the situation, a decision whether or not to implement these procedures will be made. If these Emergency Contingency Procedures are not implemented, supervisory personnel will give the "All Clear" verbally. The "All Clear" will be used to indicate a return to normal (non-emergency) conditions following emergency response activities. The alarm signals will be prominently posted at the site. After verifying these details with GE, the audible alarm system will be discussed with each resident/business entity within hearing range of the alarm system.

11.7 Implementation of the Plan

There is a logical sequence of steps to follow in responding to emergencies, which should be followed by site personnel. This sequence involves identifying the emergency, investigating the extent of the emergency, deciding on the proper initial course of action, taking corrective action to rectify the situation, and following up with a post-emergency investigation.

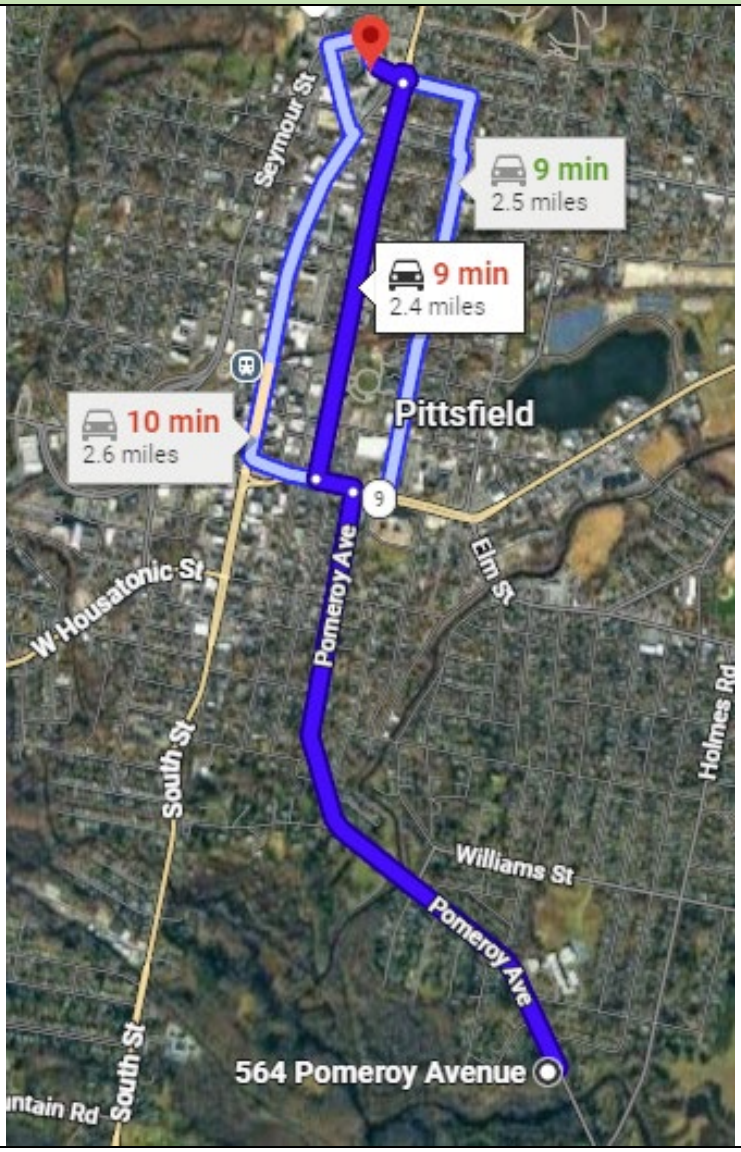
Equipment breakdowns, power failures, injuries, and natural disasters are usually rather dramatic and will capture the individual's attention immediately upon occurrence. In other cases, the individual may have prior warning of impending emergencies through weather reports in the case of natural disasters and trends in equipment performance in the case of some breakdowns.

Some emergency situations exist long before the operator is aware that an emergency exists. These cases may produce situations, which then become immediate and obvious. For example, unattended equipment may have minor breakdowns which go unnoticed; further operation thus leading to complete breakdown of the equipment resulting in possible injury to a bystander or passerby.

In the event of a fire, explosion, accidental material release, or any other emergency, response activities will be initiated following the evaluation of the event. An assessment of the situation will be performed by the SSHO immediately upon notification. The Superintendent/SSHO is authorized to commit resources to the extent detailed in this plan. If it is determined that an emergency situation exists, he will then implement the appropriate emergency response activities.

In the event that a medical emergency or accident occurs in the Exclusion Zone, all local EMS personnel responding to the emergency should be outfitted in the PPE appropriate for the situation. As a general rule, personnel should not enter the Exclusion Zone without donning the minimal level of PPE required. In the event that a worker is overcome or disabled for an unknown reason, the Superintendent/SSHO must make a determination as to the level of respiratory protection, which is appropriate.

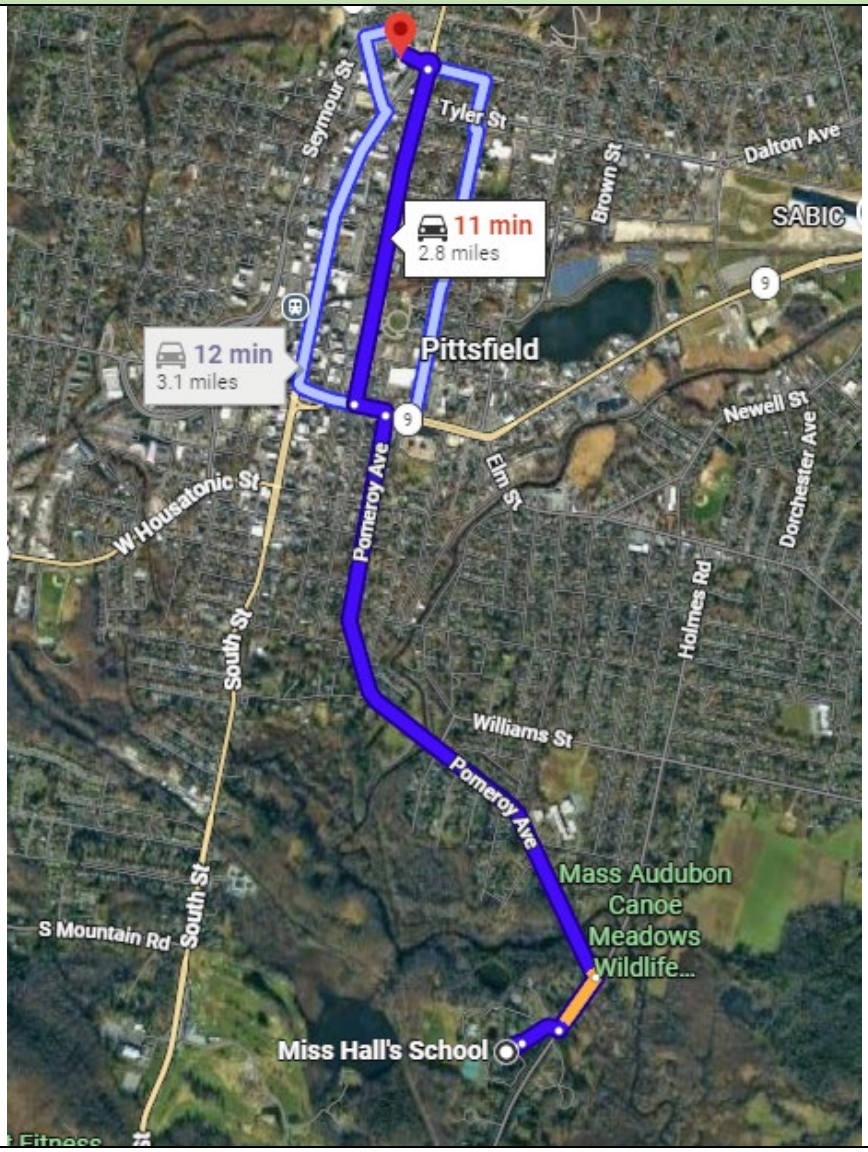
Figure 5 –
Route to– Berkshire Medical Center (Northwestern Work Area)



1. Head NORTH on Pomeroy Avenue toward Preston Avenue
2. Turn LEFT onto East Street
3. Turn RIGHT onto First Street
4. At traffic circle take THIRD exit
5. Arrive Berkshire Medical Center, 725 North Street, Pittsfield, MA 01201

Note: The 911 address for this work area will be 564 Pomeroy Avenue, Pittsfield, MA 01201.

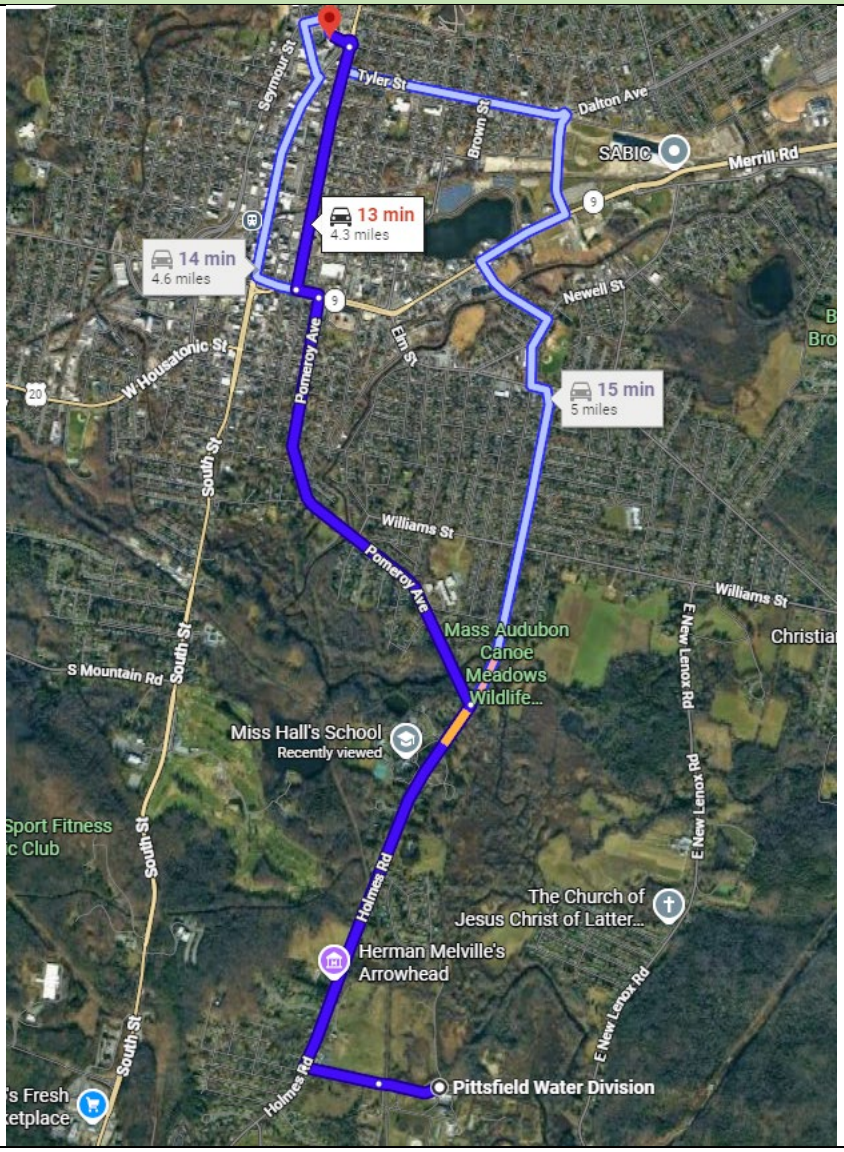
Figure 6 –
Route to– Berkshire Medical Center (Southwestern Work Area)



1. Turn LEFT to take Holmes Road to the entrance of Miss Hall's School
2. Turn LEFT onto Holmes Road
3. Turn LEFT onto Pomeroy Avenue
4. Turn LEFT onto East Street
5. Turn RIGHT onto First Street
6. At traffic circle take THIRD exit
7. Arrive Berkshire Medical Center, 725 North Street, Pittsfield, MA 01201

Note: The 911 address for this work area will be "the gravel road behind Miss Hall's School at 492 Holmes Road, Pittsfield, MA 01201".

Figure 7 –
Route to– Berkshire Medical Center (Southeastern Work Area)



1. Turn RIGHT to take Utility Drive to Holmes Road
2. Turn RIGHT onto Holmes Road
3. Turn LEFT onto Pomeroy Avenue
4. Turn LEFT onto East Street
5. Turn RIGHT onto First Street
6. At traffic circle take THIRD exit
7. Arrive Berkshire Medical Center, 725 North Street, Pittsfield, MA 01201

Note: The 911 address for this work area will be “the gravel road behind Pittsfield Water Division at Utility Drive, Pittsfield, MA 01201”.

Figure 8 –
Route to– Berkshire Medical Center (Northeastern Work Area)



1. Turn LEFT to take Holmes Road to Pomeroy Avenue
2. Turn RIGHT onto Pomeroy Avenue
3. Turn LEFT onto East Street
4. Turn RIGHT onto First Street
5. At traffic circle take THIRD exit
6. Arrive Berkshire Medical Center, 725 North Street, Pittsfield, MA 01201

Note: The 911 address for this work area will be “327 Holmes Road, Pittsfield, MA 01201”.

Table 9 – Emergency Contact List	
Pittsfield Police	911 or 413-448-9700
Pittsfield Fire	911 or 413-448-9751
Action Ambulance Services, Inc.	911 or 413-499-2527
Hospital: – Berkshire Medical Center 725 North St, Pittsfield, MA	856-346-7816 (Emergency Room)
Dr. Greaney – Occupational Physician (Work Care)	714-456-2154
WorkCare Injury Intervention	888-449-7787
Sevenson Environmental Services, Inc.	
Paul Jung - Safety and Health Manager	716-284-0431 (office) 716-609-1767 (cell)
Joseph Casper – Project Manager	631-707-4642 (cell)
Steven Coye – Site Superintendent	716-628-8387 (cell)
Ronald Scarbrough, CHST - Site Health and Safety Officer	716-923-5636 (cell)
Project Coordinators	
Kevin Mooney – GE Health and Safety Project Manager	413-553-6610 (cell)
Matt Calacone – GE Aerospace Project Manager (Alternate)	413-553-6614 (cell)
GE Plant Security	413-553-6625 (non-emergency) 413-553-6666 (emergency)
Ed Glaza – Anchor QEA	315-730-4685 (cell)
Chuck Guest – Anchor QEA	518-817-6291 (cell)
Randy Brown – Anchor QEA	315-720-6890 (cell)
Mike Flynn – Anchor QEA	413-281-5886 (cell)
OTHERS	
USEPA – Region 1	888-372-7341
Massachusetts One Call Dig Safe	811 or 888-344-7233
Office of Emergency Management – Berkshire County Sheriff	413-443-7220
Berkshire County Animal Control	413-448-9750
Berkshire County Department of Public Works (Water/Sewer)	413-499-9330
Eversource Energy (Electric)	800-592-2000
Berkshire Gas Company (Gas)	413-442-1511
MassDEP Spill/Emergency Hotline	888-304-1133
National Response Center	800-424-8802
Poison Control Center	800-222-1222
CHEMTREC	800-424-9300

11.7.1 Conditions for Implementation

The contingency plan will be activated by the Superintendent/SSHO immediately in the event of a fire or explosion, or emissions of toxic chemicals more than limits set forth by Federal, State, and local agencies. In the event of a spill or material release, it will be up to the Superintendent/SSHO to make a determination as to when emergency conditions exist, as opposed to routine maintenance of the site. His determination will depend upon the location of the spill, the size of the spill, weather conditions and the proximity of the release to workers, the community, and environmental receptors.

Once it becomes apparent that an emergency exists or that a disaster is impending, the Project Superintendent or his designee should immediately be notified and an immediate investigation

conducted. Assessment of the emergency should include assessing the severity of the situation and collecting enough information to make an initial action decision. This assessment and related information will be relayed and discussed with GE once it is verified workers are in a safe area, away from the emergency.

Assessing the emergency should include identifying injured person(s), if any, damage to buildings and equipment, noting potential impending damage if corrective action is not taken immediately, and itemizing resources required to correct the situation.

11.7.1.1 Fire or Explosion

Although the potential for fire or explosion is minimal, sources of risk do exist. These sources include welding gases, gasoline for portable equipment, diesel fuel for heavy equipment, powdered materials ad dust, and combustible debris in wooded areas. In the event of an explosion, possible emergency conditions would exist. Unless it is extinguished immediately, a fire or explosion will trigger implementation of these procedures.

11.7.1.2 Material Spills

Material Spills could occur during truck loading and from vehicle accidents. Additionally, equipment fueling operations could produce spills. Ultimately, a spill could contaminate receiving surface water or cause a release of vapors to the air. A spill of fuel could also ignite. A small spill should be cleaned up immediately but should not trigger activation of these procedures. Should an onsite spill occur, the immediate response will include closing off the source of the spill, if possible, application of the sorbent material or sand bagging, and street sweeping, as appropriate. All spills will be investigated, and a written report will be provided to the regulatory agencies in accordance with applicable regulations and permits.

11.7.1.3 Severe Weather

In the event of severe weather, the Site Superintendent and/or the SSHO have the authority to stop operations and direct evacuation procedures, if conditions warrant. All equipment will be secured and grounded. After the storm, a visual inspection will be performed by the Superintendent and/or the SSHO to check for damage and hazards. This will be performed before any work is resumed. If damage or hazards are noted, the designated or other Sevenson personnel will evaluate the conditions and implement corrective actions to repair the damage or eliminate the hazard. These actions will begin as soon as possible and will take precedence over other site activities.

A portion of the planned work will take place in wooded areas, where evacuations may be more difficult than usual. In the event work is being performed in these areas when severe weather strikes, the above plans are to be followed unless an adjustment is made by the SSHO. These adjustments to the execution of the plan will be verbally communicated from the SSHO, and workers will be expected to relay this information to all personnel they encounter. The resulting plan execution may resemble the standard plan to varying or no degrees, but will be documented post-event before the Site inspection.

11.7.2 Initial Action

Once the extent of the emergency is known, the Superintendent and the SSHO will make an immediate decision as to what initial steps should be taken to remedy the emergency situation. This first action, in the case of large-scale emergencies, usually consists of notifying responsible authorities and/or calling for the necessary assistance in order of priority.

The individual(s) should not endanger him or herself or others by attempting tasks for which the proper equipment is not available or with which he or she is unfamiliar. In all cases, if in doubt, wait until qualified help arrives before acting.

11.7.3 Corrective Action

When help arrives, the site superintendent/SSHO should immediately inform those called of the pertinent details of the situation. Corrective action should be continued until the situation is either under control or completely rectified. If corrective actions take considerable time, a long-term effort to complete the task should be developed. If the root cause of the event is identified to be an element in the Contractor HASP provided by GE, Sevenson will propose changes to GE regarding the appropriate sections in the plan.

11.7.4 Follow-Through

After the situation is corrected, the cause of the emergency event is to be determined and review of the corrective actions taken, etc. In the case of equipment failure, if negligence was not a factor, then revising maintenance procedures would be the most likely first preventive step. For natural disasters that cannot be prevented from recurring, the procedures followed in dealing with them can be reviewed to develop more effective action plans. The entire event, along with all of the responses, will be thoroughly documented for review by management and project supervisory personnel.

11.8 Spill Response and Control Plan

The purpose of this section is to define practices and procedures for the prevention, containment, and cleanup of accidental discharges of hazardous substances during the project. These substances include both the contaminated material encountered because of the construction project, such as contaminated soils and decontamination liquids, and construction materials typically found on any construction site, such as lubricating fluids, diesel fuel, gasoline, etc.

Spill prevention applies to all types of spills and can be described as the first and simplest approach to spill control. Human error is a major contributing factor to spills and releases. An awareness of spill consequences, preventive measures, and countermeasures will greatly reduce spill occurrences. A sound prevention program includes careful work practices, constant inspection, and immediate notification and correction of deficiencies. If a spill does occur, proper containment and cleanup procedures must then be followed to reduce the effect of the spill.

11.8.1 Prevention

Prevention of unnecessary spills is of priority. Prevention measures include:

- Operators and drivers will exercise extreme caution when transporting material around the site.
- When removing hoses from machines an appropriate and adequate supply of absorbents will be on hand. A supply of the following absorbents will be kept on-site, oil sorbent booms, rolls and pillows, universal towels and sheets, and vermiculite.
- Hoses will be capped when not connected to their appropriate fitting.
- All containers will be inspected daily for decay. No open container will be exposed to rainfall, snowfall, etc. without being emptied and cleaned of residue.
- All equipment will be inspected for leaks before and after service.
- Storage of material such as fuels, oils, and solvents on-site will be limited to the minimum required. All fluids will be stored in individual fluid containers appropriate and approved for the material. Most of the individual fluid containers will be further secured by storage in large, locked tool and equipment storage containers. Drums or other containers too large to be stored in containers will be stored raised off the ground on a liner and covered by plastic.

11.8.2 Reporting

All spills will be reported immediately to appropriate field and office management personnel. The sequence of reporting will be as follows:

- Notification by workers to the Project Superintendent and/or SSHO.
- The Project Superintendent or SSHO will immediately notify the CM, regardless of the size of the spill.
- Sevenson and the Client Representative will jointly determine the nature of the spill, its size, direction of travel, if anyone has been injured because of the spill and whether it requires immediate notification to regulatory agencies.
- Sevenson will have primary responsibility for notifying the regulatory agencies (National Response Center 1-800-424-8802 and/or MassDEP Spill Hotline 1-888-304-1133) unless Sevenson is directed otherwise. Sevenson will have follow-up responsibility to verify that the notification is made in a timely manner. A full list of emergency contacts and telephone numbers is included in this plan. This list includes Sevenson personnel, as well as federal, state and local authorities. This list will be posted in all trailers on-site.

Upon notification of a spill, all project activity will be immediately suspended and all necessary equipment and personnel will be diverted to spill control and containment. In the event of a spill, and regardless of the size, a Spill Incident Report will be submitted to the Client Representative with a copy within 48 hours of the incident.

11.8.3 Spill Response Equipment

Given the nature of this project, all the necessary equipment and personnel necessary to deal with the release of hazardous substances will be available on site. In addition to the heavy equipment and personal protective equipment, which is critical to spill control, Sevenson will have on hand an ample amount of sorbent materials, UN1A2 open top drums and overpacks.

11.8.4 Confinement and Containment

Prior to entering a spill area, all workers must be protected from any adverse effects of the spilled material. No one will enter any spill area alone. The SSHO will determine the level of protection required for response activities. To the extent practicable, the area will immediately be cordoned off and, if appropriate, exclusion, contamination reduction, and support zones will be established.

The decision to use confinement techniques such as diversion, diking and retention, are generally based on time, personnel, equipment, and supplies. As mentioned above, all necessary resources will be available on-site at all times. To the extent the nature of the material is known, the decision should be made based upon a review of the harmful effects of the material. In the event of a large migrating spill, an unlikely circumstance, diversion techniques, such as placing a soil wall or absorbent boom ahead of the spill, will be implemented first. Subsequently, diking techniques, such as using material such as sand covered with liner material (PVC, Hypalon) should be implemented.

11.8.5 Cleanup

Once a spill has been contained and the source of the spill corrected and controlled, cleanup can begin. Spill cleanup can proceed at the same time as containment if feasible. Supervisory personnel will determine the appropriate cleanup methods. The SSHO will determine the appropriate level of protection depending upon the nature of the material.

- The first action will be to absorb free liquids with absorbent pads, booms, pillows, or clay. The absorbent material will be placed in drums and moved to an appropriate storage location.

After the removal of free liquids, soil believed to be contaminated will be excavated and containerized in drums or stockpiled on poly sheeting and covered for further testing.

- Dry spills, while posing less of a risk of migration, will still require appropriate and immediate action. The nature of the spilled material will be ascertained. The spilled material will be recovered for reuse if appropriate. Material which cannot be recovered and residual contaminated soil will be shoveled into 55-gallon drums, placed in the drum storage area, and sampled and analyzed for waste characterization and disposal.
- Once containerized, Sevenson will provide for the appropriate sampling and analysis for waste characterization and disposal facility acceptance. Results of waste characterization analysis, waste profiles, and manifests will be provided to the Client Representative for review.
- All spilled material and visually contaminated soil will be excavated and containerized in the initial spill response. If there appears to be a possibility that contaminants have migrated into the surrounding soil, post-construction sampling will be initiated. Soil samples will be taken from the areas of suspected contamination and analyzed for the compounds which were released.

Personnel Decontamination - Spill response operations will be performed in accordance with the provisions of this PHASP.

11.9 Report/Review

A written report will be made within 24 hours of incident resolution. The Client Representative will be provided with a copy. The Spill Response Report shall include documentation of the spill, cause of the spill, summarize the response actions taken, and record the after-the-fact engineering evaluation and proposed means of preventing recurrence. The Contractor shall submit the Report to the CM within 48 hours of the incident. In addition, all key personnel will have a meeting within 48 hours of the incident to discuss and critique all the aspects of the Emergency Contingency Plan according to new site conditions and lessons learned.

12.0 Inspection and Reporting

12.1 Safety and Health Inspections

Safety and Health inspections will be conducted to discover, through specific, methodical auditing, checking, or inspection procedures, conditions and work practice that lead to job accidents and illnesses.

The Health and Safety Manager shall be responsible for ensuring that inspections are conducted at the frequency stated, reviewing the Daily Safety and Inspection Logs for completeness, thoroughness, and trends; performing monthly project inspections; and training site personnel on proper inspection techniques. The SSHO shall be responsible for ensuring that daily inspections are conducted, reviewing the inspections findings and corrective actions for applicability and thoroughness, and providing the site management personnel with a summary of inspection findings each month. To supplement this effort, Sevenson will utilize the “Safe Plan of Action” form, included in the Appendix B. The intention of this form is to have workers identify the steps to an individual definable feature of work (DFW), the hazards associated with that DFW, and the tools and resources available to complete the task safely. It is also intended to identify tools and resources that may be lacking, that need to be made available to the crew prior to starting the task. Safe Plan of Action forms should be completed at the start of each DFW by the group of workers performing the DFW. There could be multiple forms filled out by unique crews for multiple but separate DFW’s starting on the same day.

12.2 Weekly Safety Reports

The Sevenson SSHO will generate and maintain a weekly safety report, which can be made available to the client or their representatives at any time upon request. The weekly safety report will include:

- The names of all Sevenson and subcontractor personnel employed at the site at any time during the week, and the names and duties of key personnel including the Project Manager, Project Superintendent, SSHO, excavation competent person, and crane operation-competent person (if applicable).
- A summary of all health and safety incidents describing any medical treatment that was provided during the week, the current work status of any individuals affected the names of the individuals that observed the incident, and actions taken to address the unsafe act or unsafe condition.
- A summary of all health and safety near misses or observations providing an opportunity for shared learning and future hazard avoidance. For any health or safety incident or near miss, list the date, the nature of the incident or near miss, and the names of the individuals involved.
- The total number of labor hours worked at the site during the week and project.
- Internal health and safety audits performed as part of the PHASP.
- Results of behavior-based observations and feedback evaluations.

Additional information provided to the CM will be required as work progresses. The information below will be presented to the CM on a weekly basis during contractor meetings:

- Lagging indicators (injuries, incidents, spills, etc.)
- Leading indicators (near misses, employee observations, etc.)
- Number of, and reasons for, Safety Stops
- Rewards and recognitions given
- Review of the weekly schedule, including potential impacts on the plan/schedule
- Hazard recognition topic

12.3 Certification of Worker/Visitor Acknowledgment

A Certification of Worker/Visitor Acknowledgment will be administered to all new employees prior to initial entry onto the Site. The certification/acknowledgment will be filed and stored by the SSHO and include both formal, field and site-specific training received, personal protective equipment supplied and trained in use, and medical certification. Certificates and Medical certification will be maintained on file in a locked cabinet at the site.

12.4 Incident Reports

Incident reporting will ensure an immediate report on all incidents/accidents and provide an effective follow-up for corrective action in order to eliminate unsafe practices and unsafe conditions. An **Incident/Accident Form** must be completed within 24 hours of the Incident/Accident. This report is utilized in the event of injuries, off-site releases, utility breaks, or accidents. Immediately following the incident/accident, the Site Superintendent and the SSHO will initiate an Incident/Accident Investigation. An Accident Report will be completed and submitted to the CM within 24 hours (based on the complexity or severity of the incident a final version may not be available within 24 hours, a report marked preliminary will be submitted within 24 hours with an estimated completion date for the final.) "Near misses" will be documented by the SSHO and discussed at the morning safety briefings to educate the work force to potentially hazardous operations or practices.

Near misses will be reported following the same structure and timeline as incidents. For all reports, photographic support will be included to depict the conditions surrounding the event.

12.5 Daily Air Monitoring Report

The Daily Air Monitoring Report will be prepared by the SSHO. The Report will include all air monitoring data collected including real-time monitoring, personal monitoring within the Exclusion Zone, and perimeter monitoring. The Report will be made available to the CM on a daily basis.

12.6 Daily Toolbox Talks

A daily site briefing will be held to discuss current work activities and hazards for the day along with the air monitoring results from the previous day. The SSHO/Superintendent will conduct Daily Toolbox Talks with ALL on-site personnel**.**

12.7 Job Safety Enhancement Program (JSEP)

The Job Safety Enhancement Program (JSEP) is a tool used at Sevenson projects to identify behaviors and unsafe workplace conditions. These reports are reviewed and discussed by the Project Manager, Site Superintendent, Quality Control Manager, and the SSHO to determine if corrective actions are required. Each completed form is recorded on a tracking matrix to ensure the report has been reviewed, responsible person for corrections properly closed out and discussed with the affected site personnel. Sevenson encourages all personnel involved in a project to complete a JSEP Form.

Appendix A
Activity Hazard Analysis

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Backfilling Operations

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Excavations

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity \ Probability	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Deliver/dump fill material	Struck by Pinch points(dump gate) Slips/trips/falls Truck tip over Dust exposure	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you. Use spotters when appropriate. Inspect property for signs of poisonous plants, flying insects, spider webs/nests. Use an over-the-counter bug repellant spray to prevent mosquito and ticks bites. Inspect clothing regularly for ticks. Do not disturb or try to catch or corner wild life, retreat from area. Wear hand protection with a ANSI Cut Rating of A4 impact protected. Avoid placing fingers and hands in areas that could allow them to be pinched. Inspect site prior to starting work and identify hazards for slips, trips, falls, uneven ground, holes, debris, branches, etc. Mark areas on ground for tripping hazards or delineate and label those areas identified that should be avoided. Ground workers will maintain a sufficient distance from the truck such that a fully lifted bed would not reach any person if it tipped. Drivers will remain in the cab with seatbelts on, and don site specific PPE if leaving the cab is necessary. Employ dust control measures such as wet downs, ventilation, or distance and respiratory protection.	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Excavator backfilling	Struck by Machine tipover Excavation cave-ins	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand in swing radius of excavator while it is in motion. Wear seatbelt at all times in the cab. Before any work is performed, ensure the machine is on stable ground. Ground personnel are to keep a distance equal to the height of the machine and only approach equipment after given operator permission. Barricade open excavations. As excavation is backfilled, be aware of cave in potential. Maintain the proper slope for soil classification. Provide access/ egress to excavation.	L
	Backfill grading with bulldozer	Struck by Dozer tip over	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand in swing radius of excavator while it is in motion. Wear seatbelt at all times in the cab. Before any work is performed, ensure the machine is on stable ground. Ground personnel are to keep a distance equal to the height of the machine and only approach equipment after given operator permission.	L
	Backfill compacting with roller	Struck by Excessive vibration Roller tip over	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near roller while it is in motion. These machines come with built-in controls for vibrations, assuming a "normal" workday. Monitor the physical effects of vibration and take breaks as necessary. Eliminate all feelings of numbness or tingling before restarting the roller operations. Wear seatbelt at all times in the cab. Before any work is performed, ensure the machine is on stable ground. Ground personnel are to keep a distance equal to the height of the machine and only approach equipment after given operator permission.	L

	EQUIPMENT	TRAINING	INSPECTION
	Dump truck	Site Orientation	Inspect load prior to dumping to ensure load is evenly distributed across dump bed.
	Excavator, roller, bulldozer	Site Orientation Qualified Operator PPE Program	Initial equipment inspection by competent person to verify compliance with Section 18-5 for the the specific equipment being delivered. Operators will hold up-to-date certifications for the respective equipment.
	PPE	PPE Program	PPE is to be inspected by the user before donning.

Involved Personnel:
Superintendent, operator(s), truck driver, SSHO; Competent Person for Excavations: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO	Ron Scarborough	19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Clearing and Grubbing

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Site Wide

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity	Probability: Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Inspect area prior to clearing	Trips and falls - natural terrain	Inspect site prior to starting work and identify hazards for slips, trips, falls, uneven ground, holes, debris, branches, etc. Mark areas on ground for tripping hazards or delineate and label those areas identified that should be avoided	L
		Flying insects	Perform visual inspection for signs of flying insect activity in the area. If flying insects are observed, note area and inform workers.	
		Poisonous plants	Avoid walking through or making contact with poisonous plants, e.g., poison ivy, oak, sumac, or giant hog weed.	
		Tick and mosquito borne illnesses	Use insect repellent such as DEET or permethrin to control exposure to ticks and/or mosquitoes.	
	Establish controls prevent personnel from entering clearing area with rope and fence posts	Trips and falls - natural terrain	Inspect site prior to starting work and identify hazards for slips, trips, falls, uneven ground, holes, debris, branches, etc. Mark areas on ground for tripping hazards or delineate and label those areas identified that should be avoided.	L
		Struck by post pounder	Wear ANSI Cut level A4 or higher glove with impact protection when using fence post pounder.	
		Impact noise	Wear hearing protection while driving fence posts with post pounder.	
		Abrasion/rope burn	Wear ANSI Cut level A4 or higher glove when stringing rope.	
	Maneuver equipped excavator to target tree	Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	L
		Roll over	Utilize seat belt while the excavator is in motion. Avoid conditions that may cause the excavator to roll over.	

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Clear/grub with excavator	Hydraulic spill Loss of control of vegetation after removal	Stage spill kit near the controlled area. Avoid hitting hydraulic lines on trees, branches, limbs. No ground personnel are permitted in the controlled area during clearing operations.	L
	Maneuver vegetation to laydown area and lay down	Loss of control of vegetation Flying tree debris from vegetation Flying insects	No ground personnel are permitted in the controlled area during clearing operations. Excavator windshield protected by cage/screen to prevent debris from flying through windshield. Keep excavator doors and windows closed to keep any swarming insects from entering cab of excavator.	L

	EQUIPMENT	TRAINING	INSPECTION
	Excavator	Qualified operator	Daily equipment inspection by operator to verify compliance with Section 18-5 for the the specific equipment being utilized.
	Spill kit	Site Orientation PPE	Daily equipment inspection by operator to verify compliance with Section 18-5 for the the specific equipment being utilized.
	Hand tools - post pounder	Small hand tools	Inspect hand tools prior to each use by the person using the tool.
	T-Posts and rope	N/A	N/A
	PPE	PPE Program	PPE shall be inspected by the user prior to use.

Involved Personnel:
Superintendent, equipment operator/driver, laborer(s), SSHO; Competent Person for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Demobilizing Equipment

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Site Wide

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity	Probability: Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Decontaminate Equipment	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand near excavator or auger while it is in motion.	L
		Back Strain	Avoid awkward postures while reaching or working on sampling device. Use the machine for all feasible sampling tasks.	
		Chemical Exposure	Sampler will wear respiratory protection of N95 grade or better, a faceshield where needed, and in-tact, disposable, chemical gloves.	
		Pinch Points/Cuts/ Lacerations	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be hit by the pressure washer or heavy equipment.	
	Receive/Stage Delivery Truck/Trailer	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near tractor or trailer while it is in motion.	L
	Access Equipment Cab	Slips/trips/falls	Utilize three points of contact while accessing equipment cab. Wear hard toed footwear that meets ASTM F2413 Standards.	L
		Struck by	Equipment should be off while entering to avoid accidental control operation. Ensure proper seated position and seatbelt in place before operating equipment.	
	Drive Equipment On Trailer	Equipment rollover/ malfunction	Do not stand along side of the equipment being driven off the trailer. Utilize spotters to keep the operator within the confines of the trailer deck.	L
		Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Secure Binders and Load Chains	Struck By Pinch Points Sprains Strains Slip/Trip/Fall Dropped Object	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you. Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when removing load binders and chains. Avoid pushing or pulling equipment in awkward positions. Use sound ergonomic practices in all tasks. Do not walk backwards on drop deck trailers. Wear hard toed footwear that meets ASTM F2413 standards.	L

	EQUIPMENT	TRAINING	INSPECTION
	Tractor/Trailer	Site Orientation	Check for proper PPE if driver leaves the cab of the tractor.
	Loader, excavator, water truck, telehandler	Site Orientation Qualified Operator PPE Program	Initial equipment inspection by competent person to verify compliance with Section 18-5 for the the specific equipment being delivered. Operators will hold up-to-date certifications for the respective equipment.
	PPE	PPE Program	PPE is to be inspected by the user before donning.

Involved Personnel:
Superintendent, equipment operator, laborer(s), truck driver, SSHO; Competent Person Lead Exposure and for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Erosion and Sediment Controls

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Site Wide

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity	Probability: Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

JOB STEPS		HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Receive and stage delivery truck/trailer	Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near tractor or trailer while it is in motion.	L
	Remove binders and load chains	Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	L
		Pinch points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when removing load binders and chains.	
		Sprains Strains	Avoid pushing or pulling binders or load chains in awkward positions. Use sound ergonomic practices in all tasks.	
		Fall from trailer	Do not walk backwards on drop deck trailers.	
		Dropped object	Wear hard toed footwear that meets ASTM F2413 standards.	
	Unload erosion control equipment	Slips/trips/falls	Utilize three points of contact while accessing or dismounting the trailer. Wear hard toed footwear that meets ASTM F2413 Standards.	L
		Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	
		Pinch points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when handling equipment.	
		Back strain	Avoid moving equipment while in awkward positions and use team lifts when moving awkwardly shaped or large items.	

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Install erosion controls	Sprains and strains Pinch points Cuts/lacerations	Avoid pushing or pulling binders or load chains in awkward positions. Use sound ergonomic practices in all tasks. Avoid placing fingers and hands in areas that could allow them to be pinched when adjusting cribbing under trailer. Wear hard toed footwear that meets ASTM F2413 standards. Wear leather hand protection with a ANSI Cut Rating of A4 or better.	L

	EQUIPMENT	TRAINING	INSPECTION
	Tractor and trailer	Site Rules	Check for proper PPE if driver leaves the cab of the tractor.
	Hand tools	Hand Tool Program	Inspect hand tools prior to each use.
	PPE	PPE Program	PPE is to be inspected by the user before donning.
	Erosion control materials	Site Rules	Inspect materials and equipment for damage before implementing controls.

Involved Personnel:
Superintendent, laborer(s), truck driver, SSHO; Competent Person for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Excavation

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Trenching & Excavations

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity	Probability: Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Establish Utility Locations	Struck By Slip/Trip/Fall	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not enter the swing radius of the excavator while in operation. Wear ASTM F2413 footwear with a hard toe and sufficient treading.	L
	Excavation and Trenching of Soils	Fall Hazard Engulfment Struck By	Warning lines shall be placed around excavations to alert personnel to an open hole. Excavations greater than four feet in depth must have means of entry and exit, e.g., ramp, stairs, ladder. Excavations covered by this AHA may not exceed five feet in depth. Protection shall be provided by placing and keeping materials or equipment at least two feet from the edge of excavation. Excavation shall be inspected by a competent person prior to personnel entering the excavation to perform work. Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand in swing radius of excavator while it is in motion.	L
	Enter and Exit Excavation	Slips/Trips/Falls Hazardous Atmosphere	Maintain three points of contact when climbing ladders. Secure ladder to prevent side movement. Excavations greater than four feet in depth require air quality testing prior to personnel entering excavation.	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Excavation Operation	Utility Strikes Tipover/Ejection Overhead Hazards	Ensure active 811 ticket is available and verify the utility locator has had the three days to mark out the property and review GPR survey data. Do not operate equipment with the side of the tracks within two feet of the excavation. Wear seat belt while excavator is in motion. Overhead distribution and transmission lines are located along the southern portion of the site. Maintain a minimum clearance of 10 feet from these lines.	L

	EQUIPMENT	TRAINING	INSPECTION
	Dump truck	Site Orientation	Inspect load prior to dumping to ensure load is evenly distributed across dump bed.
	Excavator, roller, bulldozer	Site Orientation Qualified Operator PPE Program	Initial equipment inspection by competent person to verify compliance with Section 18-5 for the the specific equipment being delivered. Operators will hold up-to-date certifications for the respective equipment.
	PPE	PPE Program	PPE is to be inspected by the user before donning.

Involved Personnel:
Superintendent, Operator, Laborer, SSHO; Competent Person for Excavations: SSHO and/or Superintendent

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection, face shield and tyvek as determined by the SSHO.

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Mobilize Heavy Equipment

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Office/Laydown Area

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity	Probability: Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Receive and stage delivery truck/trailer	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near tractor or trailer while it is in motion.	L
	Remove binders and load chains	Struck By Pinch Points Sprains Strains Fall from Trailer Dropped Object	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you. Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when removing load binders and chains. Avoid pushing or pulling equipment in awkward positions. Use sound ergonomic practices in all tasks. Do not walk backwards on drop deck trailers. Wear hard toed footwear that meets ASTM F2413 standards.	L
	Operator access cab of equipment	Slips/trips/falls Struck By	Utilize three points of contact while accessing equipment cab. Wear hard toed footwear that meets ASTM F2413 Standards. Equipment should be off while entering to avoid accidental control operation. Ensure proper seated position and seatbelt in place before operating equipment.	L
	Drive equipment off trailer	Equipment Rollover/ Malfunction Struck By	Do not stand along side of the equipment being driven off the trailer. Utilize spotters to keep the operator within the confines of the trailer deck. Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	L

	EQUIPMENT	TRAINING	INSPECTION
	Tractor and trailer	Site rules	Check for proper PPE if driver leaves the cab of the tractor.
	Loader, excavator, water truck, telehandler	Site Orientation Qualified Operator PPE Program	Initial equipment inspection by competent person to verify compliance with Section 18-5 for the the specific equipment being delivered. Operators will hold up-to-date certifications for the respective equipment.
	PPE	PPE Program	PPE is to be inspected by the user before donning.

Involved Personnel:
Superintendent, equipment operator, laborer(s), truck driver, SSHO; Competent Person for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)

PRINTED NAME:	PRINTED TITLE:
Patrick Cuddy, ASP	Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Office Trailer Mobilization

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Office/Laydown Area

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity \ Probability	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Receive and stage trailer	Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near tractor or trailer while it is in motion.	L
	Place cribbing under trailer	Pinch points Sprains Strains	Wear leather hand protection with a ANSI Cut Rating of A4 or better and impact protection. Avoid placing fingers and hands in areas that could allow them to be pinched when placing cribbing under trailer. Avoid pushing or pulling equipment in awkward positions. Use sound ergonomic practices in all tasks.	L
	Level trailer by using jacks or the hydraulic tongue lift on the delivery truck	Pinch points	Wear leather hand protection with a ANSI Cut Rating of A4 or better and impact protection. Body parts shall remain clear of cribbing while the trailer is being raised or lowered by jack(s) or tongue lift.	L
	Adjust cribbing as needed	Sprains and strains Pinch points	Avoid pushing or pulling equipment in awkward positions. Use sound ergonomic practices in all tasks. Avoid placing fingers and hands in areas that could allow them to be pinched when adjusting cribbing under trailer.Wear hard toed footwear that meets ASTM F2413 standards.	L
	Detach trailer from delivery truck ball	Pinch points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Ensure no one is in the pinch area when lower hydraulic tongue lift to release ball from receiver. No truck or trailer motion is allowed while hands and fingers are exposed to pinch points.	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Install hurricane strapping on trailer	Utility strikes Struck by Cuts/lacerations	Ensure active 811 ticket is available and verify the utility locator has had the three days to mark out the property. Be mindful of hand placement when driving hurricane strap rods into ground holder. Wear leather hand protection with a ANSI Cut Rating of A4 or better and impact protection to protect hand against contact with rod driving tool. Wear leather hand protection with a ANSI Cut Rating of A4 or better and impact protection to protect against the sharp edges of the hurricane strapping.	L
	Install aluminum stairs	Pinch points Sprains/strains	Wear leather hand protection with a ANSI Cut Rating of A4 or better and impact protection to protect against pinching hand(s) between the trailer and the stairs. Avoid pushing or pulling equipment in awkward positions. Use sound ergonomic practices in all tasks.	L

	EQUIPMENT	TRAINING	INSPECTION
	Tractor and trailer	Site Rules	Check for proper PPE if driver leaves the cab of the tractor.
	Hand tools	Hand Tool Program	Inspect hand tools prior to each use.
	PPE	PPE Program	PPE is to be inspected by the user before donning.
	Cribbing	N/A	Check cribbing for damage prior to installation.
	Aluminum Stairs	N/A	Inspect stairs for damage prior to installation.

Involved Personnel:
Superintendent, laborer(s), truck driver, SSHO; Competent Person for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)

PRINTED NAME:	PRINTED TITLE:
Patrick Cuddy, ASP	Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Sampling Soils/Water

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Site Wide

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity \ Probability	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Prepare Sampling Equipment	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand near excavator or auger while it is in motion.	L
		Back Strain	Avoid awkward postures while assembling sampling equipment.	
		Pinch Points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when mounting the equipment.	
	Collect Samples	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand near excavator or auger while it is in motion.	L
		Back Strain	Avoid awkward postures while reaching or working on sampling device. Use the machine for all feasible sampling tasks.	
		Chemical Exposure	Sampler will wear respiratory protection of N95 grade or better, a faceshield where needed, and in-tact, disposable, chemical gloves.	
	Remove Sampling Equipment	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand near excavator or auger while it is in motion.	L
		Back Strain	Avoid awkward postures while assembling sampling equipment.	
		Pinch Points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when removing the equipment.	

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Decontaminate Equipment	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand near excavator or auger while it is in motion.	L
		Back Strain	Avoid awkward postures while reaching or working on sampling device. Use the machine for all feasible sampling tasks.	
		Chemical Exposure	Sampler will wear respiratory protection of N95 grade or better, a faceshield where needed, and in-tact, disposable, chemical gloves.	
		Pinch Points/Cuts/ Lacerations	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be hit by the pressure washer or heavy equipment.	

	EQUIPMENT	TRAINING	INSPECTION
	Sampling Equipment	Hand Tools Site Rules	Inspect hand tools prior to use. Use positioning and above-listed PPE to maintain safe work.
	PPE	PPE Program	PPE is to be inspected by the user before donning.

Involved Personnel:
Superintendent, operator(s), sample technician, SSHO; Competent Person for Lead Exposure and for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Site Survey Activities

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Site Wide

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity \ Probability	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Walking for survey	Slips/Trips/Falls Poisonous Plants Insects	Inspect area prior to starting topo survey for uneven ground, holes, tripping hazards, debris, branches, cloths line, etc. Mark areas on ground or tripping hazards that should be avoided. Inspect property for signs of poisonous plants, flying insects, spider webs/nests. Use an over-the-counter bug repellant spray to prevent mosquito and ticks bites. Inspect clothing regularly for ticks. Do not disturb or try to catch or corner wild life, retreat from area.	L
	Site navigation	Struck By Working Alone	Always approach equipment from within the operators view and operator acknowledges worker has entered the area or potential swing radius. High visibility clothing will be required whenever survey work is being performed. Extra care must be taken by surveyor. The use of traffic cones and other warning devices will be used to alert workers to their location. Visual contact, 2-way radio, or use of the “buddy” system will be required for all survey operations.	L
	Setting survey points and placing stakes	Pinch Points/Struck By	Use caution when setting up or moving tripod Surveyor shall Wear leather hand protection with a ANSI Cut Rating of A4 impact protected. Avoid placing fingers and hands in areas that could allow them to be pinched by the tripod. When placing stakes into the ground use proper hand positioning when striking marker with mallet.	L

	EQUIPMENT	TRAINING	INSPECTION
	Two-way radio	N/A	Inspect for battery charge, function, and verify channel to be used.

	EQUIPMENT	TRAINING	INSPECTION
	Survey equipmnt	Site Orientation	All tools are to be inspected daily.
	Hand tools	Hand Tool Program	Inspect hand tools prior to each use by the person using the tool.
	PPE	PPE Program	PPE shall be inspected by the user prior to use.

Involved Personnel:
Superintendent, surveyor(s), SSHO; Competent Person for PPE: SSHO; Competent Person for PPE: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Temporary Utility Installation

Date: 19 June, 2026

Overall RAC (Use highest code): M

Location: Office/Laydown Area

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified.

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity \ Probability	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Receive and stage delivery truck/trailer	Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near tractor or trailer while it is in motion.	L
	Remove binders and load chains	Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	L
		Pinch points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when removing load binders and chains.	
		Sprains Strains	Avoid pushing or pulling binders or load chains in awkward positions. Use sound ergonomic practices in all tasks.	
		Fall from trailer	Do not walk backwards on drop deck trailers.	
		Dropped object	Wear hard toed footwear that meets ASTM F2413 standards.	
	Unload utility equipment	Slips/trips/falls	Utilize three points of contact while accessing or dismounting the trailer. Wear hard toed footwear that meets ASTM F2413 Standards.	L
		Struck by	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator, if you can't see the operator, the operator can't see you.	
		Pinch points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when handling equipment.	
		Back strain	Avoid moving equipment while in awkward positions and use team lifts when moving awkwardly shaped or large items.	

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Install utilities	Electrocution Pinch points Strains/sprains Chemical contact (glue) Dropped objects	Verify power has not been established to utility sources by respective utility companies. Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when handling equipment. Avoid performing work while in awkward positions and use team lifts when installing equipment. Review SDSs for product being used. Only use PVC cleaner and glue as directed by the manufacturer in well ventilated areas. Wear nitrile gloves when handing this product. Wear hard toed footwear that meets ASTM F2413 standards.	L
	Verify utility function	Arc flash Electrocution Pressure releases	Work on exposed energized exposed electrical system requires a separate AHA be developed along with a preparatory phase meeting prior to performing the work. Qualified electrician must test the voltage involved. Before testing, visually inspect connections for leaks or errors. During testing, maintain distance from pressurized couplings to prevent whipping impacts. Hose connections will have safety ties at all connections.	M

	EQUIPMENT	TRAINING	INSPECTION
	Tractor and trailer	Site Rules	Check for proper PPE if driver leaves the cab of the tractor.
	Hand tools	Hand Tool Program	Inspect hand tools prior to each use.
	PPE	PPE Program	PPE is to be inspected by the user before donning.

Involved Personnel:
Superintendent, laborer(s), electrician(s), truck driver, SSHO; Competent Person for Excavations: SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact-protected or higher glove, as required - hearing protection

Approval Authority (*digital signature*)	
PRINTED NAME: Patrick Cuddy, ASP	PRINTED TITLE: Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

ACTIVITY HAZARD ANALYSIS (AHA)

Purpose: The Activity Hazard Analysis is a tool used in the Risk Management Process. Risk management is a business process that includes the identification, assessment, and prioritizing of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events to an acceptable level.

The overall residual risk assessment code (RAC) must be communicated and accepted by the proper approval authority before beginning the activity.

AHAs must be provided to, and reviewed by, all involved employees prior to starting the task. Each employee must document their review with a signature in the last section of form.

Activity: Traffic Controls

Date: 19 June, 2026

Overall RAC (Use highest code): L

Location: Access and Haul Roads

Prepared By: Patrick Cuddy, ASP

Reviewed By: Paul Jung, CIH, CSP

Notes: AHA must be updated by Superintendent and field crew prior to the start of the task to ensure all hazards have been identified

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Medium Risk
L = Low Risk

Severity \ Probability	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Moderate	H	M	M	L	L
Negligible	M	L	L	L	L

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Establish Access and Signage	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the driver, if you can't see the driver, the driver can't see you. Do not stand near tractor or trailer while it is in motion.	L
		Slip/Trip/Fall	Avoid walking in areas where the ground conditions are not visible. If that's not practical, ensure the area is free of obstacles or conditions which would lead to a worker potentially losing their balance.	
		Pinch Points	Wear leather hand protection with a ANSI Cut Rating of A4 or better. Avoid placing fingers and hands in areas that could allow them to be pinched when using hand or power tools.	
		Poisonous Plants/ Biological Exposure	Inspect property for signs of poisonous plants, flying insects, spider webs/nests. Use an over-the-counter bug repellent spray to prevent mosquito and ticks bites. Inspect clothing regularly for ticks. Do not disturb or try to catch or corner wild life, retreat from area.	

	JOB STEPS	HAZARDS (Recognized/Anticipated)	CONTROLS (ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS)	RESIDUAL RAC
	Direct Traffic	Struck By	Ground persons will wear ANSI Class 2 high visibility upper body garment. Stay within eye sight of the operator- if you can't see the operator the operator can't see you. Do not stand directly in front of or behind vehicles.	L
		Poisonous Plants/ Biological Exposure	Inspect property for signs of poisonous plants, flying insects, spider webs/nests. Use an over-the-counter bug repellent spray to prevent mosquito and ticks bites. Inspect clothing regularly for ticks. Do not disturb or try to catch or corner wild life, retreat from area.	
		Dust Exposure	Dust monitors are set up around the site perimeter to provide real-time data regarding airborne concentrations of respirable dust. If these concentrations exceed action levels determined in the SSHP, employ dust control measures such as ventilation, wetting-down, and/or personal protective equipment.	
		Struck By (Road Debris)	Traffic controllers should maintain a distance such that if the truck or equipment were to tip over, they are clear. Remove large rocks, wood, or other debris from roadways before allowing traffic through.	

	EQUIPMENT	TRAINING	INSPECTION
	Truck, Trailer	Site Rules Qualified Operator	If the driver leaves the cab, they must have proper PPE. All site personnel have Stop Work Authority.
	Heavy Equipment	Site Rules Certified Operator	Inspect all equipment before each use. Operators must maintain up-to-date certifications for each piece of equipment used.
	PPE	PPE Program	PPE shall be inspected by the user before donning.
	Hand Tools	Hand Tool Program	Inspect hand tools prior to each use.

Involved Personnel:
Superintendent, laborer(s), truck driver, operator, SSHO

PPE Required:
Hard hat/helmet, ANZI Z87.1 eye protection, ASTM F2413 footwear, ANSI Class 2 high visibility upper body garment, ANSI Cut level A4 impact protected or higher glove, as required - hearing protection as needed.

Approval Authority (*digital signature*)

PRINTED NAME:	PRINTED TITLE:
Patrick Cuddy, ASP	Ass. Dir. of Health and Safety
DIGITAL SIGNATURE: 	DATE: 19 June, 2026

EMPLOYEE DOCUMENTATION SHEET

AHAs must be provided to and reviewed by all involved employees prior to starting the task. Each employee must document their review with a signature.

NAME	OCCUPATION / DESIGNATION (Job Title) / (Competent or Qualified Person)	SIGNATURE	DATE
Ron Scarborough	SSHO		19 June, 2026

PREVIOUS EDITIONS ARE OBSOLETE.

Appendix B
Health & Safety Forms

Sevenson Environmental Services, Inc.

TRAINING ACKNOWLEDGMENT FORM

NAME:

ADDRESS:

SOCIAL SECURITY NO.:

EMPLOYER:

I have completed and understand the training program for work to be carried out during work at the Site, including the following topics:

a. Work Rules and Safety Requirements
b. Personal Protection Equipment
c. Potentially Hazardous Chemicals
d. Emergency Equipment and Plan
e. Reporting Injuries and Illnesses
f. Emergency Procedures
g. Job Assignment
h. Personal Hygiene
i. Medical Tests
j. Standard Operating Procedures
k. Applicable Rules and Regulations
l. Respiratory Protection
M. Site Safety and Health Plan was reviewed
N. Stop Work Authority

Employee Signature: _____	 Date:_____

I certify that this Survey Site Person has received adequate safety training and instruction and that this person is proficient in the use of protective clothing and equipment and knowledgeable in all aspects of the Health and Safety Plan.

Safety Officer Signature: _____	 Date: _____

Job Safety Enhancement Program

JSEP Form

"You can force compliance, you have to earn commitment"

☐ Safety Observation ☐ Task Improvement ☐ Hazard Identification

Description:_____

Recommendations:_____

Submitted By:_____ Date:_____

JESP Number:_____

Follow up or Corrective Action (if required):_____

Person Responsible for Follow up or Corrective Action:_____

Estimated Completion Date:_____ Actual Completion Date:_____

Person responsible for verification:_____ Date:_____

Sevenson Environmental Services, Inc.

FLOAT PLAN

Complete this plan before you go boating.
Upon return, take the plan back to the Site Safety & Health Officer.

Pilot's Name : _____ **Phone # :**
Address : _____

DESCRIPTION OF VESSEL

Type of vessel : _____ **Length of vessel :** _____
Engine(s) Number/Type/Horsepower : _____
Fuel Type/Capacity : _____ Watercraft Checked-in proper working order _____

PASSENGERS ON-BOARD

Name	Age	Address & Phone #

TRIP DETAILS

Departure Date : ___/ /_____ **Departure Time :** ____ AM/PM
Point of Departure : _____

Description of work: _____

_____

Point of Return : _____

Planned Return Date : _____/ /_____ **Planned Return Time :**

SAFETY EQUIPMENT ON-BOARD

☒ **PFDs** ☒ **Air Horn** ☐ **Flag and Flashlight** ☒ **Anchor Lines** ☐ **Anchor**
☐ **Paddle** ☒ **Fire Extinguisher**

NOTIFICATION

If not returned by _____ please Dial 911

Boating Checklist

Day:	Date:	Name (Print)	Signature:

Question	Yes	No	N/A
1. Float plan completed?			
2. Are safety cans being used for gasoline?			
3. Vessel inspected for cracks/leaks?			
4. Sufficient fuel/oil?			
5. One 1-A: 10-B-C fire extinguisher on board?			
6. Type I or II life preservers on all personnel?			
7. Type IV flotation device on board?			
8. Air horn?			
9. Spill control materials on hand?			
10. Are all employees provided with proper PPE?			
11. Severe weather protocol reviewed?			
12. Has the weight capacity of the vessel been exceeded?			
13. One pair of oars on board?			
14. First Aid Kit readily available?			

THIS FORM IS TO BE COMPLETED PRIOR TO BOAT LAUNCH

Initial Equipment Checklist

Date: _____ Owner/Vendor: _____

Type of Equipment Checked: _____ Sevenson Equip. #: _____

Model #: _____ S/N or VIN: _____

Equipment Hrs.: _____

Safety Equipment	Pass	Fail	N/A	Comments
Has the equipment been inspected by a qualified mechanic and found to be in safe operating condition prior ti being put into service?				
Are only designated and qualified operators assigned to operate the equipment?				
Lights				
Backup Alarm – Fully operational				
Seat Belt				
Horn - Operational				
Have all broken windows been replaced?				
Windshield – wipers, defrosting/defogging eq. operational?				
Fire Extinguisher - 10 lb. B.C.				
Are fuel tanks located in a manner to prevent spills or overflows from running onto engine, exhaust, or electrical equipment?				
Brakes Tested & Emergency Brake				
Is a safe means of access to the cab provided (steps, grab bars, non-slip surfaces)?				
Is operator protected against falling or flying objects?				
Are FOPS provided when operator is exposed to falling hazards?				
Moving parts, belts, gears, shafts, etc. guarded when exposed to contact by personnel				
Exhaust discharges from equipment away from cab so it doesn't endanger or obstruct operators view				
Is protection against contact w/ hot surfaces, exhaust, etc. provided?				
Operators Manual				
Other				

Physical Inspection			Comments
Evidence of Contamination	Yes	No	
Certificate of Decontamination	Yes	No	
Damage to frame, body and/or operable parts	Yes	No	
Hoses	Good	Bad	
Fluid Levels	Good	Bad	
Tires/tracks	Good	Bad	
Other			

_____ _____ _____

Name of Inspecting Person Signature of Inspecting Person Date

Sevenson Environmental Services, Inc.

Equip Type_____ Equip. ID#_____ Week ending _____ Hours/Miles_____ **ITEM(S) INSPECTED**	MON	TUE	WED	THU	F R I	SAT	SUN
Falling Object Protective Structure (FOP)							
Roll-Over Protective Structure (ROP)							
Seat Belts							
Operator Seat Bar(s)							
Side Shields, Screens, or Cab							
Grab Handles							
Back-Up Alarm - Working							
Lights							
Guards							
Horn							
Anti-Skid Tread Steps Clear of Mud							
Safety Signs/Warning Labels							
Fire Extinguisher							
Oil Level (Full/ No Leaks)							
Operator's Area Clear of Extra Materials							
Controls Function Properly							
Hydraulic System Level (Full/ No Leaks)							
Parking Brake							
Lift Arm and Bucket							
Tires/Tracks							
Steering							
Other:							
Other:							
Operators Initials							

Instructions: Inspect all applicable items at beginning of each shift. If item is found to be unsatisfactory report to Safety Officer or Superintendent immediately.

Sevenson Environmental Services, Inc.

EMPLOYEE & VISITOR LOG

DATE:

PRINT NAME	SIGNATURE	COMPANY	Time In	Time Out

Sevenson Environmental Services, Inc.
DAILY SAFETY REPORT

DATE:

WORK PERIOD COVERED:

WEATHER CONDITIONS:

SUMMARY OF DAY'S WORK ACTIVITY:

EQUIPMENT UTILIZED BY SAFETY MONITORS:

PROTECTIVE CLOTHING AND EQUIPMENT BEING USED BY TASK:

PHYSICAL CONDITION OF WORKERS (any heat or cold stress or other medical problems):

ACCIDENTS OR BREACH OF PROCEDURES:

DESCRIPTION OF MONITORING AND AIR SAMPLES TAKEN:

TYPE AND NUMBER OF PERMITS ISSUED:

SUMMARY OF TRAINING AND SAFETY MEETING:

NAME:	TITLE: Site Health and Safety Officer
SIGNATURE:	

Sevenson Environmental Services, Inc.
Daily Safety Meeting

DATE: **DAY:**	**JOB NAME:** **& NUMBER:**
TOPIC:	

PRINT	SIGNATURE:

Sevenson Environmental Services, Inc.

CONFINED SPACE PERMIT

Date_____ Time of Issue_____ Length of Permit_____
Location _____ Equipment ID_____
Purpose of Entry & Description of Work _____

Authorized Entrant(s)_____
Will "HOT" Work be authorized for this Entry? ☐ No; ☐ Yes (describe)_____

HAZARDOUS IDENTIFICATION

Indicate ALL potential Hazards of this Permit Space:	YES	N/A
a. Contains or may contain a hazardous atmosphere	☐	☐
b. Contains a material for potential engulfment	☐	☐
c. Has an internal configuration for potential entrapment	☐	☐

If "Yes", describe _____

d. Contains the following serious safety or health Hazards:_____

PRE-ENTRY PREPARATION

		YES	N/A	Done			Removed		
				Date	Time	By	Date	Time	By
1. Lines broken and/or blanked:									
Line Contents	Location								
a.									
b.									
c.									
2. Drain or at a workable level									
3. Purge - flush and vent									
4. Force air to bottom & vent									
5. Lock out power feeds:									
Equip/Location of Lock out									
a.									
b.									
6. Shut-off heating systems									
7. Other:									

TEST TO BE TAKEN

	P.E.L.	Time Tester Yes	Time Tester N/A	Time Tester Results	Time Tester Results	Time Tester Results
% of Oxygen	19.5% to 23%					
% of LEL	Any % over 10					
Carbon Monoxide	25 ppm					
Hydrogen Sulfide	10 ppm					
VOC						
Temperature	< 110ºF/43ºC					

PREVENTION OF UNAUTHORIZED ENTRY

	YES
1. Have Worker(s) to enter been trained for this specific entry?	☐
2. Have Attendants been trained for this specific space?	☐
3. Post "WORKER IN CONFINED SPACE" Sign	☐

4. Set-up the following additional barriers:

_____

_____

MANDATORY SAFETY EQUIPMENT REQUIRED

	YES	N/A
1. Fire Extinguisher	☐	☐
2. Retrieval Lines	☐	☐
3. Respirator	☐	☐
4. Goggles	☐	☐
5. Hearing Protection	☐	☐
6. Protective Clothing	☐	☐
7. Special Boots or Shoes	☐	☐
8. Gloves	☐	☐
9. Other Safety Equipment Required	☐	☐

_____ _____

_____ _____

_____ _____

_____ _____

COMMUNICATION PROCEDURES AND EQUIPMENT TO BE USED FOR THIS ENTRY

(Verify that chosen equipment is in place and operation.)

Verified by:

1._____ _____

2._____ _____

RESCUE EQUIPMENT TO BE PROVIDED ON-SITE

		YES	N/A
a.	Two chest harnesses or two wristlets	☐	☐
b.	Two five minute supplied air escape respirators	☐	☐
c.	One 30 minute S.C.B.A.	☐	☐
d.	One emergency siren	☐	☐
e.	Man basket	☐	☐
f.	Retrieval wench	☐	☐
g.	Other necessary Rescue Equipment	☐	☐

_____

_____

_____

IN CASE OF EMERGENCY

Rescue Service	Phone Number or Ext.
1._____	_____
2._____	_____
3._____	_____

Confined Space Entry Supervisor or designee must sign below AFTER all the above actions are fully understood and conditions necessary for SAFE entry have been met.

Authorization of Entry

Signature (if not CSE Supervisor, add title)	Date	Time

Termination of Entry

Signature	Date	Time

Safe Plan Of Action

Project No. _____
Job/Task _____ **Work Area** _____ **Date** _____

Steps of Task	Hazard/Reaction to Change	Safe Plan	Resources

Team Members' Signatures

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

The signature of the supervisor confirms the completion of the hazard assessment and Safe Plan of Action by the crew.

Supervisors Signature: _____ Date_____

Instructions: 1. Write name of job or task in space provided. 2. Conduct walk-through survey of work area. 3. Write the steps of the task in a safe sequence. 4. List all possible hazards involved in each step and reaction to change. 5. In the Safe Plan column, state actions that will be taken to prevent the hazards or injury from reaction to change. 6. In Resources column, list equipment, tools, etc. needed to do the job. 8. Ask each team member, who helped develop and will use this SPA, to sign in spaces provided. 9. Review the SPA at the end of the task for improvements.

Work shall stop when conditions change, the job changes, or a deficiency in the plan is discovered, and the current SPA will be modified or a new SPA created.

Project No. _____

Job/Task _____ **Work Area** _____ **Date:** _____

Team Member Signature Sheet Continuation

Review checklist while completing front page of SPA. Check all that apply.

A new SPA is required if the job scope or work conditions change.

Required Permits	Hazards	Safe Plan
☐ Confined Space	☐ Overhead Utilities	☐ Power de-energization required ☐ Insulation blankets required ☐ Wire watcher required
☐ Critical Lift		☐ Required clearance distance = _____Ft. ☐ Safe work zone marked
☐ Hot Work	☐ Crane or other	☐ Signalman assigned ☐ Tag lines in use ☐ Area around crane barricaded
☐ Lock Out/Tag Out	Lifting Equipment	☐ Lifting equipment inspected ☐ Personnel protected from overhead load
☐ Soil Disturbance (Over 12")	☐ Underground Utilities	☐ Reviewed as-builts ☐ Subsurface surveys ☐ Received dig permit
☐ Utility Clearance		☐ Required clearance distance = _____ Ft. ☐ Safe work zone Marked
Required PPE	☐ Electrical	☐ Lock Out/Tag Out/Try Out ☐ Permit required? ☐ Confirm that equipment is de-energized
☐ Hard Hat, Class C		☐ Reviewed electrical safety procedures
☐ Hard Hat, Class E *(Elect. Protect)*	☐ Excavations	☐ Permits ☐ Inspected prior to entering ☐ Proper sloping/shoring
☐ Ear Plugs/Ear Muffs		☐ Barricades provided ☐ Access/egress provided ☐ Protection from accumulated water
Eye Protection:	☐ Fire Hazard	☐ Hot Work Permit ☐Fire Extinguishers ☐ Fire watch
☐ Safety Glasses		☐ Adjacent area protected ☐ Unnecessary flammable material removed
☐ Face Shield	☐ Vehicular Traffic or	☐ Traffic Barricades ☐ Cones ☐ Signs ☐ Flagmen ☐ Lane closure
☐ Chemical Goggles	Heavy Equipment	☐ Communication with equipment operator
☐ Welding Hood	☐ Noise >85 dB	Hearing protection is required: ☐ Ear plugs ☐ Ear Muffs ☐ Both
Hand Protection:	☐ Hand & Power Tools:	☐ Inspect general cond. ☐ GFCI in use ☐ Identified PPE required for each tool
☐ Cut Resistant Gloves		☐ Reviewed safety requirements in operators manual(s) ☐ Guarding OK
☐ Welders Gloves	☐ Hand Hazards	List sharp tools, material, equipment: _____
☐ Nitrile Gloves		☐ PPE gloves, etc. ☐ Protected sharp edges as necessary
☐ Surgical Gloves	☐ Manual Lifting	☐ Reviewed proper lifting tech. ☐ Identified material requiring lifting equipment
☐ Rubber Gloves		☐ Hand protection required ☐ Back support belts
☐ Elect. Insulated Gloves	☐ Ladders	☐ Inspect general cond. before use ☐ Ladder inspected with in last quarter
☐ Arm Sleeves		☐ Ladder tied off or held ☐ Proper angle and placement ☐ Reviewed ladder safety
Foot Protection:	☐ Scaffolds	☐ Inspect general condition before use ☐ Tags in place ☐ Properly secured
☐ Sturdy Work Boots		☐ Toe boards used ☐ Footings adequate ☐ Materials properly stored on scaffold
☐ Safety Toe Boots	☐ Slips, Trips Falls	☐ Inspect for trip hazards ☐ Hazards marked ☐ Tools & material properly stored
☐ Rubber Boots		☐ Extension cords properly secured ☐ Work zone free of debris
☐ Rubber Boot Covers	☐ Pinch Points	List potential pinch points: _____
☐ Dielectric Footwear		☐ Working near operating equipment ☐ Hand/Body positioning
Respiratory. Protection:	☐ Working w/ Chemicals	☐ List specific chemicals involved and list hazards and precaution on front side.
☐ Dust Mask		☐ Reviewed MSDS ☐ Exposure Monitoring required ☐ Have proper containers and labels.
☐ Air Purifying Respirator	☐ Asbestos or Lead Paint	☐ Identified proper PPE (respirators, clothing, gloves, etc.)
☐ Supplied Air Respirator	Potential	☐ Areas to be worked may contain asbestos or lead paint ☐ Asbestos controls incorporated
☐ SCBA	☐ Heat Stress Potential	☐ Lead based point controls in place ☐ Exposure monitoring conducted.
☐ Emergency Escape Respirator		☐ Heat stress monitoring (>85°) ☐ Liquids available ☐ Cool down periods
Special Clothing:	☐ Cold Stress Potential	☐ Sun Screen ☐ Reviewed Heat Stress symptoms
☐ Tyvek ®	☐ Environmental	☐ Proper clothing (i.e.. gloves, coat, coveralls) ☐ Wind chill <32°
☐ Poly Coated Tyvek ®		☐ Reviewed Cold Stress symptoms ☐ Warm up periods
☐ Fire Resistant Coveralls	☐ Natural or Site Hazards	☐ Air emissions ☐ Water discharge ☐ Hazardous wastes ☐ Other wastes
☐ Rain Suit		☐ Pollution prevention ☐ Waste minimization
☐ Safety Vest	☐ Adjacent Work/Processes	☐ Weather ☐ Terrain ☐ Adjacent operations or processes ☐ Biological hazards
Fall Protection:		☐ Animals/reptiles/insects hazards
☐ Harness	☐ Barricades/covers	☐ Notified them of our presents ☐ Other workers adjacent, above, or below.
☐ Double Lanyard Required		☐ Coordinated with adjacent supervisor/customer/operator ☐ Need barriers between.
☐ Anchorage Point Available		☐ Caution barricade tape required ☐ Danger barricade tape required ☐ Rigid railing required
☐ Additional Anchorage Connector Needed e.g. Cross Arm Strap, etc.		☐ Covers over opening ☐ Warning signs required
☐ Retractable Device Needed		**Additional Information:**
☐ Horizontal Life Line System Req'd.		
☐ Fall Clearance Distance Adequate		
☐ Fall Rescue/Retrieval Plan Set Up		

Sevenson Environmental Services, Inc.

Acknowledgment of Site Safety and Health Plan

I certify that I have received a Site orientation and have been given the opportunity to read and ask questions on the contents of the Site Safety and Health Plan to include emergency response actions and the contaminates of concern for the project.

DATE	NAME (please print)	SIGNATURE

Job No. _____

Job Address _____

_____

Sevenson Environmental Services, Inc.

Report of Accident, Injury, or Illness

Instructions: Please print. Fill in all blanks. When completed, return this form to Sharon Lee at the main office.

Name _____ Sex:_____ Age: _____

Social Security Number _____ Birth Date: _____

Address _____ Phone Number _____

Marital Status: ☐ Single; ☐ Married; ☐ Separated; ☐ Divorced; ☐ Widowed

# of Dependents _____ Date of Accident _____ Time _____ AM/PM

Date Employee notified employer: _____ Who was notified: _____

Employment Start Date:	Wage Rate:
Occupation:	Average Hours Worked:
Date Last Worked:	Average Days Per Week:
Time Shift Began:	Was worker paid for day of injury?
Name of Witness:	Did salary continue?
Describe how the accident happened:	
What was employee doing when injured?	
Describe the injury in detail and indicate part of body affected:	
Name of object or substance that directly injured the employee:	
Date & Time medical attention was sought:	

Name, address and phone number of hospital or doctor:
Was employee involved in any other incidents/accidents? If yes, describe:
Any history of work accidents, absenteeism, and/or disciplinary problems:
Substance abuse test administered:____ Yes, ____ No – if no, why not?
Medical release obtained:
Corrective Action Taken:

Supervisor _____ Date _____

Safety Officer _____ Date _____

Comments:_____

_____

_____

_____

Report of Accident, Injury, or Illness

Sevenson Environmental Services, Inc.

HOT WORK PERMIT

Job Description: ☐ **Welding;** ☐**Torch/oxy/acetylene;** ☐ **Grinding/Cut saw;** ☐**Maintenance;**
☐ **Heating Operation;** ☐ **Other:**_____

Permit Duration: ☐ **4 hrs;** ☐ **8 hrs;** ☐ **10 hrs;** ☐ **12 hrs**

Person(s) Performing Hot Work: _____

Fire Watch Required? ☐ **Yes;** ☐ **No**

If yes, Fire Watch Attendant:_____

Air Monitoring Required? ☐ **Yes;** ☐ **No** **Respiratory Protection Required?** ☐ **Yes;** ☐ **No**

MONITORING
(Acceptable Levels)

DATE	TIME	O_2 (19.5-22.0%)	LEL (0-10%)	ORGANIC VAPOR* (0-25ppm)

FIRE PROTECTION

Fire extinguisher present: YES ☐; **Area cleared of combustibles: YES** ☐; **Are operations in compliance with OSHA Regulations: YES** ☐;

Activity Hazard Analysis attached and reviewed by affected personnel: YES ☐

Requirements for Performing Hot Work

- **Flame retardant gloves, coat, and proper eye protection (glasses or shield with welding/cutting rated glass lens)**
- **Respirators will be required when welding/cutting/heating areas that cannot be decontaminated or when welding on stainless steel (Cr-VI) or galvanized metal (metal fume fever).**
- **Use fire blankets when necessary to protect material or areas where removing combustibles is not practical.**
- **Inspect welder, lead lines, and ensure unit is properly grounded.**
- **Maintain a 50 ft diameter clearance for flammables (i.e., fuel cans, vapors) an/or 25 ft diameter clearance for combustibles (i.e., wood, rags, debris)**
- **Oxygen & Acetylene bottles are secure with regulators removed and caps installed prior to moving or unattended during breaks**
- **Inspect all hoses, torch, tips and regulators for defects and ensure flash suppressors are installed**
- **Properly store all empty and full cylinders from vicinity and protect from hot work activities**
- **Barricade walkway under any overhead work**
- **If welding shields are not available, barricade and delineate all work areas when using a torch or welder with a minimum distance of 75 feet.**
- **When normal fire prevention precautions are not sufficient, a qualified fire watch is required. The fire watch shall be instructed in anticipated fire hazards and shall perform assigned duties to 30 minutes after hot work was stopped.**
- **At completion of work activity, disassemble all hoses and regulators and properly store**
- **Toxic surface coatings must be removed prior to welding, cutting or heating. A minimum of 4-inches must be cleared from each side of the weld, cut, or heated area.**
- ***If working with fuel oil the PID for organic vapors will be used to determine the LEL due to the poor LEL sensor response to heavy hydrocarbons. Acceptable PID readings for ensuring vapors are less than 10% LEL will be less than 250 ppm VOCs.**

Health and Safety Officer:_____ **DATE:**_____

Figure 1: Lift Plan - Load and Capacity Calculations

Lift Load and Capacity Calculations (Page 1 of 3)							
Lift Description:							
A. Weight of Load (Equipment) – Live Load							
1. Load/Equipment Condition New	( )		Used	( )			
2. Weight of Load/Equipment Empty		Lbs.					
3. Weight of Attachments		Lbs.					
a. Platforms and Ladders		Lbs.					
b. Piping and Accessories		Lbs.					
c. Liquids Inside		Lbs.					
d. Dirt and Debris		Lbs.					
e. Internal Trays or Liners		Lbs.					
f. Other		Lbs.					
		Lbs.					
4. Total Amount of Load/Equipment Weight (A2 through A3f)		Lbs.					
B. Total Lifted Weight (load and/or equipment + rigging + main crane deductions)							
1. Load and/or equipment weight plus contingency*		%	7. Wt. Jib Erected		Lb		
2. Amount of Equipment Weight		Lb	7a. Wt. Of Jib Stowed		Lb		
3. Weight of Headache Ball		Lb	8. Wt. Of Jib Headache Ball		Lb		
4. Weight of Main Block		Lb	9. Wt. Of Cable (Load Fall)		Lb		
5. Weight of Spreader Bar		Lb	10. Auxiliary Boom Head		Lb		
6. Weight of Slings and Shackles		Lb	11. Other:		Lb		
*Use 100% plus some percentage (example +10%) to multiply times number in A 4 to allow for contingency to compute B2.							
TOTAL LIFTED WEIGHT (Sum B2 thru B11)		Lbs.					
Source of Load Weight (A2):							
(Name Plate, Drawings, Calculated, Weighed, etc.)							
Weights and Calculations By:			Date:				
Weights and Calculations Verified By:			Date:				
(See page 2)							

Load and Capacity Calculations (Page 2 of 3)					
C. Capacities of the (Main) Crane					
Make & Model of Crane					
2. Counter Weight Size:		Type of Boom:			
3. Lifting Arrangement					
a. Max. Radius During Lift		Ft.			
b. Length of Boom		Ft.			
c. Angle of Boom at Pick		Deg.			
d. Angle of Boom at Set		Deg.			
Rated Capacity Under Most Severe Conditions					
1. Over Rear		Lbs.			
2. Over Front		Lbs.			
3. Over Side		Lbs.			
f. Rated Capacity for Lift Radius, Crane Configuration, and Orientation (over front, side or….)		Lbs.			
4. Jib					
a. Is the Jib to be used	Yes	No			
b. Length of Jib		Ft.			
c. Jib Angle		Deg.			
d. Rated Jib Capacity for Lift Radius, Crane Configuration, and Orientation (over front, side, or…)		Lbs.			
5. Load Line/Fall Cable					
a. Is Main Block to be used?	Yes	No			
b. Number of Parts of Cable					
c. Size of Cable		Ø inches			
d. Maximum Capacity for Lift Radius, Crane Configuration, and Orientation (over front, side, or ….)		Lbs.			
D. Percent of Cranes Capacity (>85% requires High Hazard Lift Approvals)					
	Total Lifted Weight X 100 = Rated Capacity	%			
E. Size of Slings					
1. Sling Selection					
a. Type of Arrangement		(Spreader, Vertical Slings, etc.			
b. Number of Slings to Hook	Ø	Capacity	Lbs.		
c. Sling Size		Ø			
d. Sling Length		Ft.			
e. Sling Capacity (At angle used)		Lbs.			
f. Number of Slings to Load		#			
g. Total Rigging capacity (e x f)		Lbs.			
Comments:					
Sketch of rigging arrangement available	Yes	No	See Page ( )		
End of Standard Lift Plan Paperwork (					

Comments and Signatures (Page 3 of 3)			
Comments:			
Sketch of rigging arrangement available	**Yes**	**No**	**See Page ( )**
Reviewed by (*additional reviews required for high hazard lifts*):			
Safety Officer:			
Lift Supervisor:			
Rigging Supervisor:			
Crane Operator:			

Sevenson Environmental Services, Inc.
100 Years of Family
Est. 1917

Lift Plan
Excavators Used for Load Hoisting

Figure 1: Lift Plan - Load and Capacity Calculations

Lift Load and Capacity Calculations (Page 1 of 3)								
Lift Description:								
A. Weight of Load (Equipment) – Live Load								
1. Load/Equipment Condition	New ☐	Used ☐	NA ☐					
2. Weight of Load/Equipment Empty			Lbs.	☐ NA				
3. Weight of Attachments			Lbs.	☐ NA				
a. Platforms and Ladders			Lbs.	☐ NA				
b. Piping and Accessories			Lbs.	☐ NA				
c. Liquids Inside			Lbs.	☐ NA				
d. Dirt and Debris			Lbs.	☐ NA				
e. Internal Trays or Liners			Lbs.	☐ NA				
f. Other			Lbs.	☐ NA				
			Lbs.	☐ NA				
4. Total Amount of Load/Equipment Weight (A2 through A3f)			Lbs.					
B. Total Lifted Weight (load and/or equipment + rigging + bucket)								
1. Load and/or equipment weight plus contingency*		%		4. Weight of Lifting Apparatus (bag lifter, spreader bar, etc.)		Lb		
2. Amount of Equipment Weight		Lb		5. Weight of Slings and Shackles		Lb		
3. Weight of Attachment, if attached, (Bucket, Grapple, Robo-vibe, etc.)		Lb		6. Other:		Lb		
*Use 100% plus some percentage (example +10%) to multiply times number in A 4 to allow for contingency to compute B2.								
TOTAL LIFTED WEIGHT (Sum B2 thru B11)		Lbs.						
Source of Load Weight (A2):								
(Name Plate, Drawings, Calculated, Weighed, etc.)								
Weights and Calculations By:				Date:				
Weights and Calculations Verified By:				Date:				
(See page 2)								

Sevenson Environmental Services, Inc.
100 Years of Family
Est. 1917

Lift Plan
Excavators Used for Load Hoisting

Load and Capacity Calculations (Page 2 of 3)				
C. Capacities of the Excavator				
Make & Model of Excavator				
2. Counter Weight Size:		Length of arm:		Feet
3. Lifting Arrangement				
a. Max. Radius During Lift		Ft.		
b. Max Height of Load During Lift		Ft.		
Rated Capacity Under Most Severe Conditions				
1. Over Front		Lbs.		
2. Over Side		Lbs.		
c. Rated Capacity for Lift Radius and Orientation (over front or side)		Lbs.		
D. Percent of Excavator's Capacity (>85% requires Critical Lift Approvals)				
	Total Lifted Weight X 100 = Rated Capacity	%		
E. Size of Slings				
1. Sling Selection				
a. Type of Arrangement		(Spreader, Vertical Slings, etc.		
b. Number of Slings to Hook	Ø	Capacity	Lbs.	
c. Sling Size		Ø		
d. Sling Length		Ft.		
e. Sling Capacity (At angle used)		Lbs.		
f. Number of Slings to Load		#		
g. Total Rigging capacity (e x f)		Lbs.		
Comments:				
Sketch of rigging arrangement available	**Yes** ☐	**No** ☐	**See Page ( )**	
Reviewed by:				
Safety Officer:				
Superintendent:				
Equipment Operator:				

Sevenson Environmental Services, Inc.
100 Years of Family
Est. 1917

Lift Plan
Excavators Used for Load Hoisting

Figure 2: Pre-Lift Checklist

		Yes	No	NA
1.	Excavator operator meets company qualification requirements?	☐	☐	☐
2.	Lift calculations and rigging plan completed?	☐	☐	☐
3.	Are lift equipment swing & travel requirements & clearances known?	☐	☐	☐
4.	Weather conditions and wind speed acceptable?	☐	☐	☐
5.	Location and size of underground facilities are known?	☐	☐	☐
6.	Electrical equipment and power lines at required distance?	☐	☐	☐
7.	Rigging Inspected for defects?	☐	☐	☐
8.	Engineered lifting lugs fabricated and installed correctly?	☐	☐	☐
9.	Connecting/disconnecting means been developed?	☐	☐	☐
10.	Have the safety precautions been reviewed?	☐	☐	☐
11.	Is survey equipment required?	☐	☐	☐
12.	Signal person(s) assigned?	☐	☐	☐
13.	Safe Plan of Action (SPA) Completed?	☐	☐	☐
14.	Pre-Lift Meeting/Task Safety Awareness Meeting (TSA) held?	☐	☐	☐
15.	Hoist area & load path cleared of non-essential personnel?	☐	☐	☐
16.	Excavator set up per the lift plan (radius, configuration, etc)?	☐	☐	☐
17.	Rigging equipment and tag line(s) installed per plan?	☐	☐	☐

Completed By Signature: Name Printed: Date:

Figure 2: Pre-Lift Checklist

		Yes	No
1.	Crane operator meets company qualification requirements?	☐	☐
2.	Lift calculations and rigging plan completed?	☐	☐
3.	Are lift equipment swing & travel requirements & clearances known?	☐	☐
4.	Are all required approvals/permits signed?	☐	☐
5.	Crane inspections up to date (Annual/Monthly/Daily)?	☐	☐
6.	Weather conditions and wind speed acceptable?	☐	☐
7.	Has the stability of the ground been assured by soil bearing analysis?	☐	☐
8.	Location and size of underground facilities are known?	☐	☐
9.	Matting and/or outrigger pads inspected and approved?	☐	☐
10.	Electrical equipment and power lines at required distance?	☐	☐
11.	Rigging Inspected for defects?	☐	☐
12.	Engineered lifting lugs fabricated and installed correctly?	☐	☐
13.	Connecting/disconnecting means been developed?	☐	☐
14.	Have the safety precautions been reviewed?	☐	☐
15.	Is survey equipment required?	☐	☐
16.	Lift Hold Point of ≥_____ lbs communicated to crew?	☐	☐
17.	Signal person(s) assigned?	☐	☐
18.	Safe Plan of Action (SPA) Completed?	☐	☐
19.	Pre-Lift Meeting/Task Safety Awareness Meeting (TSA) held?	☐	☐
20.	Hoist area & load path cleared of non-essential personnel?	☐	☐
21.	Crane set up per the lift plan (radius, configuration, etc)?	☐	☐
22.	Rigging equipment and tag line(s) installed per plan?	☐	☐

Completed By Signature: Name Printed: Date:

Appendix C
Chemical Information Sheets

1. IDENTIFICATION

Product Identifier: Diesel Fuel

Synonyms: Diesel Fuel, Motor Vehicle Diesel Fuel, Dyed Diesel, * DieselOne®, * DieselOne® w/Platinum Plus DFX, Low Sulfur Diesel (LSD), Ultra Low Sulfur Diesel (ULSD)

Intended use of the product: Fuel

Contact:
Global Companies LLC
Water Mill Center
800 South St.
Waltham, MA 02454-9161
www.globalp.com

Contact Information: EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300
COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):

Flam. Liquid	Category 3	H226
Skin Corrosion/Irritation	Category 2	H315
Aspiration Hazard	Category 1	H304
STOT SE	Category 3	H336
Carcinogenicity	Category 2	H350
Aquatic Chronic	Category 2	H411
Serious Eye Damage/ Irritation	Category 2B	H319

Labeling Elements



Signal Word (GHS-US): **Danger**

Hazard Statements (GHS-US):
H226 – Flammable liquid and vapor.
H315 – Causes Skin irritation.
H304 – May be fatal if swallowed and enters airways.
H336 – May cause drowsiness or dizziness.
H350 – May cause cancer.
H411 – Toxic to aquatic life with long lasting effects.
H319 – May cause eye damage/irritation.

Precautionary Statements (GHS-US):
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 - Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.

P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 – Wash skin thoroughly after handling.
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P308+311 - If exposed or concerned: Get medical advice/attention.
P301+310 - If swallowed: Immediately call a poison center/doctor/…
P331 - Do NOT induce vomiting.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P403+235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:

NFPA 704
Health: 1
Fire: 2
Reactivity: 0



3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Composition Information
Mixture

Name	Product Identifier (CAS#)	% (w/w)	Classification
Diesel Fuel	68476-34-6	100	Flam Liq. 3, H226; Skin Irrit. 2, H315; Aspiration 1, H304; STOT SE 3, H336; Carc.2. H350; Aquatic chronic 2, H411
Naphthalene	91-20-3	<0.1	Carc. 2, H351; Acute Tox. 4, H302; Aquatic Acute 1, H400; Aquatic Chronic 1, H410

Additional Formulation Information:
Diesel Fuel consists of C9+ hydrocarbons resulting from distillation of crude oil.

Low Sulfur Diesel Fuel typically contains less than 500 ppm of sulfur

Ultra Low Sulfur Diesel Fuel typically contains less than 15 ppm of sulfur

4. FIRST AID MEASURES

Route	Measures
Inhalation	Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
Ingestion	Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Ingestion may cause gastrointestinal disturbances including irritation, nausea, vomiting, and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory failure, and death.
Eye Contact	In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention. In case of contact lenses, remove immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and of the area of the body burned.

Most Important Symptoms
Contact with eyes and face may cause irritation. Long-term exposure may cause dermatitis (itching, irritation, pain and swelling).

Inhalation may cause irritation and significant or long term exposure could cause respiratory insufficiency and pulmonary edema.

Ingestion may cause aspiration, gastrointestinal disturbance, and CNS effects.

Immediate Medical Attention and Special Treatment
For contact with skin or eyes, immediately wash or flush contaminated eyes with gently flowing water. If possible, irrigate each eye continuously with 0.9% saline (NS). If ingested, rinse mouth. Do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

If inhaled, administer oxygen or establish a patent airway if breathing is labored. Suction if necessary. Monitor closely, anticipate seizures. Consider orotracheal or nostracheal intubation of airway control if patient is unconscious or is in severe respiratory distress.

Discard any clothing or shoes contaminated as they may be flammable.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Foam, carbon dioxide, dry chemical are most suitable

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, C02, water spray, firefighting foam, or Halon. Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment.

LARGE FIRES: Foam, carbon dioxide, dry chemical. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Specific Hazards / Products of Combustion
Moderate fire hazard when exposed to heat or flame with a very low flash point. Product is flammable and easily ignited when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters
Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water.

For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied firefighting foam.

Fighting Equipment/Instructions
Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and protective clothing.

Refer to Section 9 for fire properties of this chemical including flash point, auto ignition temperature, and explosive limits.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Personal Precautions
Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains, or trenches. Vapors may accumulate in low lying areas and reach ignitable concentrations. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned downwind of the spill area. Refer to Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits. Refer to Section 8. Contaminated clothing should not be near sources of ignition.

Emergency Measures
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Consider wind direction. Secure all ignition sources (flame, spark, hot work, hot metal, etc.) from area. Evaluate the direction of product travel, diking sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material. For large spills, isolate initial action distance downwind 1,000 ft. (300 m).

Environmental Precautions
Stop the spill to prevent environmental release if it can be done safely. Product is toxic to aquatic life. Take action to isolate environmental receptors including drains, storm sewers and natural water bodies. Keep on impervious surface if at all possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce / prevent airborne release.

Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state or local requirements for reporting environmental release where necessary. Refer to Section 15 for further information.

Containment and Clean-Up Methods
Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of firefighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with dry earth, sand or other non-combustible, inert oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container with clean, non-sparking tools for reclamation or disposal. Response and cleanup crews must be properly trained and must utilize proper protective equipment. Refer to Section 8 for appropriate protective equipment.

7. HANDLING AND STORAGE

USE ONLY AS A FUEL.
DO NOT SIPHON BY MOUTH.

Handling Precautions
Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to

reduce the possibility of static-initiated fire or explosion. Follow precautions to prevent static initiated fire.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API RP 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage
Large quantities of diesel fuel are stored in tanks or portable containers at an ambient storage temperature. Separate from incompatible chemicals (Refer to Section 10) by distance or secondary containment. Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers that are clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain flammable vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Storage tanks should have a venting system. If stored in small containers, the area should be well ventilated, away from ignition sources and protected from potential damage or vehicular traffic. Post “No Smoking” signs in product storage areas. This storage area should comply with NFPA 30 “Flammable and Combustible Liquid Code” or applicable building code. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks in Flammable and Combustible Liquid Service” and API RP 2015 “Safe Entry and Cleaning of Petroleum Storage Tanks”.

Incompatibles
Keep away from strong oxidizers, ignition sources and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Component	CAS #	List	Value
Diesel Fuel	68476-34-6	ACGIH TLV-TWA	100 mg/m3*
Naphthalene	91-20-3	ACGIH TLV-TWA OSHA PEL ACGIH STEL	10 ppm 10 ppm 15 ppm

*Critical effects; Skin; A3; CNS impairment.

Engineering Controls
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity. Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

Personal Protective Equipment

Exposure	Equipment
Eye / Face	Wear appropriate chemical protective glasses or goggles or face shields to prevent skin and eye contact especially caused from splashing.
Skin	Wear appropriate personal protective clothing to prevent skin contact. Gloves constructed of nitrile, neoprene or PVC are recommended when handling this material. Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure.

Exposure	Equipment
Respiratory	A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
Thermal	Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire. Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	
Appearance	Clear or straw-colored liquid. May be dyed red for distribution.	
Odor	Mild characteristic petroleum distillate odor.	
Odor Threshold	<1 ppm	
pH	Not available	
Melting Point	-22 to -0.4 ˚F (-30 to -18 ˚C)	
Boiling Point Range	320 to 690 ˚F (160 to 366 ˚C)	
Flash Point	> 125.6 ˚F (52 ˚C) PMCC	
Evaporation Rate	Slow, varies with conditions	
Flammability	Flammable liquid	
Flammable Limits	0.6 % - 6.5%	
Vapor Pressure	0.009 psia @ 70 ˚F	
Vapor Density	> 1	(air=1)
Specific Gravity	0.83-0.86 @ 60 ˚F (16 ˚C)	(water=1)
Solubility	Insoluble in water; miscible with other petroleum solvents.	
Partition Coefficient (N-octanol/water)	Log Kow range of 3.3 to >.6.0	
Autoignition Temperature	494 ˚F (257 ˚C)	
Decomposition Temperature	When heated it emits acrid smoke and irritating vapors.	
Viscosity	>3 cSt	
Percent Volatiles	100	

10. STABILITY AND REACTIVITY

Stability
This is a stable material that is flammable liquid (OSHA/GHS hazard category 3). Stable during transport.

Reactivity
Material is not self-reacting. Flammable concentrations may be present in air. Compound can react with oxidizing materials.

Possibility of Hazardous Reactions
Hazardous polymerization will not occur.

Incompatibility
Keep away from strong oxidizers such as nitric and sulfuric acids.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, static electricity, welding, smoking and other ignition sources.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
Acute Toxicity (Inhalation LC50)
Diesel Fuel (68476-34-6)
LC50 Inhalation Rat >6 mg/l/4h

Acute Toxicity (Dermal LD50)
Diesel Fuel (68476-34-6)
LD50 Dermal Rabbit >5000 mg/kg

Acute Toxicity (Oral LD50)
Diesel Fuel (68476-34-6)
LD50 Oral Rabbit >5000 mg/kg

Skin Corrosion/Irritation: Prolonged and repeated contact may cause skin irritation leading to dermatitis. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

Serious Eye Damage/Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: OSHA: NO, IARC: Group 3, NTP: NO, ACGIH: NOIC:A3, NIOSH: NO

IARC: Group 3 – Not classifiable as to their carcinogenicity to humans

ACGIH: A3 – Confirmed animal carcinogen with unknown relevance to humans.

Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

IARC classifies whole diesel fuel exhaust particulates (byproduct of combustion of this material) carcinogenic to humans (Group 1) and NIOSH regards diesel fuel exhaust particulate as a potential occupational carcinogen.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Specific Target Organ Toxicity (Single Exposure): Inhalation exposure may cause drowsiness or dizziness by inhalation exposure.

Aspiration Hazard: The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Potential Health Effects: Vapor irritating to skin, eyes, nose, and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of

combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

12. ECOLOGICAL INFORMATION

Toxicity:
This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Data for Component: Diesel Fuel (68476-34-6)

Material is toxic to aquatic organisms based on an acute basis (LC50/EC50 >1 but ≤ 10 mg/L in the most sensitive species tested).

Material is a long-term aquatic hazard based on a chronic basis (LC50/EC50 >1 but ≤ 10 mg/L in the most sensitive species tested).

Persistence and Degradation: This material is not expected to be readily biodegradable.

Bioaccumulative Potential: Not available

Mobility in Soil: Not available

Other Adverse Effects: None known

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options. May be considered a hazardous waste if disposed. Direct solid waste (landfill) or incineration at a solid waste facility is not permissible. Do not discharge to sanitary or storm sewer. Personnel handling waste containers should follow precautions provided in this document.

Shipping containers must be DOT authorized packages. Follow licensure and regulations for transport of hazardous material and hazardous waste as applicable.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	NA 1993 / UN 1202
Proper Shipping Name	Diesel Fuel
Hazard Class and Packing Group	3, PGIII
Shipping Label	Combustible liquid
Placard / Bulk Package	Combustible liquid, 1993
Emergency Response Guidebook Guide Number	128

IATA Information

UN Identification Number	UN 1202
Proper Shipping Name	Combustible-Liquid, N.O.S. (Fuel, Diesel)
Hazard Class and Packing Group	3, PGIII
ICAO Label	3
Packing Instructions Cargo	310
Max Quantity Per Package Cargo	220L
Packing Instructions Passenger	309Y
Max Quantity per Package	60L

ICAO

UN Identification Number	UN 1202
Shipping Name / Description	Combustible-Liquid, N.O.S. (Fuel, Diesel)
Hazard Class and Packing Group	3, PG III
IMDG Label	3

IMDG

UN Identification Number	UN 1202
Shipping Name / Description	Combustible-Liquid, N.O.S. (Fuel, Diesel)
Hazard Class and Packing Group	3, PGIII
IMDG Label	3
EmS Number	F-E-S-E
Marine Pollutant	Yes

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information
Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning And Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Clean Water Act (Oil Spills)
Any spill or release of this product to “navigable waters” (Essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts this material. This product does not contain any chemicals subject to the reporting requirements of CERCLA Section 103 or SARA 304.

SARA Section 313- Supplier Notification
This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States, or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

Pennsylvania Right to Know Hazardous Substance list:
The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Diesel Fuel	68476-34-6	100%

New Jersey Right to Know Hazardous Substance list:
The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Diesel Fuel	68476-34-6	100%

California Proposition 65 WARNING: This product contains chemicals known to the State of California to cause Cancer or Reproductive Toxicity.

Component	CAS	Amount
Naphthalene	91-20-3	<0.1%

U.S. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)
Class B3 – Combustible Liquid
Class D2A – Materials causing other toxic effects. (Very Toxic)

16. OTHER INFORMATION

Version	4
Issue Date	May 20, 2016
Prior Issue Date	May 3, 2015

Description of Revisions
Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

˚F	Degrees Fahrenheit (temperature)
<	Less than
=	Equal to
>	Greater than
AP	Approximately
C	Centigrade (temperature)
kg	Kilogram
L	Liter
mg	Milligrams
mL	Milliliter
mm^2	Square millimeters
mmHg	Millimeters of mercury (pressure)
N/A	Not applicable
N/D	Not determined
ppm	Parts per million
sec	Second
ug	Micrograms

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
AL	Action Level
ANSI	American National Standards Institute
API	American Petroleum Institute
CAS	Chemical Abstract Service
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation
EC50	Ecological concentration 50%
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
GHS	Global Harmonized System
HMIS	Hazardous Materials Information System
IARC	International Agency for Research On Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
Koc	Soil Organic Carbon
LC50	Lethal concentration 50%
LD50	Lethal dose 50%
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NOIC	Notice of Intended Change

NTP	National Toxicology Program
OPA	Oil Pollution Act of 1990
OSHA	U.S. Occupational Safety & Health Administration
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act Reauthorization Act of 1986 Title III
REL	Recommended Exposure Limit (NIOSH)
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and
SCBA	Self Contained Breathing Apparatus
SPCC	Spill Prevention, Control, and Countermeasures
STEL	Short Term Exposure Limit (generally 15 minutes)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hr.)
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WEEL	Workplace Environmental Exposure Level (AIHA)
WHMIS	Canadian Workplace Hazardous Materials Information System

Disclaimer of Expressed and Implied Warranties

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

** End of Safety Data Sheet **

SAFETY DATA SHEET
Ethanol 99,8%

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Date issued 26.11.2013

1.1. Product identifier

Product name	Ethanol 99,8%
Chemical name	Ethyl alcohol
Synonyms	methyl carbinol
REACH Reg No.	01-2119457610-43-0000
CAS no.	64-17-5
EC no.	200-578-6
Index no.	603-002-00-5
Article no.	12110000

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/preparation	For the preparation of paints and as a solvent. Disinfectant. Antiseptic. Antifreeze liquid. General purpose cleaner.

1.3. Details of the supplier of the safety data sheet

Company name	Fred Holmberg & Co AB
Office address	Geijersgatan 8
Postal address	Box 60056
Postcode	S-216 10
City	Limhamn
Country	Sweden
Tel	+46 (0)40 15 79 20
Fax	+46 (0)40 16 22 95
E-mail	info@holmberg.se
Website	http://www.holmberg.se/en/

1.4. Emergency telephone number

Emergency telephone	112 (Europe)

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to 67/548/EEC or 1999/45/EC	F; R11
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Flam. Liq. 2; H225;

2.2. Label elements

Hazard Pictograms (CLP)



Signal word	Danger
Hazard statements	H225 Highly flammable liquid and vapour.

Precautionary statements	P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking. P233 Keep container tightly closed. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ventilating/lighting//equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P280 Wear protective gloves/protective clothing/eye protection/face protection. P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P370 + P378 In case of fire: Use for extinction. P403 + P235 Store in a well-ventilated place. Keep cool. P501 Dispose of contents/container to

2.3. Other hazards

Other hazards	Not known.

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance	Identification	Classification	Contents
Ethanol	CAS no.: 64-17-5 EC no.: 200-578-6 Index no.: 603-002-00-5 Synonyms: Ethanol	F; R11 Flam. Liq. 2; H225	99,8 %
Column headings	CAS no. = Chemical Abstracts Service; EU (Einecs or Elincs number) = European inventory of Existing Commercial Chemical Substances; Ingredient name = Name as specified in the substance list (substances that are not included in the substance list must be translated, if possible). Contents given in; %, %wt/wt, %vol/wt, %vol/vol, mg/m3, ppb, ppm, weight%, vol%		
HH/HF/HE	T+ = Very toxic, T = Toxic, C = Corrosive, Xn = Harmful, Xi = Irritating, E = Explosive, O = Oxidizing, F+ = Extremly flammable, F = Very flammable, N = Environmental hazard		

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.
Skin contact	Remove contaminated clothes and rinse skin thoroughly with water.
Eye contact	Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention if any discomfort continues.
Ingestion	NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Do not induce vomiting. Rinse mouth with water. Get medical attention if any discomfort continues.

4.2. Most important symptoms and effects, both acute and delayed

Information for health personnel	Treat Symptomatically. Do not give victim anything to drink if he is unconscious.

4.3. Indication of any immediate medical attention and special treatment needed

Specific details on antidotes	No recommendation given.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	HIGHLY FLAMMABLE! Solvent vapours may form explosive mixtures with air.
Hazardous combustion products	Fire creates: Carbon monoxide (CO). Carbon dioxide (CO2).

5.3. Advice for firefighters

Fire fighting procedures	No specific fire fighting procedure given.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection measures	Ensure suitable personal protection (including respiratory protection) during removal of spillages in a confined area. Ventilate well. Stop leak if possible without risk. Avoid contact with skin and eyes. Do not breathe vapour.

6.2. Environmental precautions

Environmental precautionary measures	Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Cleaning method	Dam and absorb spillages with sand, earth or other non-combustible material.

6.4. Reference to other sections

Other instructions	No recommendation given.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Keep away from heat, sparks and open flame. Take precautionary measures against static discharges. Mechanical ventilation may be required.

Protective Safety Measures

Advice on general occupational hygiene	Provide easy access to water supply and eye wash facilities.

7.2. Conditions for safe storage, including any incompatibilities

Storage	Keep away from heat, sparks and open flame. Ground container and transfer equipment to eliminate static electric sparks. Store in a cool and well-ventilated place.

7.3. Specific end use(s)

Specific use(s)	Not entered.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Other Information about threshold limit values	Norske grenseverdier; FOR-2011-12-06-1358 vedlegg 1. Etanol: 8 t.: 500ppm, 950 mg/m3 (2003)

DNEL / PNEC

Exposure guidelines	Country of origin: Sverige Limit value type: KTV OEL Short Term Value: 1900 mg/m3 Source: Nationella hygieniska gränsvärden, AFS 2005:17
Other Information	NGV, 1000 mg/m3

8.2. Exposure controls

Occupational exposure limits	Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours. Protective gloves and goggles are recommended. Provide eyewash, quick drench.

Safety signs



Respiratory protection

Respiratory protection	Respiratory protection must be used if air contamination exceeds acceptable level. Use respiratory equipment with gas filter, type A2.

Hand protection

Hand protection	Use protective gloves. Chemical resistant gloves required for prolonged or repeated contact. Gloves of nitrile rubber, PVA or Viton are recommended.

Eye / face protection

Eye protection	Use safety goggles or face shield in case of splash risk.

Skin protection

Skin protection (except hands)	Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene / Environmental

Specific hygiene measures	Wash hands after contact.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Colour	Colourless.
Odour	Odour of alcohol.
Comments, pH (as supplied)	Not applicable.
Melting point/melting range	Value: -115 °C
Boiling point / boiling range	Value: 78 °C
Flash point	Value: 12 °C
Explosion limit	Value: 3,5-15 %
Vapour pressure	Value: 5,9 kPa Test temperature: 20 °C
Vapour density	Value: 1,6
Specific gravity	Value: 789 kg/m3 Test temperature: 20 °C
Solubility description	Completely soluble in water. Soluble in: Organic solvents.
Partition coefficient: n-octanol/water	Value: -0,32
Spontaneous combustability	Value: 425 °C
Viscosity	Value: 1,2 mPas Test temperature: 20 °C

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Heating may cause a fire.

10.2. Chemical stability

Stability	Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Not known.

10.4. Conditions to avoid

Conditions to avoid	Avoid heat, flames and other sources of ignition.

10.5. Incompatible materials

Materials to avoid	Avoid contact with oxidising agents (e.g. nitric acid, peroxides and chromates). Strong acids.

10.6. Hazardous decomposition products

Hazardous decomposition products	Fire creates: Carbon monoxide (CO). Carbon dioxide (CO2).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological Information:

Other toxicological data	Acute Toxicity (Oral LD50): mg/kg (oral rat) 7060 Acute Toxicity (Inhalation LC50): mg/l (vapours) (4h) 124,7 Acute Toxicity (Dermal LD50): mg/kg (ipr-rat) > 20 000

Potential acute effects

Inhalation	In high concentrations, vapours are narcotic and may cause headache, fatigue, dizziness and nausea. Icke klassificerad som aspirationstoxisk (Not classified as asp. tox.)
Skin contact	Prolonged or frequent contact may cause redness, itching, eczema and skin cracking. Defats the skin.
Eye contact	Causes serious eye irritation.
Ingestion	Ingestion of large amounts may cause unconsciousness. However, ingestion may cause nausea, headache, dizziness and intoxication. Ingestion may cause irritation of the gastrointestinal tract, vomiting and diarrhoea. May cause irritation to the mouth and throat.

Delayed effects / repeated exposure

Sensitisation	Not known.
Chronic effects	None known.

Carcinogenic, Mutagenic or Reprotoxic

Carcinogenicity	None.
Mutagenicity	Not known.
Teratogenic properties	Not known.
Reproductive toxicity	Not known.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic, fish	Value: 13500 mg/l Method of testing: LC50 Fish, species: Pimephales promelas Duration: 96h
Acute aquatic, algae	Value: 5000 mg/l Method of testing: IC50 Algae, species: Scenedesmus subspicatus Duration: 7d
Acute aquatic, Daphnia	Value: 5400 mg/l Method of testing: EC50 Daphnia, species: D. magna Duration: 72h

12.2. Persistence and degradability

Degradation half life	Lättnedbrytbart. 85% bryts ned på 28 dygn OECD 301D
Chemical oxygen demand (COD)	Value: 0,4-0,8 Method of testing: COD
Biological oxygen demand (BOD)	Value: 0,4-0,8 Method of testing: BOD

12.3. Bioaccumulative potential

Bioaccumulative potential	Will not bio-accumulate.
Bioconcentration factor (BCF)	Value: 0,66 Method of testing: BCF

12.4. Mobility in soil

Mobility	The product is water soluble and may spread in water systems.

12.5. Results of PBT and vPvB assessment

PBT assessment results	This substance is not classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects / Remarks	None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal	Confirm disposal procedures with environmental engineer and local regulations. Absorb in vermiculite or dry sand and dispose of at a licenced hazardous waste collection point. Liquid components can be disposed of by incineration.
Product classified as hazardous waste	Yes
Packaging classified as hazardous waste	No

SECTION 14: Transport information

14.1. UN number

ADR	1170
RID	1170
IMDG	1170
ICAO/IATA	1170

14.2. UN proper shipping name

ADR	ETHANOL
RID	ETHANOL
IMDG	ETHANOL
ICAO/IATA	ETHANOL

14.3. Transport hazard class(es)

ADR	3
Hazard no.	33
RID	3
ADN	33
IMDG	3
ICAO/IATA	3

14.4. Packing group

ADR	II
RID	II
IMDG	II
ICAO/IATA	II

14.5. Environmental hazards

Comment	Not relevant.

14.6. Special precautions for user

EmS	F-E, S-D

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

EC no.	200-578-6

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Other Label Information	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments.

Legislation and regulations	Dangerous Substance Directive 67/548/EEC. The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (S.I 2009 No. 716). The List of Wastes (England) (Amendment) Regulations 2005. (SI 2005 No. 895). Avfallsförordningen (2011:927).

15.2. Chemical safety assessment

SECTION 16: Other information

Hazard symbol



Highly flammable

R-phrases	R11 Highly flammable.
S-phrases	S2 Keep out of the reach of children. S7 Keep container tightly closed. S16 Keep away from sources of ignition - No smoking.
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Flam. Liq. 2; H225;
List of relevant R-phrases (under headings 2 and 3).	R11 Highly flammable.
List of relevant H-phrases (Section 2 and 3).	H225 Highly flammable liquid and vapour.
Responsible for safety data sheet	Fred Holmberg & Co AB

JP-4 Fuel (MIL-T-5624)

Version 1.4 Revision Date 2016-05-11

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information

Product Name : JP-4 Fuel (MIL-T-5624)
Material : 1061880, 1028366, 1024271, 1024270, 1024269, 1105003

Use : Fuel

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview

Danger

Form: Liquid **Physical state**: Liquid **Color**: Clear to amber **Odor**: Mild

OSHA Hazards : Flammable Liquid, Moderate skin irritant, Carcinogen, Mutagen, Target Organ Effects, Aspiration hazard

Classification

: Flammable liquids , Category 1

Skin irritation , Category 2
Germ cell mutagenicity , Category 1B
Carcinogenicity , Category 1B
Specific target organ systemic toxicity - single exposure , Category 3
Specific target organ systemic toxicity - repeated exposure , Category 1 , Eyes, Blood
Aspiration hazard , Category 1

Labeling

Symbol(s) :



Signal Word : Danger

Hazard Statements : H224: Extremely flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H340: May cause genetic defects.
H350: May cause cancer.
H336: May cause drowsiness or dizziness.
H372: Causes damage to organs (Eyes, Blood) through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapor/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:

IARC	Group 2B: Possibly carcinogenic to humans	
	Naphthalene	91-20-3
NTP	Reasonably anticipated to be a human carcinogen	
	Naphthalene	91-20-3
ACGIH	Confirmed animal carcinogen with unknown relevance to humans	
	Kerosene C9-C16	8008-20-6

SECTION 3: Composition/information on ingredients

Synonyms : Petroleum Naphtha
JP-4 AVIATION TURBINE FUEL
JP-4 (MIL-T-5624)

Molecular formula : Mixture

Component	CAS-No.	Weight %
Kerosene C9-C16	8008-20-6	70 - 90
Hydrodesulfurized Naphtha	64742-73-0	5 - 10
Isopentane	78-78-4	5 - 10
Naphthalene	91-20-3	1 - 5

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

If inhaled : Consult a physician after significant exposure. If unconscious place in recovery position and seek medical advice.

In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point	:	-23 °C (-9 °F) estimated
Autoignition temperature	:	No data available
Suitable extinguishing media	:	Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage

Handling

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.
Advice on protection against fire and explosion	:	Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers	:	No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

US

Ingredients	Basis	Value	Control parameters	Note
Kerosene C9-C16	ACGIH	TWA	200 mg/m3	CNS impair, URT irr, skin irr, P, A3, Skin, varies,
	OSHA Z-1	TWA	500 ppm, 2,000 mg/m3	(b),
	OSHA Z-1-A	TWA	400 ppm, 1,600 mg/m3	
Isopentane	ACGIH	TWA	600 ppm,	peripheral neuropathy, (),
Naphthalene	ACGIH	TWA	10 ppm,	hematologic eff, URT irr, eye irr, eye dam, (), A4, Skin,
	ACGIH	STEL	15 ppm,	hematologic eff, URT irr, eye irr, eye dam, (), A4, Skin,
	OSHA Z-1	TWA	10 ppm, 50 mg/m3	(b),
	OSHA Z-1-A	TWA	10 ppm, 50 mg/m3	
	OSHA Z-1-A	STEL	15 ppm, 75 mg/m3	

() Adopted values or notations enclosed are those for which changes are proposed in the NIC
(b) The value in mg/m3 is approximate.
A3 Confirmed animal carcinogen with unknown relevance to humans
A4 Not classifiable as a human carcinogen
CNS impair Central Nervous System impairment
eye dam Eye damage
eye irr Eye irritation
hematologic eff Hematologic effects
P Application restricted to conditions in which there are neglible aerosol exposures
peripheral neuropathy Peripheral neuropathy
Skin Danger of cutaneous absorption
skin irr Skin irritation
URT irr Upper Respiratory Tract irritation
varies varies

Immediately Dangerous to Life or Health Concentrations (IDLH)

Substance name	CAS-No.	Control parameters	Update

Naphthalene	91-20-3	Immediately Dangerous to Life or Health Concentration Value 250 ppm	1995-03-01

Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

Protective measures : Wear full protective clothing and self-contained breathing apparatus.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form : Liquid
Physical state : Liquid
Color : Clear to amber
Odor : Mild

Safety data

Flash point	:	-23 °C (-9 °F) estimated
Lower explosion limit	:	1.3 %(V)
Upper explosion limit	:	8 %(V)
Oxidizing properties	:	no
Autoignition temperature	:	No data available
Thermal decomposition	:	No data available
Molecular formula	:	Mixture
Molecular weight	:	No data available
pH	:	No data available
Pour point	:	No data available
Boiling point/boiling range	:	22 °C (72 °F)
Vapor pressure	:	2.00 - 3.00 PSI at 37.8 °C (100.0 °F)
Relative density	:	0.751 at 15.6 °C (60.1 °F)
Water solubility	:	Negligible
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	No data available
Relative vapor density	:	No data available
Evaporation rate	:	No data available
Percent volatile	:	> 99 %

SECTION 10: Stability and reactivity

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	:	Heat, flames and sparks.

Materials to avoid	:	May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Thermal decomposition	:	No data available
Hazardous decomposition products	:	Carbon oxides
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

JP-4 Fuel (MIL-T-5624)
Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Acute inhalation toxicity

Kerosene C9-C16 : LC50: > 5.2 mg/l
Exposure time: 4 h
Species: Rat

Isopentane LC50: > 25.3 mg/l
Exposure time: 4 h
Species: Rat
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Information given is based on data obtained from similar substances.

Acute dermal toxicity

Kerosene C9-C16 : LD50: >2000 milligram per kilogram
Species: Rabbit

JP-4 Fuel (MIL-T-5624)
Skin irritation : May cause skin irritation in susceptible persons.

JP-4 Fuel (MIL-T-5624)
Eye irritation : Vapors may cause irritation to the eyes, respiratory system and the skin.

Sensitization

Kerosene C9-C16 : Did not cause sensitization on laboratory animals.

Isopentane Did not cause sensitization on laboratory animals.

Naphthalene	Classification: Did not cause sensitization on laboratory animals. Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Kerosene C9-C16	:	Species: Rabbit Application Route: Dermal Dose: 0, 200, 1000, 2000 mg/kg Exposure time: 28 day Number of exposures: 3 times/wk Lowest observable effect level: 1,000 mg/kg
Isopentane		Species: Rat, male and female Sex: male and female Application Route: Inhalation Dose: 668, 2220, 6646 ppm Exposure time: 13 wk Number of exposures: 6 h/d, 5 d/wk NOEL: > 2220 ppm Lowest observable effect level: > = 6646 ppm Method: OECD Guideline 413 Target Organs: Kidney Information given is based on data obtained from similar substances.

Carcinogenicity

Kerosene C9-C16	:	Species: Mouse Dose: 0, 28.5, 50, 100% Exposure time: 104 wks Number of exposures: 2, 4, or 7 times/wk Remarks: Weak dermal carcinogen
Naphthalene		Species: Mouse Sex: male Dose: 10, 30 ppm Exposure time: 105 weeks Number of exposures: 6 hours/day, 5 days/week Test substance: yes Print Date: No information available. Remarks: No evidence of carcinogenicity

Species: Mouse
Sex: female
Dose: 10, 30 ppm
Exposure time: 105 weeks
Number of exposures: 6 hours/day, 5 days/week
Test substance: yes
Print Date: No information available.
Remarks: increased incidence of alveolar/bronchiolar adenomas

Species: Rat
Sex: male and female
Dose: 10, 30, 60 ppm
Exposure time: 105 weeks
Number of exposures: 6 hours/day, 5 days/week
Test substance: yes
Print Date: No information available.
Remarks: nose respiratory epithelial adenoma, increased incidence of olfactory neuroblastomas

Reproductive toxicity

Isopentane : Species: Rat
Sex: male and female
Application Route: inhalation (vapor)
Dose: 0, 500, 2000, 7000 ppm
Number of exposures: 6 h/d 5 d/wk
Method: OECD Test Guideline 416
NOAEL Parent: 7000 ppm
NOAEL F1: 2000 ppm
NOAEL F2: 2000 ppm
Information given is based on data obtained from similar substances.

Species: Rat
Sex: female
Application Route: oral gavage
Dose: 0, 100, 300, 1000 mg/kg/d
Method: OECD Test Guideline 415
NOAEL Parent: >= 1,000 mg/kg
NOAEL F1: >= 1,000 mg/kg

Species: Rat
Sex: male
Application Route: oral gavage
Dose: 0, 100, 300, 1000 mg/kg/d
Method: OECD Test Guideline 415
NOAEL Parent: >= 300 mg/kg

Developmental Toxicity

Kerosene C9-C16 : Species: Rat
Application Route: Inhalation
Dose: 0, 106, 364 ppm
Exposure time: 6 hrs/d
Test period: GD 6-15
NOAEL Teratogenicity: 364 ppm
NOAEL Maternal: 364 ppm

Isopentane	Species: Rat Application Route: oral gavage Dose: 0, 100, 500, 1000 mg/kg/d Exposure time: GD 6-15 Number of exposures: daily Method: OECD Guideline 414 NOAEL Teratogenicity: 1,000 mg/kg NOAEL Maternal: 1,000 mg/kg Information given is based on data obtained from similar substances. Species: Rat Application Route: Inhalation Dose: 0, 500, 2000, 7000 ppm Exposure time: GD 6-15 Number of exposures: 5 d/wk Method: OECD Guideline 414 NOAEL Teratogenicity: 7000 ppm NOAEL Maternal: 500 - 2000 ppm Information given is based on data obtained from similar substances. Species: Rabbit Application Route: Inhalation Dose: 0, 500, 2000, 7000 ppm Exposure time: GD 6-18 Method: OECD Guideline 414 NOAEL Teratogenicity: 7000 ppm NOAEL Maternal: 7000 ppm Information given is based on data obtained from similar substances.
Naphthalene	Species: Rabbit Application Route: oral gavage Dose: 40, 200, 400 mg/kg Test period: 29 d, GD 6-18 NOAEL Teratogenicity: 400 mg/kg

JP-4 Fuel (MIL-T-5624)

Aspiration toxicity : May be fatal if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

Hydrodesulfurized Naphtha	: Carcinogenicity: Possible human carcinogen Mutagenicity: In vivo tests showed mutagenic effects
Isopentane	Carcinogenicity: Not available Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Animal testing did not show any effects on fertility.
Naphthalene	Carcinogenicity: Limited evidence of carcinogenicity in animal

studies

JP-4 Fuel (MIL-T-5624)
Further information : Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

Kerosene C9-C16	: LL50: 2 - 5 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) Method: OECD Test Guideline 203
Isopentane	LC50: 4.26 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.
Naphthalene	LC50: 3.2 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates

Kerosene C9-C16	: EL50: 1.4 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Method: OECD Test Guideline 202
Isopentane	EC50: 2.3 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
Naphthalene	LC50: 2.16 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)

Toxicity to algae

Kerosene C9-C16	: EL50: 1 - 3 mg/l Exposure time: 72 h Species: Raphidocellus subcapitata (algae) Method: OECD Test Guideline 201
Isopentane	EC50: 7.51 mg/l Exposure time: 72 h Species: Scenedesmus capricornutum (fresh water algae) Growth inhibition Method: OECD Test Guideline 201 Information given is based on data obtained from similar

substances.

Naphthalene	EC50: 2.96 mg/l Exposure time: 48 h Species: Selenastrum capricornutum (algae)

Elimination information (persistence and degradability)

Bioaccumulation

Isopentane	:	Accumulation in aquatic organisms is unlikely.

Biodegradability	:	Expected to be ultimately biodegradable

Ecotoxicology Assessment

Acute aquatic toxicity

Kerosene C9-C16	:	Toxic to aquatic life.
Isopentane	:	Toxic to aquatic life.
Naphthalene	:	Very toxic to aquatic life.

Chronic aquatic toxicity

Kerosene C9-C16	:	Toxic to aquatic life with long lasting effects.
Isopentane	:	Toxic to aquatic life with long lasting effects.
Naphthalene	:	Very toxic to aquatic life with long lasting effects.

Results of PBT assessment

Isopentane	:	Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product.

Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, I

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, I, (-23 °C), MARINE POLLUTANT, (KEROSENE, C9-C12)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, I

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, I, (D/E), ENVIRONMENTALLY HAZARDOUS, (KEROSENE, C9-C12)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, I, ENVIRONMENTALLY HAZARDOUS, (KEROSENE, C9-C12)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, I, ENVIRONMENTALLY HAZARDOUS, (KEROSENE, C9-C12)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

Chronic Health Hazard

CERCLA Reportable Quantity : 1667 lbs

Isopentane

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 302 Threshold Planning Quantity : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 304 Reportable Quantity : This material does not contain any components with a section 304 EHS RQ.

SARA 313 Ingredients : The following components are subject to reporting levels established by SARA Title III, Section 313:

: Naphthalene - 91-20-3

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

The following chemical(s) are listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F):

: Isopentane - 78-78-4

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

: Isopentane - 78-78-4

US State Regulations

Pennsylvania Right To Know

: Kerosene C9-C16 - 8008-20-6
Isopentane - 78-78-4
Naphthalene - 91-20-3

New Jersey Right To Know : Kerosene C9-C16 - 8008-20-6
Isopentane - 78-78-4
Naphthalene - 91-20-3

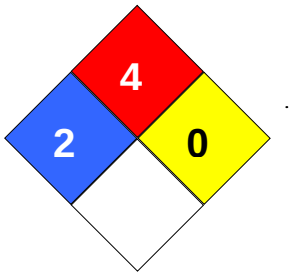
California Prop. 65 Ingredients : WARNING! This product contains a chemical known in the State of California to cause cancer.

Notification status

Europe REACH	:	A substance or substances in this product is not registered or notified to be registered. Importation or manufacture of this product is still permitted provided that it does not exceed the REACH minimum threshold quantity of the non-regulated substances.
United States of America TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	Not in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	Not in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
Fire Hazard: 4
Reactivity Hazard: 0



Further information

Legacy SDS Number : 001927

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

1. IDENTIFICATION

Product Identifier: Gasoline, Unleaded With Ethanol

Synonyms: Regular Unleaded Gasoline, Premium Unleaded Gasoline, Mid-grade Unleaded Gasoline, Reformulated Blendstock for Oxygenate Blending (RBOB) w/Ethanol, Premium Blendstock for Oxygenate Blending (PBOB) w/Ethanol, Conventional Blendstock for Oxygenate Blending (CBOB) w/Ethanol, Unleaded Gasoline

Intended use of the product: Fuel

Contact:
Global Companies LLC
Water Mill Center
800 South St.
Waltham, MA 02454-9161
www.globalp.com

Contact Information: EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300
COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):

Flammable Liquid	Category 2	H225
Acute Toxicity	Category 4	H332
Skin Corrosion/Irritation	Category 2	H315
Carcinogenicity	Category 1A	H350
Germ Cell Mutagenicity	Category 1B	H340
Reproductive Toxicity	Category 2	H361d
STOT RE	Category 1	H372
Aspiration Hazard	Category 1	H304

Labeling Elements



Signal Word (GHS-US): **Danger**

Hazard Statements (GHS-US):
H225 – Highly flammable liquid and vapor.
H304 - May be fatal if swallowed and enters airways.
H332 - Harmful if inhaled.
H315 - Causes skin irritation.
H350 – May cause cancer.
H340 – May cause genetic defects.
H361 – Suspected of damaging fertility or the unborn child.
H372 – Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements (GHS-US)
P201 - Obtain special instructions before use.
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 - Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.
P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P308+311 - If exposed or concerned: Get medical advice/attention.
P301+310 - If swallowed: Immediately call a poison center/doctor/…
P331 - Do NOT induce vomiting.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P403 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:

NFPA 704
Health: 1
Fire: 3
Reactivity:0



3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Composition Information

Name	Product Identifier (CAS#)	% (w/w)	Classification
Gasoline	8006-61-9	100	Carc 1B, H350; Muta 1B, H340; Asp 1, H304
Benzene	71-43-2	0.1 to 4.9 (0.1 to 1.3*)	Flam liq 2, H225; Carc 1A, H350; Muta 1B H340; STOT RE 1, H372; Asp 1, H304; Eye Irrit 2, H319; Skin Irrit 2, H315
Ethyl Alcohol (Ethanol)	64-17-5	0 – 10	Flam Liq 2 H225
Toluene	108-88-3	0 - 15	Flam liq 2, H225; Repro 2, H361d; STOT RE 2, H373; Asp 1, H304; Skin Irrit 2, H315; STOT SE 3, H336
Xylene, mixed isomers	1330-20-7	0 - 15	Flam Liq 3, H226; Acute Tox 4, H332; Acute Tox 4, H312; Skin Irrit 2, H315
Ethyl Benzene	100-41-4	< 4	Flam Liq 2, H225; Acute Tox 4, H332; STOT RE 2, H373; Asp 1, H304
1,2,4- Trimethylbenzene	95-63-6	<5	Flam Liq 3, H226; Acute Tox 4, H332; Acute Tox 4, H312; Skin Irrit 2, H315; Eye Irrit 2, H319; STOT SE 3, H335; Acute Aquatic 2, H411

*for reformulated gasoline

Additional Formulation Information
A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. Butane is often added to increase volatility, especially in winter. May contain antioxidant and multifunctional additives. Oxygenated and reformulated gasoline will have legally-required amounts of oxygenates (Ethanol) to increase octane levels.

RBOB and PBOB are gasoline base stocks and do not contain any Oxygenates (Ethanol).

*Also see Section 15 for list of SARA Section 313 toxic chemicals.

4. FIRST AID MEASURES

Route	Measures
Inhalation	Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
Ingestion	Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.
Eye Contact	If present, remove contact lenses. In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 mm. Hold eyelids open to ensure adequate flushing. Seek medical attention.
Skin Contact	Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.
Absorption	As with skin contact, remove contaminated clothing and flush with copious amounts of water. Flush affected area for at least 15 minutes to minimize potential for further absorption. Seek medical attention if significant portions of skin have been exposed.

Most Important Symptoms
Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

Immediate Medical Attention and Special Treatment
If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

Application of epinephrine may cause cardiac arrhythmia in persons exposed to large quantities of hydrocarbon vapor or due to skin absorption. Observe for development of symptoms leading to cardiac arrhythmia.

Urine samples may be obtained to determine biological effects of benzene exposure and should be collected in accordance with the medical surveillance criteria in 29 CFR 1910.1028.

Contaminated clothing, including shoes may present a fire hazard and should be discarded

Medical Conditions Aggravated by Exposure
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, C02, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

During certain times of the year and/or in certain geographical locations, gasoline may contain additional additives. Firefighting

foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration - refer to NFPA 11 'Low Expansion Foam -1994 Edition."

Specific Hazards / Products of Combustion
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full face piece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 9 for fire properties of this chemical including flash point, autoignition temperature, and explosive limits

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Depending on the size of the spill, downwind receptors may need to be notified.

Evacuate nonessential personnel and remove or secure all ignition sources (flame, spark, hot work, hot metal, etc.). Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material.

Highly flammable material, even small spills may pose a fire danger for emergency responders. Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains, or trenches. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned downwind of the spill area. See Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits (see Section 8). Contaminated clothing should not be near sources of ignition.

Environmental Precautions
Stop the spill to prevent environmental release if it can be done safely. Product is toxic to aquatic life. Take action to isolate environmental receptors including drains, storm sewers and natural water bodies. Keep on impervious surface if at all possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce / prevent airborne release.

Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state or local requirements for reporting environmental release where necessary (see Section 15 for further information)

Containment and Clean-Up Methods
Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking absorbents, or absorbent

boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of firefighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with dry earth, sand or other non-combustible, inert oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container with clean, non-sparking tools for reclamation or disposal. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING AND STORAGE

Handling Precautions
USE ONLY AS A FUEL
DO NOT SIPHON BY MOUTH

Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to reduce the possibility of static-initiated fire or explosion. Follow precautions to prevent static initiated fire.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Vapors are heavier than air and can accumulate in low lying areas (e.g., tanks, pits, vaults, dikes, drains, etc.) Follow specific procedures for confined space entry in areas where product may be present pursuant to OSHA requirements in 29 CFR 1910.146. Atmospheric testing using a combustible gas indicator may be necessary in confined areas where product may be present.

Special slow load procedures for “switch loading” must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, “Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

Storage
Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Separate from incompatible materials (see Section 10) by distance or secondary containment.

Store in a well-ventilated area. Protect containers from damage and vehicular traffic. Post “No Smoking” signs in product storage areas. This storage area should comply with NFPA 30 “Flammable and Combustible Liquid Code”. Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks In Flammable and Combustible Liquid Service” and API RP 2015 “Cleaning Petroleum Storage Tanks”.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Component	CAS #	List	Value
Gasoline	8006-61-9	ACGIH TWA ACGIH STEL	300 ppm 500 ppm
Benzene	71-43-2	ACGIH TLV-TWA ACGIH STEL OSHA AL OSHA TWA OSHA STEL	0.5 ppm* Skin; A1; BEI 2.5 ppm* Skin, A1: BEI 0.5 ppm 1 ppm 5 ppm
Ethyl Alcohol (Ethanol)	64-17-5	ACGIH STEL OSHA PEL	1000 ppm 1000 ppm
Toluene	108-88-3	ACGIH TWA OSHA TWA OSHA Ceiling limit OSHA Ceiling limit Peak	20 ppm 200 ppm 300 ppm 500 ppm (10 min)
Xylene, mixed isomers	1330-20-7	ACGIH TWA ACGIH STEL OSHA PEL	100 ppm 150 ppm 100 ppm
Ethyl Benzene	100-41-4	ACGIH TWA OSHA PEL OSHA STEL	20 ppm 100 ppm 125 ppm
1,2,4- Trimethylbenzene	95-63-6	ACGIH TWA	25 ppm

*Skin designation indicates the chemical is skin absorbable

Engineering Controls

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and

Flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity.

Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

Personal Protective Equipment

Exposure	Equipment
Eye / Face	Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.
Skin	Gloves constructed of nitrile or neoprene are recommended when handling this material. If contact with the body is expected, chemical protective clothing such as of E.I. DuPont Tychem ®, Barricade®, or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.
Respiratory	Personal protective equipment (PPE) should meet recommended national standards. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134 and the OSHA Benzene Standard, 29 CFR 1910.1028. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection. Specific requirements under the OSHA occupational exposure to Benzene may apply if concentrations exceed the action level or permissible limits. Consult 29 CFR 1910.1028 for further information)

Exposure	Equipment
Thermal	Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	Comments
Appearance	A clear, water-like liquid	
Odor	A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with Ethanol may have a alcohol-like odor and is detectable at a lower concentration than non-oxygenated gasoline.	
Odor Threshold	See table below	
pH	Not available	
Melting / Freeze Point	- 150 ˚F	
Boiling Point And Range	85 to 437 ^{0}F (39 to 200 C)	
Flash Point	-45 ^{0}F (-43 C)	
Evaporation Rate	10-11	(n-butyl acetate = 1)
Flammability	Flammable liquid	
Flammability Limits	1.4 – 7.6%	(est)
Vapor Pressure	7-15 RVP @100 ^{0}F (38 C) 275-475mm Hg @ 68 ^{0}F (20 C)	
Vapor Density	AP 3 to 4	
Specific Gravity	0.76	(water =1)
Solubility	Non-oxygenated gasoline-negligible (<0.1% @77^{0}F). Gasoline with 10% Ethanol has greater solubility than other oxygenates	
Partition Coefficient	2-7	as Log P
Autoignition Temperature	highly variable; >530 ^{0}F (>280 C)	
Decomposition Temperature	Evaporation or ignition likely before decomposition will occur	
Viscosity	0.64 – 0.88 mm^2/sec	
Percent Volatiles	100%	

Parameter	Odor Detection	Odor Recognition
Non-oxygenated gasoline	0.5-0.6 ppm	0.8-1.1 ppm
Gasoline with 10% Ethanol	0.2-0.3 ppm	0.4-0.7 ppm

10. STABILITY AND REACTIVITY

Reactivity
Material is not self reacting, flammable concentrations may be present in air.

Stability
Normally stable unless mixed with incompatibles or fire in presence of an ignition source. Material is flammable liquid.

Reactions / Polymerization
Stable. Hazardous polymerization will not occur.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

Incompatible Materials
Keep away from strong acids and oxidizers.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:

Acute Toxicity (Inhalation LC50)

Gasoline (8006-61-9)	
LC50 Inhalation Human	2000 ppm/1 hr
Benzene (71-43-2)	
LC50 Inhalation Rat	10,000 ppm/7 hr
Ethanol (64-17-5)	
LC50 Inhalation Rat	>20,000 ppm/10 hr
Toluene (108-88-3)	
LC50 Inhalation Mouse	400 ppm/4 hr
1,2,4 Trimethylbenzene (95-63-6)	
LC50 Inhalation Mouse	2000 ppm/48 hr
Xylene (1330-20-7)	
LC50 Inhalation Rat	6350 ppm/4 hr

Acute Toxicity (Oral LC50)

Gasoline (8006-61-9)	
LC50 Oral Rat	14,063 mg/l/4h
Benzene (71-43-2)	
LC50 Oral Rat	3306 mg/kg
Ethanol (64-17-5)	
LC50 Oral Rat	7060 mg/kg
Toluene (108-88-3)	
LC50 Oral Rat	2600 mg/kg
1,2,4 Trimethylbenzene (95-63-6)	
LC50 Oral Rat	3550 mg/kg
Xylene (1330-20-7)	
LC50 Oral Rat	>3500 mg/kg
Ethylbenzene (100-41-4)	
LC50 Oral Rat	3500 mg/kg

Acute Toxicity (Dermal LC50)

Gasoline (8006-61-9)	
LD50 Dermal Rabbit	>5 mL/kg
Benzene (71-43-2)	
LD50 Dermal Rabbit	>8260 mg/kg
Toluene (108-88-3)	
LC50 Dermal Rabbit	12,200 mg/kg
1,2,4 Trimethylbenzene (95-63-6)	
LC50 Dermal Rabbit	>3160 mg/kg

Xylene (1330-20-7)
LC50 Dermal Rabbit >43 g/kg
Ethylbenzene (100-41-4)
LC50 Dermal Rabbit 17,800 mg/kg

Skin Corrosion/Irritation: Causes skin irritation.

Serious Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: May cause genetic defects.

Carcinogenicity: OSHA: NO IARC: YES - 2B NTP: NO ACGIH: YES (A3)

IARC has determined that gasoline and byproducts of combustion are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. The NTP, ARC, OSHA and ACGIH list benzene as a human carcinogen.

Reproductive Toxicity: May damage/Suspected of damaging fertility or the unborn child.

Teratogenicity: Not available

Specific Target Organ Toxicity (Repeated Exposure): Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

Specific Target Organ Toxicity (Single Exposure): Single over-exposure likely to cause central nervous system effects (dizziness and drowsiness), excessive exposure could cause paralysis or cardiac arrhythmia.

Aspiration Hazard: This chemical is considered to be an aspiration hazard. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Potential Health Effects: Vapor irritating to eyes, nose, and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur. Inhalation at high concentrations in confined spaces with less than 16% oxygen needed to sustain life, skin and /or eye contact (liquid).

Chronic effects: Human inhalation (chronic) >500 ppm (approx 1.8 mg/L)/ day. Effects: May cause vomiting, diarrhea, insomnia, headache dizziness, anemia, muscle & neurological symptoms.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

12. ECOLOGICAL INFORMATION

Toxicity

Material is toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

EC50 Daphnia	30 mmol/m3 (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish	7.7 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

Persistence and Degradation: Not available

Bioaccumulative Potential: Not available

Mobility In Soil: Not available

Other Adverse Effects: None known

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options. May be considered a hazardous waste if disposed. Direct solid waste (landfill) or incineration at a solid waste facility is not permissible. Do not discharge to sanitary or storm sewer. Personnel handling waste containers should follow precautions provided in this document.

Shipping containers must be DOT authorized packages. Follow licensure and regulations for transport of hazardous material and hazardous waste as applicable.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	UN 1203
Proper Shipping Name	Gasoline
Hazard Class and Packing Group	3, PG II
Shipping Label	Flammable Liquid
Placard / Bulk Package	Flammable / 1203
Emergency Response Guidebook Guide Number	128

IATA Cargo

UN Identification Number	UN1203
Shipping Name / Description	Gasoline
Hazard Class and Packing Group	3, PG II
ICAO Label	3
Packing Instructions Cargo	364, Y341
Max Quantity Per Package Cargo	60 L

IATA Passenger

UN Identification Number	UN1203
Shipping Name / Description	Gasoline
Hazard Class and Packing Group	3, PG II
ICAO Label	3
Packing Instructions Passenger	353, Y341
Max Quantity Per Package	5 L

IMDG

UN Identification Number	UN1203
Shipping Name / Description	Gasoline
Hazard Class and Packing Group	3, PG II
IMDG Label	3
EmS Number	F-E S-E
Marine Pollutant	No

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local

regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Clean Water Act (Oil Spills)
Any spill or release of this product to “navigable waters” (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow-up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA Section 313- Supplier Notification
This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

- Benzene (71-43-2)
- Benzene (71-43-2) for reformulated gasoline
- Ethyl benzene (100-41-4)
- n-Hexane (110-54-3)
- Toluene (108-88-3)
- 1,2,4- Trimethylbenzene (95-63-6)
- Xylene, mixed isomers (1330-20-7)
- Ethyl Alcohol (Ethanol)

Information on each ingredient’s concentration can be found in Section 3
Information on each ingredient’s exposure limits can be found in Section 8

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States, or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

Pennsylvania Right to Know Hazardous Substance list:
The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Benzene	71-43-2	0.1-4.9%
Xylene	1330-20-7	0-15%
Toluene	108-88-3	0-15%
1,2,4-Trimethylbenzene	95-63-6	<5%
Ethyl Benzene	100-41-4	<4%
Ethyl Alcohol	64-17-5	0-10%

New Jersey Right to Know Hazardous Substance list:
The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Gasoline	8006-61-9	100%
Benzene	71-43-2	0.1-4.9%
Xylene	1330-20-7	0-15%
Toluene	108-88-3	0-15%
1,2,4-Trimethylbenzene	95-63-6	<5%
Ethyl Benzene	100-41-4	<4%
Ethyl Alcohol	64-17-5	0-10%

California Prop. 65
WARNING: This product contains chemicals known to the State of California to cause Cancer or Reproductive Toxicity.

Component	CAS	Amount
Benzene	71-43-2	0.1-4.9%
Toluene	108-88-3	0-15%
Ethyl Benzene	100-41-4	<4%
Ethyl Alcohol	64-17-5	0-10%

U.S. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)
Class B, Division 2 (Flammable Liquid)
Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

16. OTHER INFORMATION

Version	5
Issue Date	May 20, 2016
Prior Issue Date	March 3, 2015

Description of Revisions
Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

˚F	Degrees fahrenheit (temperature)	mg	Milligrams
<	Less than	mL	Milliliter
=	Equal to	mm^2	Square millimeters
>	Greater than	mmHg	Millimeters of mercury (pressure)
AP	Approximately	ppm	Parts per million
C	Centigrade (temperature)	sec	Second
kg	Kilogram	ug	Micrograms
L	Liter		

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
AL	Action Level
ANSI	American National Standards Institute
API	American Petroleum Institute
CAS	Chemical Abstract Service
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation
EC50	Ecological concentration 50%
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
GHS	Global Harmonized System
HMIS	Hazardous Materials Information System
IARC	International Agency for Research On Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
Koc	Soil Organic Carbon
LC50	Lethal concentration 50%
LD50	Lethal dose 50%
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NOIC	Notice of Intended Change
NTP	National Toxicology Program
OPA	Oil Pollution Act of 1990
OSHA	U.S. Occupational Safety & Health Administration
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act Reauthorization Act of 1986 Title III
REL	Recommended Exposure Limit (NIOSH)
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and
SCBA	Self Contained Breathing Apparatus
SPCC	Spill Prevention, Control, and Countermeasures
STEL	Short-Term Exposure Limit (generally 15 minutes)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hr.)
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WEEL	Workplace Environmental Exposure Level (AIHA)
WHMIS	Canadian Workplace Hazardous Materials Information System

Disclaimer of Expressed and Implied Warranties

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

** End of Safety Data Sheet **

Safety Data Sheet

SECTION 1 IDENTIFICATION

Chevron and Texaco Unleaded Gasolines (All Grades)

Recommended Use: Fuel
Restrictions on Use: For use as a motor fuel only.
Other means of identification: Automotive, Calco Mid-Grade Unleaded Gasoline, Calco Premium Gasoline, Calco Regular Unleaded Gasoline, CHEVRON and TEXACO MID-GRADE UNLEADED GASOLINES, CHEVRON and TEXACO PREMIUM UNLEADED GASOLINES, CHEVRON and TEXACO REGULAR UNLEADED GASOLINES, Chevron Mid-Grade Unleaded Gasoline, Chevron Plus Unleaded Gasoline, Chevron Premium Unleaded Gasoline, Chevron Regular Unleaded Gasoline, Chevron Supreme Plus Unleaded Gasoline, Chevron Supreme Unleaded Gasoline, Chevron UL/CQ Gasoline, GASOLINE (GENERIC), Gasolines, Texaco Power Plus Gasoline, Texaco Power Premium Unleaded Gasoline, Texaco Unleaded Gasoline, UNLEADED GASOLINE FOR EXPORT
Company Identification
Chevron Products Company
1400 Smith Street
Houston, TX 77002
United States of America

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623
Product Information
Product Information: (800) 582-3835
SDS Requests: (800) 414-6737

SPECIAL NOTES: This SDS applies to: all motor gasoline.

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:
- Flammable liquid: Category 1.
- Aspiration toxicant: Category 1.
- Carcinogen: Category 1B.
- Eye irritation: Category 2A.
- Germ Cell Mutagen: Category 1B.
- Reproductive toxicant (developmental): Category 2.
- Skin irritation: Category 2.
- Target organ toxicant (central nervous system): Category 3.
- Target organ toxicant (repeated exposure): Category 1.
- Acute aquatic toxicant: Category 2.

- Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards:

- Extremely flammable liquid and vapour.

Health Hazards:

- May be fatal if swallowed and enters airways.
- Causes skin irritation.
- Causes serious eye irritation.
- May cause drowsiness or dizziness.
- May cause genetic defects.
- May cause cancer.
- Suspected of damaging the unborn child.
- Causes damage to organs (Blood/Blood Forming Organs) through prolonged or repeated exposure.

Environmental Hazards:

- Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

General:

- Keep out of reach of children.
- Read label before use.

Prevention:

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames, and hot surfaces. - No smoking.
- Keep cool.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical, ventilating, lighting, and equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe fume, gas, mist, vapours, or spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Avoid release to the environment.
- Wear protective gloves, protective clothing, eye protection, and face protection.

Response:

- IF SWALLOWED: Immediately call a POISON CENTER, doctor, or physician.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- IF exposed or concerned: Get medical advice or attention.
- Specific treatment (see Notes to Physician on this label).
- Do NOT induce vomiting.
- If skin irritation occurs: Get medical advice or attention.
- If eye irritation persists: Get medical advice or attention.

- Wash contaminated clothing before reuse.
- In case of fire: Use media specified in the SDS to extinguish.
- Collect spillage.

Storage:
- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.

Disposal:
- Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous Substance(s) or Complex Substance(s) required for disclosure

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %volume

Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure

COMPONENTS	CAS NUMBER	AMOUNT
Toluene	108-88-3	15 - 40 %volume
Pentane, 2,2,4-trimethyl-	540-84-1	10 - 15 %volume
Xylene	1330-20-7	10 - 15 %volume
Pentane isomers (pentanes)	Mixture	7 - 13 %volume
Butane	106-97-8	7 - 13 %volume
Ethanol	64-17-5	5 - 10 %volume
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5-isomer)	25551-13-7	5 - 10 %volume
Benzene	71-43-2	1 - < 5 %volume
Hexane	110-54-3	1 - 4 %volume
Heptane	142-82-5	1 - 4 %volume
Cyclohexane	110-82-7	1 - 3 %volume
Ethylbenzene	100-41-4	1 - 3 %volume
Naphthalene	91-20-3	1 - 2 %volume
Methylcyclohexane	108-87-2	1 - 2 %volume
Cumene	98-82-8	0 - 0.3 %volume

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything

by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed
IMMEDIATE HEALTH EFFECTS
Eye: Contact with the eyes causes severe irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.
Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.
Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.
Inhalation: Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:
Reproduction and Birth Defects: Contains material that may cause harm to the unborn child if inhaled above the recommended exposure limit.
Cancer: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 1 carcinogen (carcinogenic to humans on the basis of sufficient evidence for cancer in humans and the combination of sufficient evidence for cancer in experimental animals and strong mechanistic evidence in exposed humans) by the International Agency for Research on Cancer (IARC). Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethanol, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains cumene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Genetic Toxicity: Contains material that may cause heritable genetic damage based on animal data.
Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Blood/Blood Forming Organs See Section 11 for additional information. Risk depends on duration and level of exposure.

Indication of any immediate medical attention and special treatment needed
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry Chemical, CO2, water spray (fog) or alcohol resistant foam.
UNSUITABLE EXTINGUISHING MEDIA: Do not use water jet.
Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Observe all relevant local and international regulations. Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator. Keep out unnecessary and unprotected personnel. Persons entering the contaminated area to correct the problem or to determine whether it is safe to resume normal activities must comply with all instructions and wear appropriate personal protective equipment as indicated in Section 8.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Precautionary Measures: This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.
Do not store in open or unlabeled containers. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.
Static Hazard: Improper filling of portable gasoline containers creates danger of fire. Only dispense gasoline into approved and properly labeled gasoline containers. Always place portable containers on the ground. Be sure pump nozzle is in contact with the container while filling. Do not use a nozzle's lock-open device. Do not fill portable containers that are inside a vehicle or truck/trailer bed.

Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be

sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:
Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.
Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. **Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced.** Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Butyl	0.7	7
Neoprene	0.61	7
Nitrile	0.8	60
Nitrile	0.23	2
Polyvinyl Chloride (PVC)	1.1	2
Viton Butyl	0.3	120

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors. When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Gasoline	ACGIH	--	300 ppm	500 ppm	--	--
Gasoline	ACGIH	Vapor	300 ppm	500 ppm	--	A3
Toluene	ACGIH	--	20 ppm	--	--	--
Toluene	OSHA Z-2	--	200 ppm	--	300 ppm	--
Pentane, 2,2,4-trimethyl-	ACGIH	--	300 ppm	--	--	--
Pentane, 2,2,4-trimethyl-	OSHA Z-1	--	2350 mg/m3	--	--	--
Xylene	ACGIH	--	20 ppm	--	--	--
Xylene	OSHA Z-1	--	435 mg/m3	--	--	--
Butane	ACGIH	--	--	1000 ppm	--	--
Ethanol	ACGIH	--	1000 ppm	1000 ppm	--	A4
Ethanol	OSHA Z-1	--	1900 mg/m3	--	--	--
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5- isomer)	ACGIH	--	10 ppm	--	--	--
Benzene	ACGIH	--	0.5 ppm	2.5 ppm	--	Skin
Benzene	ACGIH	Vapor	0.5 ppm	2.5 ppm	--	--
Benzene	CVX	Vapor	0.5 ppm	2.5 ppm	--	--
Benzene	OSHA SRS	--	1 ppm	5 ppm	--	29 CFR 1910.1028
Benzene	OSHA Z-2	--	10 ppm	--	25 ppm	--
Hexane	ACGIH	--	50 ppm	--	--	Skin
Hexane	OSHA Z-1	--	1800 mg/m3	--	--	--
Heptane	ACGIH	--	400 ppm	500 ppm	--	--
Heptane	OSHA Z-1	--	2000 mg/m3	--	--	--
Cyclohexane	ACGIH	--	100 ppm	--	--	--
Cyclohexane	OSHA Z-1	--	1050 mg/m3	--	--	--
Ethylbenzene	ACGIH	--	20 ppm	--	--	--
Ethylbenzene	ACGIH	Vapor	100 ppm	--	--	--
Ethylbenzene	OSHA Z-1	--	435 mg/m3	--	--	--
Naphthalene	ACGIH	--	10 ppm	--	--	Skin
Naphthalene	ACGIH	Vapor	10 ppm	15 ppm	--	A4 Skin
Naphthalene	OSHA Z-1	--	50 mg/m3	--	--	--
Methylcyclohexane	ACGIH	--	400 ppm	--	--	--
Methylcyclohexane	OSHA Z-1	--	2000 mg/m3	--	--	--
Cumene	ACGIH	--	5 ppm	--	--	--
Cumene	OSHA Z-1	--	245 mg/m3	--	--	Skin

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow

Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: 5 psi - 15.5 psi (Typical) @ 37.8 °C (100 °F)
Relative Vapor Density: 3 - 4 (Typical)
Initial Boiling Point: 27.2°C (81°F) - 52.8°C (127°F) (Typical)
Solubility: Negligible
Freezing Point: Not Applicable
Melting Point: Not Applicable
Specific Gravity: 0.7 g/ml - 0.8 g/ml @ 15.6°C (60.1°F) (Typical)
Particle Characteristics: Not applicable
Density: No data available
Kinematic Viscosity: <1 SUS @ 37.8°C (100°F)
Evaporation Rate: No data available
Decomposition temperature: No data available
Partition coefficient n-octanol/water (logarithmic value): 2 - 7

FLAMMABLE PROPERTIES:
Flammability (solid, gas): Not Applicable

Flashpoint: (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)
Autoignition: > 280 °C (> 536 °F)
Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur. May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Incompatibility With Other Materials: Not applicable
Hazardous Decomposition Products: None known (None expected)

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects
Serious Eye Damage/Irritation: This material causes serious eye irritation. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Corrosion/Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: LD50: >3.75 g/kg (rabbit).

Acute Oral Toxicity: LD50: >5 ml/kg (rat).

Acute Inhalation Toxicity: 4 hour(s) LD50: >20000 mg/m3 (rat).
Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: This material may cause genetic defects. The product has not been tested. The

statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: This material may cause cancer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components. Gasoline has been classified as a Group 1 carcinogen (carcinogenic to humans on the basis of sufficient evidence for cancer in humans and the combination of sufficient evidence for cancer in experimental animals and strong mechanistic evidence in exposed humans) by the International Agency for Research on Cancer (IARC). Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethanol, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains cumene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: This material is suspected of damaging the unborn child. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: This material may cause drowsiness or dizziness. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: This material causes damage to organs through prolonged or repeated exposure. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: This material is considered an aspiration hazard based on the kinematic viscosity of the material.

ADDITIONAL TOXICOLOGY INFORMATION:
Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2/3, 8 and 15 of this SDS. More detailed information on the health hazards of specific gasoline components can be obtained calling the Chevron Emergency Information Center (see Section 1 for phone numbers). Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice and kidney cancer in male rats. MUTAGENICITY: Gasoline was not mutagenic, with or without activation, in the Ames assay (Salmonella typhimurium), Saccharamyces cerevisesae, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chromosomal aberrations in their bone marrow cells. EPIDEMIOLOGY: To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma. This product contains naphthalene.
GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.
REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. GENETIC TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains cyclohexane.
Cyclohexane primarily affects the central nervous systems of laboratory animals and humans. Acute or prolonged inhalation of cyclohexane at levels below the recommended exposure limits does not result in toxic effects while acute exposures to levels above these recommended limits can cause reversible central nervous system depression. Prolonged exposures of laboratory animals to high levels (up to low thousands of parts per million) have also caused reversible effects which included hyperactivity, diminished response to stimuli, and adaptive liver changes while very high levels (high thousands of parts per million) were fatal. No developmental effects were seen in rats or rabbits following exposures of up to 7000 ppm cyclohexane. No reproductive effects occurred in rats, although postnatal pup growth was reduced at 7000 ppm in a similar manner as observed in the parental animals. Cyclohexane has not been shown to be mutagenic in several in vitro and in vivo assays and has not produced tumors in several dermal application long-term bioassays. Based on these results and the lack of any mutagenic or

genotoxic metabolites, cyclohexane is not expected to be mutagenic or genotoxic. Following dermal exposure, cyclohexane is rapidly absorbed, metabolized,and excreted.

This product contains ethanol (ethyl alcohol).
Chronic ingestion of ethanol can damage the liver, nervous system and heart. Chronic heavy consumption of alcoholic beverages has been associated with an increased risk of cancer. Ingestion of ethanol during pregnancy can cause human birth defects such as fetal alcohol syndrome.
This product contains butane.
An atmospheric concentration of 100,000 ppm (10%) butane is not noticeably irritating to the eyes, nose or respiratory tract, but will produce slight dizziness in a few minutes of exposure. No chronic systemic effect has been reported from occupational exposure.

This product contains benzene.
GENETIC TOXICITY/CANCER: Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation.
REPRODUCTIVE/DEVELOPMENTAL TOXICITY: No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.
OCCUPATIONAL: The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product.

This product contains n-hexane.
TARGET ORGAN TOXICITY: Prolonged or repeated ingestion, skin contact or breathing of vapors of n-hexane has been shown to cause peripheral neuropathy. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage. Exposure to 1000 ppm n-hexane for 18 hr/day for 61 days has been shown to cause testicular damage in rats. However, when rats were exposed to higher concentrations for shorter daily periods (10,000 ppm for 6 h/day, 5 days/wk for 13 weeks), no testicular lesions were seen.
CARCINOGENICITY: Chronic exposure to commercial hexane (52% n-hexane) at a concentration of 9000ppm was not carcinogenic to rats or to male mice, but did result in an increased incidence of liver tumors in female mice. No carcinogenic effects were observed in female mice exposed to 900 or 3000 ppm hexane or in male mice. The relevance for humans of these hexane-induced mouse liver tumors is questionable.
GENETIC TOXICITY: n-Hexane caused chromosome aberrations in bone marrow of rats, but was negative in the Ames and mouse lymphoma tests.

This product contains ethylbenzene.
BIRTH DEFECTS AND REPRODUCTION: Ethylbenzene is not expected to cause birth defects or other developmental effects based on well-conducted studies in rabbits and rats sponsored by NIOSH. Other studies in rats and mice which reported urinary tract malformations have many deficiencies and have limited usefulness in evaluating human risk. Reproductive effects are not expected based on a NIOSH study of fertility, and lack of effects observed for sperm counts and motility, estrous cycle and pathology of reproductive organs following repeated exposures. HEARING: Statistically significant losses in outer hair cells (OHCs) were observed in rats exposed to >=200 ppm ethylbenzene, 6 hours/day, 6 days/week for 13 weeks, after an 8-week recovery period. Following longer exposure, inner hair cells losses were also observed in rats exposed to >= 600 ppm ethylbenzene, but only occasionally in rats exposed to 400 ppm. The Lowest Observed Adverse Effect Level in rats (LOAEL) was 200 ppm for losses of OHCs.

Guinea pigs exposed to ethylbenzene at 2,500 ppm, 6 hours/day for 5 days did not show auditory deficits or losses in OHCs. The concentration of ethylbenzene used in the JP-8 study was approximately 10 ppm. GENETIC TOXICITY: Ethylbenzene tested negative in the bacterial mutation test, Chinese Hamster Ovary (CHO) cell in vitro assay, sister chromatid exchange assay and an unscheduled DNA synthesis assay. Conflicting results have been reported for the mouse lymphoma cell assay. Increased micronuclei were reported in an in vitro Syrian hamster embryo cell assay; however, two in vivo micronuclei studies in mice were negative. In Syrian hamster embryo cells in vitro, cell transformation was observed at 7 days of incubation but not at 24 hours. Based on these results, ethylbenzene is not expected to be mutagenic or clastogenic. CARCINOGENICITY: In studies conducted by the National Toxicology Program, rats and mice were exposed to ethylbenzene at 25, 250 and 750 ppm for six hours per day, five days per week for 103 weeks. In rats exposed to 750 ppm, the incidence of kidney tubule hyperplasia and tumors was increased. Testicular tumors develop spontaneously in nearly all rats if allowed to complete their natural life span; in this study, the development of these tumors appeared to be enhanced in male rats exposed to 750 ppm. In mice, the incidences of lung tumors in males and liver tumors in females exposed to 750 ppm were increased as compared to control mice but were within the range of incidences observed historically in control mice. Other liver effects were observed in male mice exposed to 250 and 750 ppm. The incidences of hyperplasia were increased in the pituitary gland in female mice at 250 and 750 ppm and in the thyroid in male and female mice at 750 ppm.

This product contains cumene.
SUBCHRONIC TOXICITY: Two subchronic inhalation studies, in which rats of each sex were exposed for six hours/day, five days/week for thirteen weeks to 0, 50, 100, 500 or 1200 ppm cumene vapor, found that rats exposed to 500 and 1200 ppm had increases in weights of liver, kidneys and adrenals, and microscopic changes in the kidneys. Decreased motor activity in male rats exposed to 500 and 1200 ppm was observed in the first study, but was not duplicated in the second study. Cataracts in the lenses of the eyes, which occurred in both treated and untreated rats in the first study, were not statistically higher in treated animals in the second study, indicating that cumene did not cause cataracts. There were no exposure-related changes in hearing (auditory brainstem response), spermatogenesis or responses in the functional observation battery. DEVELOPMENTAL TOXICITY: In inhalation developmental toxicity studies, there was no evidence of developmental effects either in rabbits exposed to levels up to 2300 ppm on days 6-8 of gestation or in rats exposed to levels up to 1200 ppm on days 6-15 of gestation. GENETICTOXICITY: Cumene was not genotoxic in several in vitro assays including the Ames test, and unscheduled DNA synthesis assay and the Chinese hamster ovary cell chromosome aberration assay. CARCINOGENICITY: IARC has classified cumene as "possibly carcinogenic to humans" (Group 2B). Key findings from lifetime inhalation studies in laboratory rodents were as follows: An increased incidence of kidney tumors was observed in male rats only. These tumors are consistent with alpha-2u-globulin-mediated nephropathy, an effect specific to male rats and is considered irrelevant to humans. An increased incidence of liver tumors was observed in female mice only, and an increased incidence of lung tumors was observed in both male and female mice. The relevance of these cumene-induced liver and lung tumors to humans has not been established. This product contains toluene. GENERAL TOXICITY: The primary effects of exposure to toluene in animals and humans are on the central nervous system. Solvent abusers, who typically inhale high concentrations (thousands of ppm) for brief periods of time, in addition to experiencing respiratory tract irritation, often suffer permanent central nervous system effects that include tremors, staggered gait, impaired speech, hearing and vision loss, and changes in brain tissue. Death in some solvent abusers has been attributed to cardiac arrhythmias, which appear to be have been triggered by epinephrine acting on solvent sensitized cardiac tissue. Although liver and kidney effects have been seen in some solvent abusers, results of animal testing with toluene do not support these as primary target organs.
HEARING: Humans who were occupationally exposed to concentrations of toluene as low as 100 ppm for long periods of time have experienced hearing deficits. Hearing loss, as demonstrated using behavioral and electrophysiological testing as well as by observation of structural damage to cochlear hair cells, occurred in experimental animals exposed to toluene at high concentrations. It also appears that toluene exposure and noise may interact to produce hearing deficits.

COLOR VISION: In a single study of workers exposed to toluene at levels under 50 ppm, small decreases in the ability to discriminate colors in the blue-yellow range have been reported for female workers. This effect, which should be investigated further, is very subtle and would not likely have been noticed by the people tested.
REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene (usually at thousands of ppm) when they are pregnant. Toluene caused growth retardation in rats and rabbits when administered at doses that were toxic to the mothers. In rats, concentrations of up to 5000 ppm did not cause birth defects. No effects were observed in the offspring at doses that did not intoxicate the pregnant animals. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm in the rat and 500 ppm in the rabbit.

This product contains xylene.
ACUTE TOXICITY: The primary effects of exposure to xylene in animals and humans are on the central nervous system. In addition,in some individuals, xylene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. DEVELOPMENTAL TOXICITY: Xylene has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations. In addition, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Since xylene can cross the placenta, it may be appropriate to prevent exposure during pregnancy. GENETIC TOXICITY/CARCINOGENICITY: Xylene was not genotoxic in several mutagenicity testing assays including the Ames test. In a cancer study sponsored by the National Toxicology Program (NTP),technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years. HEARING: Mixed xylenes have been shown to cause measurable hearing loss in rats exposed to 800 ppm in the air for 14 hours per day for six weeks. Exposure to 1450 ppm xylene for 8 hours caused hearing loss while exposure to 1700 ppm for 4 hours did not. Although no information is available for lower concentrations, other chemicals that cause hearing loss in rats at relatively high concentrations do not cause hearing loss in rats at low concentrations. Worker exposure to xylenes at the permissible exposure limit (100 ppm, time-weighted average) is not expected to cause hearing loss.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

Gasoline studies have been conducted in the laboratory under a variety of test conditions with a range of fish and invertebrate species. An even more extensive database is available on the aquatic toxicity of individual aromatic constituents. The majority of published studies do not identify the type of gasoline evaluated, or even provide distinguishing characteristics such as aromatic content or presence of lead alkyls. As a result, comparison of results among studies using open and closed vessels, different ages and species of test animals and different gasoline types, is difficult.

The bulk of the available literature on gasoline relates to the environmental impact of monoaromatic (BTEX) and diaromatic (naphthalene, methylnaphthalenes) constituents. In general, non-oxygenated gasoline exhibits some short-term toxicity to freshwater and marine organisms, especially under closed vessel or flow-through exposure conditions in the laboratory. The components which are the most prominent in the water soluble fraction and cause aquatic toxicity, are also highly volatile and can be readily biodegraded by microorganisms.

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)
96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)

96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)
48 hour(s) LC50: 3.0 mg/l (Daphnia magna)

MOBILITY
No data available.

PERSISTENCE AND DEGRADABILITY
This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE
Bioconcentration Factor: No data available.
Partition coefficient n-octanol/water (logarithmic value): 2 - 7

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1203, GASOLINE, 3, II; OPTIONAL DISCLOSURE: UN1203, GASOLINE, 3, II, MARINE POLLUTANT (GASOLINE)

IMO/IMDG Shipping Description: UN1203, GASOLINE, 3, II, FLASH POINT SEE SECTION 9, MARINE POLLUTANT (GASOLINE)

ICAO/IATA Shipping Description: UN1203, GASOLINE, 3, II

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:
Aspiration Hazard
Carcinogenicity
Flammable (gases, aerosols, liquids, or solids)
Germ cell mutagenicity

Reproductive toxicity
Serious eye damage or eye irritation
Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

The following components of this material are found on the regulatory lists indicated.

Gasoline	01-1, 07
Toluene	03, 04, 05, 06, 07
Pentane, 2,2,4-trimethyl-	05, 06, 07
Xylene	03, 05, 06, 07
Butane	05, 06, 07
Ethanol	01-1, 02, 04, 05, 06, 07
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5- isomer)	05, 06, 07
Benzene	01-1, 02, 03, 04, 05, 06, 07
Hexane	03, 04, 05, 06, 07, 08-2
Heptane	05, 06, 07, 08-2
Cyclohexane	03, 05, 06, 07, 08-2
Ethylbenzene	01-2B, 03, 04, 05, 06, 07
Naphthalene	01-2B, 02, 03, 04, 05, 06, 07
Methylcyclohexane	05, 06, 07
Cumene	01-2B, 02, 03, 04, 05, 06, 07

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AIIC (Australia), DSL (Canada), EINECS (European Union), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States).

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 3 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 3 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the American Coatings Association (ACA) (for HMIS ratings).

REVISION STATEMENT:
SECTION 03 - Composition information was modified.
SECTION 04 - Delayed Health Effects - Carcinogenicity information was modified.
SECTION 08 - Occupational Exposure Limit Table information was modified.

SECTION 11 - Additional Toxicology Information information was modified.
SECTION 11 - Toxicological Information information was modified.
SECTION 15 - Regulatory Information information was modified.

Revision Date: April 17, 2026

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	PNOS - Particles Not Otherwise Specified

Prepared according to the 29 CFR 1910.1200 (2024) by Chevron.

The information in this SDS is based on the knowledge, information, and belief of Chevron and its affiliates as of the publication date. It is not a quality specification, and no warranty, express or implied, is given. We assume no responsibility or liability for the results of using this material. The information presented here pertains only to the listed product. Since conditions of use are beyond our control, it is the user's responsibility to determine the conditions for safe use of this product and assess its suitability for their application. Users should seek additional guidance if necessary.

Appendix D
Respiratory Protection Program

1. PURPOSE

The purpose of *Safety Management Procedure (SMP)-24 Respiratory Protection Program* is to provide guidance for the selection, use, storage, and cleaning of respiratory protection equipment as well as the medical and fit testing requirements for using respiratory protection.

2. SCOPE

This program described herein apply and shall be practiced by all Sevenson employees using non-voluntary use of respiratory protection in the workplace.

3. RESPONSIBILITIES

The Site Safety Professional shall be the Administrator of this Program.

4. METHODS

The Site Safety Professional will review product Safety Data Sheets, SDS as well as monitor for the contaminants of concern at the site to determine the need for respiratory protection. This review will include the intended use of products brought onto the site as well as the site activities that have the potential to expose workers to chemicals in concentrations at or above established action levels.

5. PROCEDURE FOR SELECTION OF RESPIRATORS

Respiratory protection utilized to prevent exposures to airborne workplace hazards will only be used when accepted engineering controls are not feasible. Administrative controls (i.e., worker rotation) will not be considered an accepted control measure to reduce personnel exposures.

Sevenson will select and provide respiratory protection based on the respiratory hazards to which its employees are exposed. Potential atmospheric hazards associated with non-routine activities performed shall be identified and assessed in separate Activity Hazard Analyses, AHA's. Additional performance considerations including cleaning, inspection, proper disassembly and assembly, and any other workplace and/or user factors that affect respirator reliability shall be identified and communicated to project staff during training sessions conducted annually or when deficiencies are observed by the Site Safety Professional. Sevenson will only issue respiratory protection that bears National Institute of Occupational Safety and Health, NIOSH approval.

All respiratory protection used by Sevenson personnel will be selected in accordance with procedures outlined in the NIOSH Respirator Decision Logic (May 1987), 29 CFR 1926.1101 (Table 1), 29 CFR 1926.62 (Table 1), and USACE EM385-1-1 (2024). Selection will be based on the following criteria:

- The nature of the contaminants (gas, vapor, dust, mist, or fume);
- The warning properties of the known or suspected contaminants;
- Applicable exposure limits published by OSHA, ACGIH, and NIOSH;

- The potential for exposure to workplace atmospheres which may be immediately dangerous to life or health (IDLH);
- Qualitative estimates of airborne contaminant concentrations;
- The results of air monitoring; and
- The nature of the work being performed for which respiratory protection is required.

Potential activities performed on the project site that may require respiratory protection include:

- Demolition Activities (concrete, asphalt and railroad tracks);
- Soil Excavation and Disposal
- Chemical Sampling
- Decontamination of Tools/Equipment

Use of respiratory protection shall be based upon task analysis, the results of air monitoring as determined by real time instrumentation, or both.

6. MEDICAL EVALUATIONS

All personnel whose job duties require, or may require the use of respiratory protection, must be approved to wear respiratory protection by an occupational physician approved by Sevenson's Medical Consultant, Work Care. Work Care shall, upon successful completion of the medical evaluation, issue a written Health Status Report approving the use of respiratory equipment. The Health Status Report shall include the telephone, email, and physical address as well as the printed name and signature of the physician issuing the opinion. The Health Status Report shall also state the date of the exam and the date the clearance expires. Respiratory clearance is part of the Sevenson medical surveillance program and will be repeated on an annual basis. The Health Status Report that contains the physician's written approvals for each Sevenson employee using respiratory equipment is maintained by the Site Safety Professional in the employee's safety and health file and may be reviewed in the site safety office.

All Client or subcontractor respirator users shall have a pre-placement history and targeted physical. The exam shall include a pulmonary function test, evaluation of the cardiovascular and respiratory system, and any tests required by the Occupational Health Provider.

Any physical problems associated with respirator use during the project will be noted in the employee's medical file; such information will be forwarded to Work Care upon approval by the Health and Safety Manager.

Additional medical evaluations shall be provided when:

- An employee reports medical signs or symptoms that are related to the ability to use a respirator

- A supervisor or the Site Safety Professional informs the employer that an employee needs to be reevaluated
- Information from the respiratory protection program, including observations made during the fit testing and program evaluation, indicates a need for employee reevaluation
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee
- It has been more than 12 months since the last medical exam

7. FIT TESTING PROCEDURES FOR TIGHT-FITTING RESPIRATORS

All personnel required to use respiratory protection by their job tasks must undergo a qualitative or quantitative fit test on an annual basis (no more than one year may elapse between fit tests). Fit testing will also be required if an employee is assigned a respirator of a make, type, or size different from any previously fit-tested.

Qualitative fit testing will be performed by in-house personnel using the fit test protocols identified in 29 CFR 1920.134, Appendix A, Section B, Subsection 5 (Irritant Smoke). The fit test results will include, at a minimum, the following information:

- The name, signature, and last four digits of social security number for the employee being fit tested;
- The respirator brand, model, and size;
- The date of the fit test;
- The method of fit testing used;
- A statement that the fit test protocols meet the requirements of 20 CFR 1910.134; and
- The name and signature of the fit testing instructor.

Quantitative fit tests may be performed in-house or by third party. This determination is made by the Site Safety Professional based on the availability of quantitative fit testing equipment at or near the project site. The fit test results will include, at a minimum, the following information:

- The name, signature, and social security number of the employee being fit tested;
- The respirator brand, model, and size;
- The date of the fit test;
- The method of fit testing used;
- A statement that the fit test protocols meet the requirements of 20 CFR 1910.134; and

- The name and signature of the fit testing instructor

Fit test reports shall be completed annually for all site personnel who are medically qualified and required to use respiratory protection. Fit test reports are maintained in the employee's personal health and safety file by the Site Safety Professional and may be reviewed upon request.

8. Procedure for Proper Use of Respirators in Routine and Reasonably Foreseeable Emergency Situations

Project employees will only use the respiratory equipment provided for the project. The project utilizes a community use system for respiratory equipment with the option to assign certain employees with their own individual respirator dependent on the frequency of use. The employee will only use the size and make of the respirator used during the fit test procedure.

If the employee is not sure of his/her size, they will check with the Site Safety Professional who will refer to his/her fit test record for verification. The exception to this procedure will be subcontractor personnel, who are responsible for reporting to the site with their own properly assigned and fitted respirators. Compliance with these requirements will be monitored by the Site Safety Professional.

Contact lenses may be worn while using a fullface-piece respirator. Sevenson will provide special eyeglass inserts designed for the respirator if an employee must wear eyeglasses with a full face-piece respirator.

The actual use of all respiratory protective equipment will conform to the manufacturer's operating instructions and training provided to the employee. A copy of all operating instructions for each type of respiratory equipment utilized will be maintained by the Site Safety Professional. The Site Safety Professional shall reference these operating instructions during annual fit-testing exercises and/or training involving respiratory equipment. Upon request to the Site Safety Professional, operating instructions shall be made available.

Respirators will not be worn when conditions exist that prevent a good face-to-face piece seal. These conditions include, but are not limited to:

- The growth of a beard or sideburns,
- The use of a skull cap which projects under the face piece,
- The use of regular corrective glasses where the temple bars prohibit a proper seal, or
- The absence of one or both dentures.

As stated, employees will be required to equip their respirators with the project's standard APR cartridge, HEPA (P100)/Organic Vapors/Acid Gases, for operations that require APR use. The cartridge change-out schedule is based on the site contaminant arsenic, which has the lowest Permissible Exposure Limit (PEL) for any of the project's contaminants of concern. Based on the Woods Equation (predictive model), APR cartridges will be changed at the end of each shift.

Employees will be required to perform a positive and negative fit check each time they don a respirator. Employees will be instructed to leave any work area where respirators are being used in the following situations:

- Before removing the respirator face piece for any reason;
- Before changing respirator cartridges; or
- When leakage around the face piece or a change in breathing resistance is detected

9. Procedure for Cleaning, Disinfecting, Storing, Inspecting, Repairing, Discarding, Maintaining Respirators

Respirators must be cleaned and disinfected at a frequency necessary to ensure proper protection is provided to the wearer. Respirators worn daily will be cleaned and disinfected at the end of the shift and during the annual inspection session. A respiratory cleaning station is set up in the decontamination area. The station will include, at a minimum, the following items:

- A bucket with a respirator cleaner/sanitizer solution and a soft bristle brush;
- Warm water clean rinse;
- Clean water rinse; and
- A non-contaminated area where respirators may be hung to dry.

Gross decontamination of the respirator shall be completed prior to immersion in the sanitizing solution and does not constitute respirator cleaning, but should always be completed as a precursor. Employees will remove and discard respirator cartridges prior to cleaning. Discarded cartridges exposed to site contaminants shall be discarded as hazardous waste.

Each employee who wears respiratory protection shall be responsible for cleaning the respirator they use. The following instructions will be posted at the respirator cleaning stations to ensure adequate cleaning and disinfection.

- Clean and disinfect respirators daily.
- Follow appropriate respirator cleaning/disinfection procedures. These procedures include:
    1. Remove mouth and nose pieces prior to cleaning respirators.
    2. Wash all parts thoroughly with sanitizer solution using a soft bristle brush.
    3. Rinse all parts in warm water.
    4. Perform a second rinse in clean water.
    5. Place respirators in a non-contaminated area to dry.

Respiratory equipment users shall store their respirator in the plastic bag provided when taken from the shelf during periods of non-use.

New and/or replacement respirators will be stored in the Site Safety Professional trailer in protective plastic bags and/or in manufacturer's boxes away from heat, direct sun, and dust.

Employees will be instructed to inspect the respirator they select prior to each use, after each use, during cleaning, and at any other time, as necessary. The inspection will focus on:

- Cleanliness;
- Respirator and respirator component integrity; and
- The presence and correct installation of component parts.

The Site Safety Professional will be required to hold an inspection session with the staff on an annual basis. The purpose of this session will be to allow the staff a chance to inspect a personal respirator. This inspection will provide aid in the identification of problems that the inspector of the respirator may not notice.

During this session, the respirator will be completely disassembled in accordance with the manufacturer's instruction. Specific disassembly procedures will be reviewed during the training. Copies of the manufacturer's assembly/disassembly instructions will be made available to all site employees. All individual parts will be thoroughly cleaned and inspected prior to assembly and use.

Sevenson will have approved replacement parts available for all respirators used on site. Respirator users will notify the Site Safety Professional when an inspection reveals a problem or inconsistency. The Site Safety Professional, or a designated representative, will then examine the respirator and determine if the complete respirator or a component part needs to be replaced. The Site Safety Professional, or a designated representative, will provide the appropriate replacement part/respirator and assist in the installation, as necessary. If a respirator cannot be immediately repaired, the respirator will be tagged with a "Do Not Use" sign and taken out of service until repairs can be completed.

Respiratory protection equipment that is no longer usable or viable will be discarded as soon as practical by the Site Safety Professional.

10. PROCEDURE TO ENSURE ADEQUATE AIR QUALITY, QUANTITY, AND FLOW OF BREATHING AIR FOR ATMOSPHERE SUPPLIED RESPIRATORS

The Site Safety Professional will ensure that breathing air for atmosphere-supplying respirators will be of high purity, meet quality levels for content, and does not exceed certain contaminant levels and moisture requirements.

10.1. COMPRESSED BREATHING AIR CYLINDERS

For supplied-air respirators (SARs), only Grade D breathing air shall be used in cylinders. The Site Safety Professional will coordinate deliveries of compressed air with the approved vendor and require certification that the air in the cylinders meets the specifications of Grade D breathing air. Moisture content in the cylinders will not exceed a dew point of –50°F (-45.6°C) at 1 atmosphere pressure.

Note: This requirement will prevent respirator valves from freezing, which can occur when excess moisture accumulates on the valves. All breathing gas containers must be marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84.

10.2. Compressors

Compressors used for supplying breathing air must be constructed and situated so contaminated air cannot enter the air-supply system. The location of the air intake will be in an uncontaminated area where exhaust gases from nearby vehicles, the internal combustion engine that is powering the compressor itself (if applicable), or other exhaust contaminants being ventilated will not be picked up by the compressor air intake.

Compressors will be equipped with suitable in-line, air-purifying sorbent beds and filters to further ensure breathing air quality and to minimize moisture content so that the dew point at 1 atmosphere pressure is 10°F (5.56°C) below the ambient temperature. Sorbent beds and filters will be maintained and replaced or refurbished periodically according to the manufacturer's recommendations. An inspection tag will be kept at the compressor indicating the most recent change date and the signature of the Program Administrator or designee authorized to perform the maintenance. Only non-oil-lubricated compressors will be used.

The SSHO will ensure that the compressor intake will not allow the introduction of carbon monoxide greater than 10 parts per million (ppm) into the system.

Note: This could be from sources other than the compressor such as forklifts/vehicles or other gas powered equipment.

Breathing air couplings must be incompatible with outlets for non-respirable plant air or other gas systems to prevent accidental servicing of airline respirators with non-respirable gases or oxygen. No asphyxiating substance (e.g., nitrogen) will be allowed in the breathing airlines.

11. Guidelines for Voluntary Use

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If Sevenson provides you with a respirator or you supply your own, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

- Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.

- Choose a respirator certified for use to protect against the contaminant of concern. NIOSH, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
- Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles, will not protect you against gases, vapors, or very small particles of fumes or smoke.
- Keep track of your respirator so that you do not mistakenly use someone else's respirator.

12. Training

12.1. Respiratory Hazards

Employees will be trained in the specific hazards anticipated at the Site. This training shall include but is not limited to:

- Coworker medical emergency
- Site wide evacuation
- Fire at the site
- HAZCOM training for the chemicals of interest or use at the site.

12.2. Proper Use

All personnel required to use respiratory protection on this project will meet specific training requirements, and have the corresponding documentation available in the site safety files.

Personnel will be expected to have at least rudimentary knowledge of respirator use prior to job assignment. However, all site personnel will receive additional respirator training as a portion of their site-specific safety and health training.

The additional site-specific respirator training will include, at a minimum, the following information:

- Why the training is necessary;
- What conditions can render a respirator ineffective;
- What the limitations and capabilities of the respirator are;
- How to use the respirator effectively in emergency situations;
- How to inspect, put on and remove, and check the seals of the respirator;
- What respirator cleaning, storage, inspection, and maintenance procedures are; and

- How to recognize medical signs and symptoms that may limit or prevent effective use of the respirator.

This initial training will be reinforced and updated through a series of regularly scheduled safety meetings and interaction with area supervisors. Training records will be maintained by the Site Safety Professional and will be available for review in the site safety office.

12.3. Procedure for Proper Use of Respirators in Routine and Reasonably Foreseeable Emergency Situations

Employees shall be trained on Section 8 *Procedure for Proper Use of Respirators in Routine and Reasonably Foreseeable Emergencies Situations*.

12.4. Voluntary Use

Employes that choose to wear respiratory protection voluntarily must learn the contents of 29CFR1910.134 Appendix D. These requirements are reflected in Section 11 *Guideline for Voluntary Use* of this SMP.

13. Evaluating the Program

The Site Safety Professional will periodically review this respiratory protection program. The program will, at a minimum, be reviewed annually. More frequent reviews may be implemented by the Site Safety Professional if site conditions or concerns warrant an additional review. Changes will be enacted in respirator use procedures or policies based on the results of the Site Safety Professional's audits and observations or if legitimate concerns or issues are addressed to the Site Safety Professional on a repetitive basis. Any changes in the respiratory protection program will be documented and must first be approved by the Safety and Health Manager (SHM).

14. Revisions

1. November 9, 2025. Added Section 3 *Responsibilities* to indicate that the Site Safety Professional is the Respirator Protection Program Administrator at the site level. Added new section, Section 10, Procedure to Ensure Adequate Air Quality, Quantity, and Flow of Breathing Air for Atmosphere Supplied Respirators. Revised the remaining sections for number flow. Added Sections 12.3 and 12.4 to reflect training requirements for respiratory hazards to which employees are potentially exposed during routine and emergency situations and voluntary use guidelines in 29CFR1910.134 Appendix D.

Appendix E
Hazard Communication Program

1. PURPOSE

The Hazard Communication Standard, OSHA 1910.1200, recently amended to meet the international Global Harmonization Standard (GHS), is the primary regulation to communicate information about chemical hazards. The regulation requires that each employer develop and implement its own program to assure employees know and understand how to protect themselves from the hazards of using chemicals at Sevenson.

2. SCOPE

This program and the procedures described herein apply and shall be practiced by all Sevenson employees using or potentially exposed to the hazards of chemical in the workplace. This program applies to permanent facilities and construction sites equally.

3. REQUIREMENTS

All employees who may be exposed to hazardous materials will be trained according to the requirements of this Hazard Communication Program BEFORE using or being potentially exposed to hazardous chemical. The training requirements are in section 6 of *SMP-07 Hazard Communication Program*.

Retraining will occur as needed when new hazards become recognized, when employees become exposed to new hazards because of transfer, process changes, or new chemical introductions, or when they demonstrate a lack of understanding and/or adherence to the program requirements. In the event non-English speaking or reading employees are utilized at the site, accommodations will be made to obtain a SDS in their native langue and have someone who can communicate effectively with the individual(s) participate in the training. Employees shall demonstrate comprehension of the chemical hazards they may be exposed to, how to protect themselves from such hazards, how to use an SDS to recognize and avoid those hazards.

4. RESPONSIBILITIES

Job site personnel shall be under the general direction of the Sevenson Project Manager. Each project shall also have personnel with the primary responsibility of site safety and who are under the direction of the Sevenson Director of Health and Safety. Facility-based personnel shall be directly responsible to the Director of Health and Safety. Following is a description of the different program roles.

4.1. SITE SAFETY PROFESSIONAL

Site Safety Professional(s) report directly to Sevenson's Director of Health and Safety. The Site Safety Professional(s) are responsible for implementing *SMP-07 Hazard Communication Program*. Depending upon the size of the project, the SSHOs may have safety technicians reporting to them. The SSHO's are responsible for:

1. Assuring all personnel on the job site have received training described by this program.
2. Obtaining and managing all SDSs of chemicals used on the site.
3. Conveying site-specific hazard communication information.
4. Conducting site observations to assure that this program is properly implemented.

4.2. PROJECT SUPERINTENDENT/FIELD SUPERVISORS

1. Enforce the requirements of the Sevenson Hazard Communication Program.
2. Apprise other contractors regarding the hazardous chemicals which their employees may be exposed to. Contractors, whose employees may be exposed to hazardous substances used by Sevenson employees, will be given access to *SMP-07 Hazard Communication Program*.
3. Ensure that all Subcontracts working at the site shall submit all SDSs for the materials they are using at the site to the Site Safety Professional.

4.3. CRAFT AND PROJECT PERSONNEL

1. Craft and Facility Personnel are responsible for carrying out the requirements of this program and notifying their immediate supervisor of any deficiencies or concerns.

5. HAZARD COMMUNICATION PROGRAM

5.1. INVENTORY

A written inventory of all the hazardous chemicals used or stored by Sevenson is maintained by the Site Safety Professional and is available in the Site Safety Office. Likewise, a written inventory will be maintained at each facility's location and will include all chemicals used at that facility. For emergency response purposes, identify the approximate maximum and average on hand quantities of each chemical. Quantities may be in liters, kilograms, gallons, pounds, cubic feet, etc.

See SMP-07 *Hazard Communication Program* Attachment 1 for an example Chemical Inventory Form.

5.2. STORAGE LOCATION MAP

A storage location map shall be posted on the employee bulletin board and updated accordingly when new products are introduced to the site or as storage locations change, added, or removed from site.

See SMP-07 *Hazard Communication Program* Attachment 1 for an example Location Map.

5.3. USE

An explanation of how the chemicals will be used at the project on the Chemical Inventory Form.

See SMP-07 *Hazard Communication Program* Attachment 1 for an example Chemical Inventory Form.

5.4. WARNING LABELS

Sevenson will ensure that each container of hazardous chemical in the workplace will be labeled with the following information, provided on the manufacturer's SDS:

1. Identity of the hazard.

2. Appropriate hazard pictogram (see next page).
3. Signal word (danger or warning).
4. Hazard statement with degree of hazard.
5. Precautionary statements

Employees are required to label secondary containers into which hazardous chemicals are transferred from labeled containers even if only for immediate use and under constant control. Manufacturer's and/or shipping labels will be left on the containers and that all containers will be labeled.

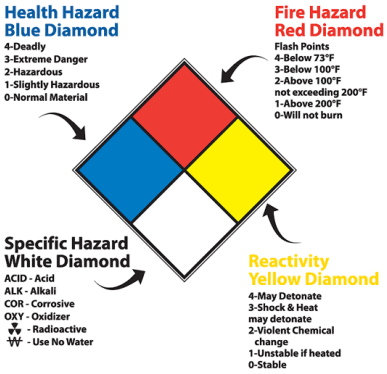
5.5. Labeling Chemicals in the Workplace

5.5.1. HCS Pictograms and Hazards

HCS Pictograms and Hazards - Mandatory

Health Hazard  ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity	**Flame**  ▪ Flammables ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides	**Exclamation Mark**  ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  ▪ Gases Under Pressure	**Corrosion**  ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals	**Exploding Bomb**  ▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
Flame Over Circle  ▪ Oxidizers	**Environment (non-Mandatory)**  ▪ Aquatic Toxicity	**Skull and Crossbones**  ▪ Acute Toxicity (fatal or toxic)

5.5.2. NFPA Method – Optional



5.5.3. HMIS Method – Optional



Refer to the National Paint & Coatings Association for further explanation of the HMIS system.

Informing Vendors and Sub-Contractors

It is the responsibility of the Site Safety Provide to provide contractors the following information should this system be utilized:

1. Hazardous chemicals to which they may be exposed while on the jobsite; and
2. Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures.

5.6. Safety Data Sheets (SDS)

Sevenson shall obtain or develop a SDS for all hazardous chemicals used in the workplace. The SDS is a form that provides more detailed information about a chemical than the label. It is accessible upon request. The SDS file exists both on a computerized data system and in hard copies. The SDS file is maintained by the Site Safety Professional and is available for review at any time from the Safety Office. All material received on-site must have a SDS prior to the use of this material.

5.6.1. Procedure

If a SDS is not received with the material, then the procedures for obtaining a SDS are as follows:

1. Perform an internet search for the product's SDS, if unavailable continue with next steps.
2. An email or letter will be sent at any time an item is received and a SDS does not accompany it, nor can it be located through an internet search.
3. If after 30 days, a SDS has not been received, a follow up request will be sent.

4. If after an additional 30 days from the follow up request a SDS has not been received, the company will report to OSHA to receive the proper information.

   Below is a sample request for an SDS.

Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, New York 14305

Date

Dear Sir:

The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) requires that employers be provided Safety Data Sheets (SDS) for all hazardous substances used in their facility, and to make these forms available to employees potentially exposed to these hazardous substances.

To comply with these regulations, we ask your cooperation in providing us with a current Safety Data Sheet on (product name) no later than (date). Delays in receiving the SDS information may prevent use of your product.

Please consider this letter as a standing request to your company for any information concerning the safety and health aspects of using this product that may become known in the future.

Your cooperation is greatly appreciated. Thank you for your timely response to this request. If you have any questions concerning this matter, please contact myself at the above address.

Sincerely,

SEVENSON ENVIRONMENTAL SERVICES, INC.

Your name
Title

5.6.2. REVIEW OF SDS

The Site Safety Professional will review all incoming SDS for completeness and accuracy and make the information directly available to employees. Employees will be advised of precautionary measures in using the product.

The following is an outline of the guidelines used to check for SDS completeness:

1. Is a SDS available for the hazardous chemicals used?
2. Is the SDS in English?

3. Are all mandatory sections of the SDS included?
    i. Identification
    ii. Hazard(s) identification
    iii. Composition
    iv. First Aid
    v. Firefighting
    vi. Accidental release
    vii. Handling and storage
    viii. Exposure limits & controls
    ix. Properties
    x. Stability and reactivity
    xi. Toxicology
    xii. Ecological information
    xiii. Disposal
    xiv. Transportation
    xv. Regulations
    xvi. Other information

5.7. SDS Information and Key Sections

5.7.1. Section 1. Product Name & Identification

5.7.1.1. Chemical Manufacturer's Name

This may list one or more alternate manufacturers or importers, the address and emergency telephone number.

5.7.1.2. Name of Product

Generally, the trade name, which is an adopted name that is given by a manufacturer to distinguish it as produced by him and that it may be protected as a trademark.

5.7.1.3. Chemical Name

Lists the name of the chemical. (In some cases, this may be listed as a "Trade Secret" but the remainder of the SDS should be filled out).

A manufacturer, importer, or employer may withhold the chemical identity if it is a trade secret. However, it must be stated clearly that the chemical is a trade secret and the hazardous nature of the chemical MUST still be listed, both on the label and the SDS.

5.7.2. Section 2. Hazard Identification

This includes all the information required on the label for that chemical including the hazard pictogram(s), signal word, hazard statement, and precautionary statement(s).

5.7.3. Section 3. Composition/Information on Ingredients

Here you will find information on the chemical identity, common names or synonyms, CAS numbers or other unique identifiers as well as any impurities and stabilizing additives which are themselves classified and which contribute to the classification of a substance and any concentrations of the mixture if applicable.

5.7.4. Section 4. First Aid

Here you will find the immediate treatment and response to an emergency exposure.

5.7.5. Section 5. Firefighting Measures

This section provides firefighting measures, e.g., suitable and unsuitable extinguishing media, specific hazards arising from the chemical (nature of any hazardous combustion or decay products), and special PPE for firefighters.

5.7.6. Section 6. Accident Release Measures

Here you will find personal precautions, PPE and emergency procedures, environmental precautions, and methods/materials for containing and cleaning up the release.

5.7.7. Section 7. Handling and Storage

This section details how the chemical must be handled to prevent fire, explosion, or spill which could result in exposure to employees or the environment.

5.7.8. Section 8. Exposure controls/personal protection

Here you will find the regulatory allowable exposures, engineering controls, and personal protective equipment necessary to minimize exposure.

5.7.9. Section 9. Physical and Chemical Properties

This section provides information on appearance, odor, odor threshold, pH, melting/freezing point, boiling point and range, flash point, evaporation rate, flammability, upper and lower explosive limits, vapor pressure, relative density, solubility, partition coefficient, auto ignition temperature, decomposition temperature, and viscosity.

5.7.10. Section 10. Stability and Reactivity

This section provides information on reactivity, chemical stability, possibility of hazardous reactions, conditions to avoid (static discharge, shock, vibration) incompatible materials, hazardous decomposition products.

5.7.11. SECTION 11. TOXICOLOGY INFORMATION

This section provides concise but compete and comprehensible description of the various toxicological (health) effects and the available data used to identify those effects.

5.7.12. SECTION 12. ECOLOGICAL INFORMATION

This section provides information on eco-toxicity, persistence and degradability, bio-accumulative potential, mobility in soil, and other adverse effects.

5.7.13. SECTION 13. DISPOSAL INFORMATION

This provides a description of waste residues and information on their safety handling and methods of disposal, including the disposal of any contaminated package.

5.7.14. SECTION 14. TRANSPORTATION INFORMATION

This section provides the UN number, UN proper shipping name, transport hazard class(es), packing group, environmental hazards (marine pollutant), transporting in bulk, and special precautions which a user needs to be aware of, or needs to comply with, in connection with the transport or conveyance within or outside their premises.

5.7.15. SECTION 15. REGULATORY INFORMATION

This provides safety, health, and environmental regulations specific for the product in question.

6. TRAINING

Prior to handling or being exposed to chemical hazards and as required, each employee shall receive instruction as described below.

6.1. TRAINING COURSE OUTLINE

6.1.1. COURSE INTRODUCTION

1. Chemical Hazard Recognition
2. Sources of Information on Chemical Hazards
3. Control of Chemical Hazards

6.1.2. CHEMICAL HAZARD RECOGNITION

Employees shall be instructed of the health hazards of each hazardous chemical in their workplace.

6.1.2.1. TYPES OF HAZARDS

6.1.2.1.1. PHYSICAL HAZARDS

Employees shall be instructed on the fire hazard of hazardous chemicals in their workplace:

a. Combustible liquid
b. Compressed Gas
c. Explosive
d. Flammable
e. Oxidizer
f. Pyrophoric
g. Unstable or Reactive

6.1.2.1.2. FLAMMABLE

a. Oxidizer
b. Pyrophoric
c. Unstable or Reactive

6.1.2.2. HEALTH HAZARDS

6.1.2.2.1. ACUTE HAZARDS

a. Corrosive
b. Highly toxic
c. Toxic
d. Irritant
e. Sensitizer

6.1.2.2.2. CHRONIC HAZARDS

a. Carcinogens
b. Mutagens
c. Teratogens and reproductive toxins
d. Hepatotoxins
e. Nephrotoxins
f. Neurotoxins
g. Other toxic effects

Employees shall be instructed on how to protect themselves when exposed to hazardous chemicals. They will also be instructed on the type and use of personal protective equipment required when using a particular hazardous chemical.

6.1.2.3. ROUTES OF EXPOSURE

1. Ingestion

2. Inhalation
3. Skin absorption
4. Injection

6.1.2.4. SYMPTOMS OF EXPOSURE

6.1.2.4.1. ACUTE EXPOSURE

1. Short term exposure period
2. Usually high concentrations
3. Immediate health effect

6.1.2.4.2. CHRONIC EXPOSURE

1. Long term exposure period
2. Usually low concentrations
3. Long term health effects

6.1.2.4.3. REACTIONS

1. Chronic lung disease-silica, cotton dust
2. Anesthetics-solvent vapors
3. Irritants-formaldehyde, acids
4. Chronic liver damage-carbon tetrachloride
5. Sensitizers-reactive dyes
6. Cutaneous Hazards-ketones, chlorinated compound
7. Eye hazards-methanol, acids

6.1.2.5. RELATIONSHIP OF DOSE AND RISK

1. Toxicity of chemical
2. Concentration of chemical
3. Mode of exposure and exposure time
4. The greatest risk is posed by toxic substances that are:
    a. Highly toxic
    b. Present in high concentrations and
    c. To which employees are exposed to several hours per day/day after day

6.1.2.6. EXPOSURE STANDARDS

6.1.2.6.1. OSHA

1. 8-hour time weighted averages

2. 15-minute ceiling
3. Legally binding

6.1.2.6.2. ACGIH

1. 8-hour time weighted averages
2. Instantaneous ceiling
3. Not legally binding

6.1.2.6.3. Other Relevant Standards or Criteria

1. NIOSH Criteria Documents
2. ANSI Standards
3. EPA Health Assessment Documents

6.1.2.6.4. Common Features of Exposure Limits

1. Units-very small amounts
    a. ppm, ppb, ppt
    b. mg/m^3, ug/m^3
2. Not “safe” limits but exposure to concentration below levels is generally low risk.

6.1.3. Sources of Information on Chemical Hazards

6.1.3.1. Summary of HCS

1. Hazard determination-performed by manufacturer
2. SDS
3. Labeling
4. Training Requirements
5. Written Hazard Communication Program
6. List of Hazardous substances in workplace

6.1.3.2. Contents of SDS

1. Manufacturer's address and phone number
2. Hazardous ingredients/identity
3. OSHA, PEL, ACGIH, TLV, other recommended limits
4. Physical/Chemical characteristics
    a. Boiling point
    b. Vapor pressure
    c. Vapor density

d. Solubility in water
e. Specific gravity
f. Melting point
g. Evaporation rate
h. Appearance and odor

5. Fire and explosion hazard data
    a. Flash point
    b. Flammable limits
    c. Explosive levels
    d. Extinguishing media
    e. Special firefighting procedures
    f. Unusual fire and explosion hazards
6. Reactivity Data
    a. Stability
    b. Conditions to avoid
7. Health Hazard Data
    a. Routes of entry
    b. Acute and chronic hazards, including carcinogen
    c. Signs and symptoms of exposure
    d. Medical conditions aggravated by exposure
    e. Emergency first aid procedures
8. Precautions for Safe Handling and Use
    a. Steps to be taken in handling and storage
    b. Waste disposal method
    c. Precautions to be taken in handling and storing
    d. Other precautions
9. Control measures
    a. Ventilation
        i. Local exhaust, special
        ii. Mechanical other
    b. Sealed systems
    c. Other engineering controls

d. Respiratory protection
e. Protective gloves
f. Other protective clothing or equipment
g. Eye protection
h. Workplace practices, industrial hygiene procedures

6.1.3.3. LABELING

1. Labels tell you
    a. What the principal hazards are
    b. What precautions you should take
    c. Emergency first aid procedures
2. Labels provide this information by
    a. Words
    b. Symbols
    c. Numbers
    d. Colors
    e. Combinations

6.1.3.4. RECOGNIZING HAZARDOUS CHEMICALS ARE PRESENT

1. Appearance or odor of hazardous chemicals
2. Physical or health effects
3. Monitoring
4. Inventory Control

6.1.4. CONTROL OF CHEMICAL HAZARDS

6.1.4.1. VARIOUS METHODS

1. Engineering control, e.g., ventilation
2. Workplace practices e.g., grounding containers of flammable substances
3. Personal protective devices
    a. Gloves, shoes
    b. Eye protection
    c. Protective clothing
    d. Dust masks
    e. Respirators

4. Isolation of chemical

6.1.4.2. SAFE HANDLING

1. Storage practices
2. Reactivity considerations
3. Proper containers
4. Spill prevention
5. Spill cleanup procedures
6. Personal protective equipment

Attachment 1. Example Inventory Sheet

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
SAFETY PROFESSIONAL GROUP

Sevenson Environmental Services, Inc.
Hazardous Chemical Inventory

SDS#	Hazardous Chemical	Explanation of Use	Storage Location	Average QTY	Maximum QTY
1	Gasoline	Fuel for gasoline vehicles and equipment	Fuel Storage Area	150 gal	250 gal
2	Off-road diesel fuel	Fuel for diesel powered vehicles and equipment	Fuel Storage Area	1000 gal	2000 gal
3	Hydraulic oil	Used in heavy equipment to power hydraulic cylinders	Conex Box Area	100 gal	165 gal
4	Motor oil 30w	Used in vehicles, equipment, and fossil fueled had tools	Conex Box Area	50 gal	110 gal
5	Diesel Exhaust Fluid (DEF)	DEF's primary use is to chemically convert Nox into harmless nitrogen gas and water vapor to significantly lower pollutants from diesel engines.	Conex Box Area	60 gal	100 gal
6	Gear oil 75w-90	Used in heavy equipment to lubricate final drives and differentials.	Conex Box Area	35 gal	55 gal
7	Two-Cycle oil	Fuel additive for two-cycle engines typically for hand tools.	Conex Box Area	2 qt	1 gal

Attachment 1. Example Storage Location Map

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
SAFETY PROFESSIONAL GROUP

Sevenson Environmental Services, Inc.
Hazardous Chemical Inventory
Storage Location Map



Appendix F
Fall Protection
Program

1. PURPOSE

The objective of Safety Management Procedure (SMP)-40 Fall Protection Program is to identify and evaluate fall hazards to which employees will be exposed at sites that utilize the United States Army Corps of Engineers (USACE) Safety and Health Requirements Engineering Manual 385-1-1, and to provide specific training as required by the Occupational Safety and Health Administration (OSHA) Fall Protection Standard, 29 CFR 1926, Subpart M and the USACE Health and Safety Manual EM 385-1-1 (2024), Section 21.

2. POLICY

It is the policy of Sevenson Environmental Services, Inc. (Sevenson) to protect its employees and sub-contractors from occupational injuries by implementing and enforcing safe work practices and appointing a competent person(s) to manage the Fall Protection Program. This Fall Protection Program shall comply with OSHA and USACE requirements. A copy of the EM 385-1-1(2024) and OSHA Fall Protection Standards shall be made available to all employees and may be obtained from the Site Safety Professional in either written or electronic format.

SMP-40 Fall Protection Program covers the use of Personal Fall Arrest Systems at several areas at the Site. These areas are:

1. Working at heights greater than 6 feet or leading-edge work
2. Working in mobile elevated work platforms (MEWPs)
3. Securing of ladders

3. DEFINITIONS

3.1. ANCHORAGE

Means a secure point of attachment for lifelines, lanyards or deceleration devices.

3.2. BASIC RESCUE

Means providing rescue services for a fallen employee(s) who does not require immediate emergency medical services and can be performed with a ladder or aerial lift man basket.

3.3. BODY HARNESS

Means straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system. Section 21-8.c(8)(f) states; Equip all full body harnesses with suspension trauma preventers (for example, stirrups, relief steps) to provide short-term relief from the effects of suspension trauma.

3.4. CLASS 1 SRD

For use with anchorages at or ABOVE the dorsal D-ring. Maximum allowable freeball not to exceed two feet.

3.5. CLASS 2 RSD

For use with anchorages at or BELOW the dorsal D-ring. Maximum allowable freefall not to exceed six feet.

3.6. DECELERATION DEVICE

Means any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest. All energy absorbers used shall be equipped with deployment indicator.

3.7. DECELERATION DISTANCE

Means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of the attachment point after the employee comes to a full stop.

3.8. GUARDRAIL SYSTEM

Means a barrier erected to prevent employees from falling to lower levels.

3.9. INFEASIBLE

Means that it is impossible to perform the construction work using conventional fall protection systems (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of the these systems to provide fall protection.

3.10. LANYARD

Means a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchorage.

3.11. PERSONAL FALL ARREST SYSTEM

Means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

3.12. POSITIONING DEVICE SYSTEM

Means a body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

3.13. Self-Retracting Device (SRD)

A device with a locking mechanism and energy management system that arrests the fall and limits the forces imparted to the user.

3.14. Self-Retracting Device, Personal (SRD-P)

An SRD designed to be worn by the user on a full body harness or alternatively mounted to an anchor point.

3.15. Self-Retracting Device with Integral Rescue Capability (SRD-R)

A SRD that includes integral means for assisted rescue via raising or lowering the rescue subject, including by controlled descent.

3.16. Unprotected Sides and Edges

Means any side or edge (except entrances to point of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches high.

4. Responsibilities

4.1. Sevenson

It is the responsibility of Sevenson to provide fall protection to affected employees, and to ensure that all employees understand and adhere to the procedures of this plan and follow the instructions of Site Safety Professional or Competent Person.

4.2. Program Manager

It is the responsibility of Fall Protection Program Manager to implement this program by:

1. Performing routine safety checks of work operations;
2. Enforcing Site safety policy and procedures;
3. Correcting any unsafe practices or conditions immediately;
4. Training employees and supervisors in recognizing fall hazards and the use of fall protection systems;
5. Maintaining records of employee training, equipment issue, and fall protection systems used at the Site; and
6. Investigating and documenting all incidents that result in employee injury.

4.3. Competent Person

Is it the responsibility of the Competent Person to:

1. Understand the hazards posed by falls.
2. Calculate fall forces.
3. Understand the methods of fall protection.
4. Assist in the implementation of the Fall Protection Program.

5. Select, inspect, and maintain the fall arrest equipment.
6. Ensure Site personnel are properly trained in the use and limitation of fall protection.

4.4. Employees

It is the responsibility of all employees to:

1. Understand and adhere to the procedures outlined in *SMP-40 Fall Protection Program*;
2. Follow the instructions of the Site Safety Professional or Competent Person;
3. Bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees; and
4. Report any incident that causes injury to an employee, regardless of the nature of the injury.

5. Description of Task

5.1. Heights Greater Than 6 Feet

Workers may be exposed to falling greater than six feet from either working at heights or working near the edge of a drop off.

5.2. Type I MEWP Work

Workers may utilize Type I MEWPs at the Site to perform maintenance on equipment or systems. Any time a person is in the basket of an aerial lift they will utilize a restraining system.

5.3. Securing Ladders

Workers may have to utilize ladders at the Site to perform assigned job tasks. Any time a person utilizes a straight ladder that must be secured a Fall Protection Plan will be completed to ensure a safe plan has been developed to protect workers.

6. Labels, Markings, Icons

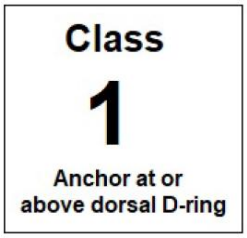
6.1. Self-Retractable Devices

The following markings are required on SRDs under ANSI Z359.14-2021. Warnings shall be in English. Non-warning markings shall be in English or pictorial format.

The legibility and attachment of required markings shall endure for the life of the SRL.

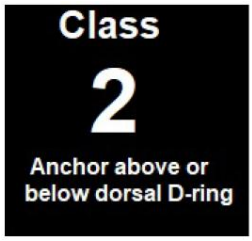
6.1.1. CLASS 1

6.1.1.1. CLASS DESIGNATION ICON

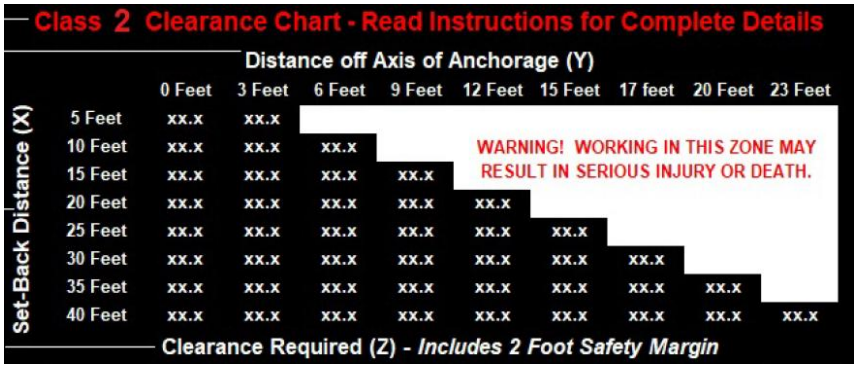


6.1.2. CLASS 2

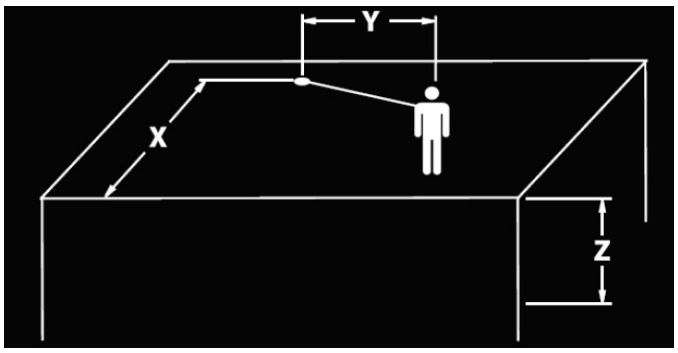
6.1.2.1. CLASS DESIGNATION ICON



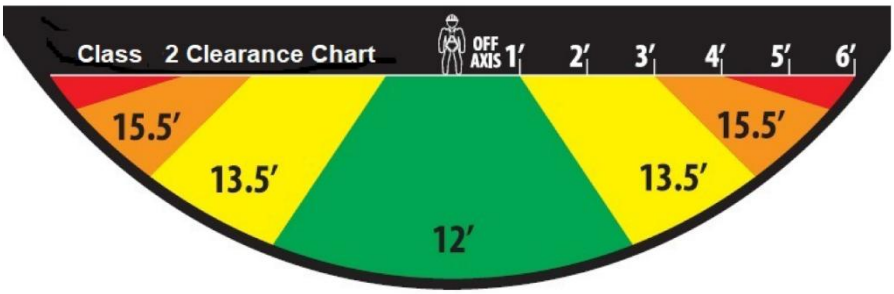
6.1.2.2. FALL CLEARANCE TABLE



6.1.2.3. DIAGRAM OF AXES



6.1.2.4. ILLUSTRATION OF CLEARANCE REQUIREMENTS EXAMPLE



Note: This figure is meant to be an example only. Due to the variations in size and shape and the limited real estate available for labeling on devices of this type, the actual format may be different from manufacturer to manufacturer.

6.1.3. WARNING LABEL

WARNING: This Class 2 self-retracting device, when attached to a foot-level anchorage, poses significant risk of injury. The user, the competent person and/or qualified person should all acknowledge that normal use of this device MAY NOT PREVENT A SERIOUS INJURY.

Failure to follow all manufacturer's instructions and warnings may result in serious injury or death.

7. ANTICIPATED HAZARDS

Prior to the use of a personal fall arrest system a Fall Protection Plan, a Fall Hazard Analysis (FHA), and an Activity Hazard Analysis (AHA) will be completed for the associated task. The Fall Protection Plan (Attachment 1) will be completed by the Safety Professional or their designee. The Fall Protection Plan, FHA, and AHA will identify the anticipated hazards and the controls to be implemented to reduce or eliminate these hazards.

Some of the anticipated hazards at the Site include, the use of Type 1 MEWPs, erection of the sediment treatment, and water treatment equipment, and work from ladders.

8. FALL HAZARD PREVENTION AND CONTROL

8.1. ENGINEERING CONTROLS

This should always be the first option for selection whenever possible (i.e., light bulb changing, telescoping arm, changing valve, relocate at ground level).

8.2. GUARDRAILS

For all work areas, only guardrails made from steel, wood, and wire rope will be acceptable. All guardrail systems will comply with the current OSHA and EM 385-1-1 (2024) standards (i.e., withstand 200 pounds of force, 42-inch-high handrail, mid rail, and if necessary a toe board). These guardrails will be placed in the following areas if necessary or feasible based on job location or requirements:

1. On all open sided floors.
2. Around all open excavations or pits.
3. On leading edges of roofs or decking.

8.3. PERSONAL FALL PROTECTION SYSTEMS

8.3.1. GUIDELINES

All employees that will be required to wear a personal fall arrest or restraint system will follow these guidelines:

1. A full body harness will be used at all times.
2. All personal fall arrest systems will be inspected before each use by the employee. Any deteriorated, bent, damaged, impacted and/or harness showing excessive wear will be removed from service. Full body harnesses shall be equipped with Suspension Trauma preventers such as stirrups, relief steps, or similar to provide short term relief from the effects of orthostatic intolerance.
3. Connectors will be inspected to ensure they are drop forged, pressed, or formed steel or are made of equivalent materials and that they have a corrosion resistant finish as well as that all surfaces and edges are smooth to prevent damage to interfacing parts of the system.
4. Verify that D rings and snap hooks have a minimum tensile strength of 5,000 lbs and that the D rings and snap hooks are proof tested to a minimum tensile load of 3,600 lbs without cracking, breaking, or taking permanent deformation.
5. Only shock absorbing lanyards or SRDs are to be used to keep impact forces at a minimum on the body (fall arrest systems). All energy absorbers shall be equipped with a deployment indicator.
6. Only nylon rope or nylon straps with locking snap hooks are to be used for restraints.
7. All lanyards and restraining straps will have self-locking snap hooks.
8. Snap hooks are not engaged in the following manners:
    a. To a tie off adapter D ring to which another snap hook or other connector is attached;
    b. In a manner that would result in a load on the gate;

c. In a false engagement, where features that protrude from the snap hook or carabiner catch on the anchor and without visual confirmation seems to be fully engaged to the anchor point;

d. To each other;

e. Directly to webbing or rope lanyard or tie-back unless the manufacturer's instructions for both the lanyard and the connector specifically allow such a connection;

f. To any object which is shaped or dimensioned such that the snap hook or carabiner will not close and lock, or that rollout could occur.

9. The maximum free fall distance is not to exceed 2 feet with a Class 1 SRD or 6 feet with a Class 2 SRD or traditional shock absorbing lanyard. Consideration must be given to the total fall distance. The following factors can affect total fall distance:

a. Length of connecting means (i.e., lanyard length, use of carabiners, snap hooks, etc.).

b. Position and height of anchorage relative to work platform/area (always keep above head whenever possible).

c. Position of attachment and D ring slide on the full body harness.

d. Deployment of shock absorber (max 42-inches).

e. Movement in lifeline.

f. Initial position of worker before free fall occurs (i.e., sitting, standing, etc.).

8.3.2. Calculating Fall Distance

Knowing how to calculate Total Fall Distance is as important as picking the proper harness, lanyard, and anchorage system. Total Fall Distance (TFD) is defined as the sum of the Free Fall Distance (FFD), Deceleration Distance (DD), Harness Effect (HEFF), Vertical Elongation (VEL), and Safety Factor (SF) of at least one foot. The TFD can be calculated by:

TFD = FFD+DD+HEFF+VEL+SF

Where:

- TFD Total Fall Distance or the vertical distance a worker travels between the onset of a fall till the fall event is completed.
- FFD Free Fall Distance or the vertical distance a worker travels between the onset of a fall until just prior to the point where the Fall Arrest System begins to arrest the fall.
- DD Deceleration Distance or the vertical distance a worker travels between the activation of the Fall Arrest System and the final fall arrest. (Federal OSHA limits this distance to

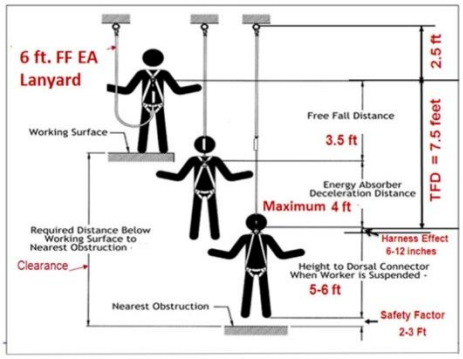
3.5-feet or less. This distance is determined by the manufacturer and can be found on the product label.)

- HEFF Harness Effect Distance or the stretch of a harness during a fall arrest. (This is typically one foot or less for a properly fitted harness. However, some harnesses use elastic-type webbing that can increase the harness effect to two feet or more. Check manufacturer's information to determine this distance.)
- VEL Vertical Elongation Distance or the stretch in the lifeline of the Personal Fall Arrest System. Vertical Elongation is measured on the part of the lifeline that is under tension during deceleration and final fall arrest. This variable will change drastically depending upon the type of Fall Arrest System. For example, most shock-absorbing lanyards are designed to have a maximum deceleration distance of 3.5 feet, which includes the vertical elongation of the lanyard. However, if you are using a rope grab system or a horizontal lifeline, vertical elongation must be calculated based on the stretch of the vertical or horizontal lifelines in those systems. You will need to check the specific manufacturers' product information for exact stretch percentages.
- SF Safety Factor Distance is an additional factor of safety to ensure that you have the required clearance below your working surface. This should be at least one foot but can reflect any number with which you feel comfortable.

Example:

- Full body harness
- 6-foot shock absorbing lanyard
- Fixed, ridged anchor point (such as a D-plate bolted to a structural I-beam)
- SMP-40 Fall Protection Program Figure 1, provides visual for example for calculating fall distance.

SMP-40 Fall Protection Program Figure 1
Example for Calculating Fall Distance



In Figure 1 we see a worker with a 6-foot shock absorbing lanyard on an elevated platform. In this example, let's assume the anchor point is 2.5-feet above the back D-ring of the harness. For every 1-foot the lanyard attachment point is above the harness back D-ring, 1-foot is deducted from the FFD. For every 1-foot the lanyard attachment point is below the harness back D-ring, 1-foot is added to the FFD. In this example, if the worker falls, the FFD will equal 3.5-feet since the lanyard attachment point is 2.5-feet above the back D-ring of the harness. So, the formula looks like this:

- TFD = 3.5 feet + DD + HEFF + VEL + SF

  The next value to consider is Deceleration Distance or the DD. Federal OSHA requires that this distance not exceed 3.5-feet. Since all manufacturers' products are slightly different, you will have to read the label or product specification sheet to determine the maximum DD that a product will permit and use that value for your calculation. In this example, the maximum deceleration distance will be 3.5-feet.

- TFD = 3.5 feet + 3.5 feet + HEFF + VEL + SF

  The Harness Effect or HEFF variable is relatively constant at less than 1-foot. This will vary slightly due to the adjustment of the harness, so we generally use 1-foot to account for these slight differences. However, elastic type harnesses can have more than 1-foot of stretch, possibly 2-feet or more, and that additional distance must be accounted for in your calculation. In this example, we are using a non-elastic harness.

- TFD = 3.5 feet + 3.5 feet + 4 foot + VEL + SF

  Most manufacturers design their shock absorbing lanyards so that the vertical elongation of the lanyard is included in the OSHA mandated 3.5-feet maximum DD. However, if we were using a rope grab or vertical lifeline, or if you were attaching to a non-ridged

anchorage connector, the VEL would need to be based on the specifications of those components in the Fall Arrest System. Since this example uses a ridged anchor point and a 6-foot shock absorbing lanyard and the VEL is already considered in the lanyard design the VEL for our equation will be zero (0).

- TFD = 3.5 feet + 3.5 feet + 4 foot + 0 feet + SF

  The final variable of the formula is the safety factor or SF. It is always a good idea to include at least 1-foot, however, that safety factor could reflect any number that makes you comfortable with your calculation. If you are using a non-ridged system it would not be uncommon to see a SF of 3-feet or more.

- TFD = 3.5 feet + 3.5 feet + 4 foot + 0 feet + 3-foot

  We can now solve for Total Fall Distance or TFD. The TFD for this example would be 9.5-feet. So, you will need a minimum of 9.5-feet clearance from the workers feet to the next level or object below.

NOTE: Some people calculate the TFD from the anchor point, to modify this equation to reflect the distance from the anchor point you would add the distance from the working surface to the workers D-ring and add it to the equation.

Example: Let's use the same example from above. The distance from the working level (the level the worker is standing on) to the distance the harness D-ring is from that surface is 5-feet. You would add 5-feet to 14 feet for a total distance of 21-feet from the anchor point to the lower level or object.

8.4. Engineered Lifeline

Lifeline systems must be designed and approved by an engineer or qualified person.

Lifeline systems must be engineered to have appropriate anchorages, strength of line designed to hold X number of individuals connected to it, line strength to aid in the arrest of a fall, and durability to hold a fallen employee(s) suspended until rescue can occur.

8.5. Warning Line System

All flat roofs greater than 50 feet wide (i.e., roof with less than 4/12 slope) where work is performed 6 feet or further back from the edge of the roof can be completed by installing a Warning Line and using a safety monitor. Warning Lines will consist of the following:

1. Will be erected 6 feet from the edge of the roof.
2. Be constructed of stationary stanchions capable of resisting without tipping over a force of at least 16 pounds applied horizontally against the stanchion.
3. Wire, chain, or rope shall be rigged and supported in such a way that at its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches for the walking/working surface.

4. Wire, chain, or rope will be flagged at no more than 6-foot intervals with high visibility material. The rope, wire or chain shall have a minimal tensile strength of 500 pounds.
5. The warning line will guard the entire perimeter of the roof where work is being performed.

If an employee must access an area within 6 feet of the roof edge for reasons other than exiting the roof via a ladder or fixed industrial ladder, another employee must monitor that individual and warn him/her of any dangers. If another employee is not available to act as a safety monitor, then the employee must don a full body harness and attach a fall restraint lanyard to an anchor point to prevent reaching the edge of the roof.

9. Rescue Plan and Procedure

The height of the work to be performed at the Site requiring the use of personal fall arrest systems is less than 21 feet.

Will this section include wording to address the newly required suspension trauma preventers, in 21-8.c(8)(f)?

An employee who falls must be rescued within 15 minutes to avoid permanent physical harm. Site personnel will be responsible for performing basic rescue for persons involved in a fall arrest situation when no life-threatening injuries are present. If a situation occurs where the fallen person receives injuries that require immediate emergency medical attention, local emergency services will be summons via 911.

The following basic rescue equipment will be made available at the Site where personal fall arrest systems are employed:

- A straight or folding ladder tall and strong enough to reach the maximum height an individual may be suspended from.
- In the absence of a suitable ladder, an aerial lift with a man basket may be used.

Basic rescue equipment shall be located and inspected prior to work being performed. During the rescue, ladders will be properly positioned and either held in place or secured in place to prevent the ladder from sliding or falling. If a fallen worker cannot access the ladder under their own power, 911 will be immediately called for rescue assistance. At no time will the ladder weight restriction be compromised to perform a basic rescue.

If injuries are involved where the worker cannot be moved or should not be moved, 911 will be immediately called for rescue assistance.

A medical professional must evaluate and clear any worker involved in a fall arrest stop for suspension trauma before being allowed to resume work duties.

10. Designs of Personal Fall Arrest Systems

Personal fall arrest systems will be designed by a professional engineer and installed as directed by the manufacturer. All equipment used in a personal fall arrest system shall meet the requirements set forth in ANSI/ASSE Z359.1. Full body harnesses labeled to meet the requirements of ANSI A10.14 shall not be used. The SSHO shall ensure all personal fall arrest

system equipment meets these standards by showing proof from the manufacturer. The proof can be presented by the manufacturer in either as built drawings/specifications or affixed tags to the system parts.

11. Inspection, Maintenance, and Storage of Fall Protection Equipment

The following criteria will be utilized to maintain all equipment in good working condition.

11.1. Full Body Harness

1. Inspect before each use.
    a. Closely examine all the nylon webbing to ensure there are no burn marks, which could weaken the material.
    b. Verify there are no torn, frayed, broken fibers, pulled stitches, or frayed edges anywhere on the harness.
    c. Examine D ring for excessive wear, pits, deterioration, or cracks.
    d. Verify that buckles are not deformed, cracked, and will operate correctly.
    e. Check to see that all grommets (if present) are secure and not deformed from abuse or a fall.
    f. Harness should never have additional punched holes.
    g. All rivets should be tight, not deformed.
    h. Check tongue/straps for excessive wear from repeated buckling.
    i. Inspect suspension trauma preventer device.
2. Semi-annual inspection of all harnesses will be completed by the SSHO; documentation will be maintained on file.
3. Storage will consist of hanging in an enclosed cabinet, to protect from damage.
4. All harnesses that are involved in a fall removed from service and retained by the Site Safety Professional till disposal is authorized by Sevenson's Director of Health and Safety.

11.2. Lanyards/Shock Absorbing Lanyards

1. Inspect before each use.
    a. Check lanyard material for cuts, burns, abrasions, kinks, knots, broken stitches and excessive wear.
    b. Inspect the snap hooks for hook, locks, and eye distortion.
    c. Check carabiner for excessive wear, distortion, and lock operation.
    d. Ensure that all locking mechanisms seat and lock properly.

e. Once locked, locking mechanism should prevent hook from opening.

f. Visually inspect shock absorber for any signs of damage, paying close attention to where the shock absorber attaches to the lanyard.

g. Verify that points where the lanyard attaches to the snaphooks are free of defects.

2. Semi-annual inspection of all harnesses will be completed by the SSHO; documentation will be maintained on file.

3. Storage will consist of hanging in an enclosed cabinet, to protect from damage.

4. All lanyards that are involved in a fall will be removed from service and retained by the Site Safety Professional till disposal is authorized by Sevenson's Director of Health and Safety.

11.3. SNAP HOOKS

1. Inspect before each use.

   a. Inspect snap hooks for any hook and eye distortions.

   b. Verify there are no cracks, pitted surfaces, and eye distortions.

   c. The keeper latch should not be bent, distorted, or obstructed.

   d. Verify that the keeper latch seats into the nose without binding.

   e. Verify that the keeper spring securely closes the keeper latch.

2. Test the locking mechanism to verify that the keeper latch locks properly.

3. Semi-annual inspection of all harnesses will be completed by the SSHO; documentation will be maintained on file.

4. All snap hooks involved in a fall will be removed from service and retained by the Site Safety Professional till disposal is authorized by Sevenson's Director of Health and Safety.

11.4. SELF-RETRACTING LANYARDS

On June 17, 2021, the American National Standard for the Safety Requirements for Self-Retracting Devices was approved with an amended effective date of August 1, 2023. After this date, manufacturers will be required to conform to the latest revision of the ANSI/ASSP Z359.14 standard document.

1. Inspect before each use.

   a. Visually inspect the body to ensure there is no physical damage to the body.

   b. Make sure all back nuts or rivets are tight.

c. Make sure the entire length of the nylon strap is free of any cuts, burns, abrasions, kinks, knots, broken stitches, and excessive wear and retracts freely.

d. Test the unit by pulling sharply on the lanyard to verify that the locking mechanism is operating correctly.

e. If manufacturer requires, make certain the retractable lanyard is returned to the manufacturer for scheduled annual inspections.

2. Semi-annual inspection of all harnesses will be completed by the SSHO; documentation will be maintained on file.
3. Service per manufacturer specifications.
4. Inspect for proper function after every fall.

11.5. Tie Off Adaptors/Anchorages

1. Inspect for integrity and attachment to solid surface.
2. Semi-annual inspection of all harnesses will be completed by the SSHO; documentation will be maintained on file.
3. All tie offs adapters will be removed from service and retained by the Site Safety Professional till disposal is authorized by Sevenson's Director of Health and Safety after a fall event.

11.6. Mobile Elevated Work Platforms

1. Inspect before each use.
2. Inspect/service per manufacturer guidelines. Forklift, scissors lifts, and safety nets will be inspected at the beginning of each shift in use. Structural integrity or forklift basket will be checked per same schedule.
3. Semi-annual inspection of all harnesses will be completed by the SSHO; documentation will be maintained on file.
4. If a SRD is utilized it shall be a Class 2 device.

12. Maintenance

Maintenance will be performed as specified by the manufacturer.

13. Storage

A designated storage area will be established for personal fall arrest equipment. An inspection sheet will be posted at the storage area to allow site personal to document their inspection prior to use. The inspection sheet will also provide direction and requirements for ensuring the equipment is in satisfactory condition.

Personal fall arrest equipment will be stored as follows:

1. Never store the personal fall arrest equipment in the bottom of a toolbox, on the ground, or outside exposed to the elements (i.e., sun, rain, snow, etc.).

2. Hang equipment in a cool dry location in a manner that retains its shape.
3. Always follow manufacturer recommendations for inspection.
4. Clean with a mild, nonabrasive soap, and hang to dry.
5. Never force dry or use strong detergents in cleaning.
6. Never store equipment near excessive heat, chemicals, moisture, or sunlight.
7. Never store in an area with exposures to fumes or corrosives elements.
8. Avoid dirt and build up on equipment.
9. Never use this equipment for any purpose other than personal fall arrest.
10. Once exposed to a fall, remove equipment from service immediately.

14. INCIDENT INVESTIGATION PROCEDURE

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. The SSHO and Site Superintendent shall conduct investigations as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Fall Protection Program shall be reevaluated by the SSHO and Safety and Health Manager to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

15. TRAINING

All employees who may be exposed to fall hazards are required to receive training on how to recognize such hazards, and how to minimize their exposure to them. Employees shall receive training as soon after employment as possible, and before they are required to work in areas where fall hazards exist.

A record of employees who have received training and training dates shall be maintained by the SSHO. Training of employees shall include:

1. Nature of the fall hazards employees may be exposed to.
2. Correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems.
3. Use and operation of controlled access zones, guardrails, personal fall arrest systems, safety nets, warning lines, and safety monitoring systems.
4. Limitations of the use of mechanical equipment during roofing work on low-slope roofs (if applicable).
5. Correct procedures for equipment and materials handling, and storage and erection of overhead protection.
6. Requirements of the OSHA Fall Protection Standard, 29 CFR 1926, Subpart M and the USACE EM 385-1-1(2024) Section 21, “Fall Protection”.

7. Sevenson and USACE requirements for reporting incidents that cause injury to an employee.
8. Documented training for personnel utilizing a Type I MEWP.

Additional training shall be provided on an annual basis, or as needed when changes are made to this Fall Protection Program, the EM 385-1-1 (pertaining to fall protection), or the OSHA Fall Protection Standard.

16. Evaluation of Program Effectiveness

This fall protection program will be evaluated periodically to determine effectiveness. The following criteria will be used to evaluate its performance:

1. Accident reports, number of accidents.
2. Management/staff compliance with program components.
3. Periodic onsite audits.
4. Safety Observation Reports
5. Staff feedback, interviews.

17. Inspection and Oversight Methods Employed

The SSHO, Site Superintendent, and the Construction Quality Control Systems Manager will be responsible for performing Safety Observation Reports for personnel performing tasks that involve the use of personal fall arrest systems. These observations will be done on a random basis and will be used in to aid in the evaluation of the Fall Protection Programs effectiveness. The Fall Protection Program will also be audited on a quarterly basis by the Safety and Health Manager or a member Sevenson's corporate health and safety staff.

Fall Protection Plan

Project Location:		Plan Effective Dates
Specific Equipment Involved		Start:
Project Description		End:
Fall Protection Plan Author (Print)		Office or Cell Phone Number
Fall Protection Plan Author (Sign)		
Competent Person (Print)		Office or Cell Phone Number
Competent Person (Sign)		
Site Superintendent (Print)		Office or Cell Phone Number
Site Superintendent (Sign)		

Elevated Surface Work Plan

Questions to Consider	Answers or Solutions
Has an Activity Hazard Analysis (AHA) and a Fall Hazard Analysis (FHA) been performed to identify the hazards and controls to be used to eliminate hazards for work at unprotected elevations?	
What is the job to be performed?	
What is the location and the height of the work?	
What is the working or walking surface like (flat steel, textured steel, wood planking, dirt, etc.)?	
Are there any environmental factors to consider (i.e., heat, cold, slippery, wet, wind, glare, etc.)?	
Are there any hazards nearby or underneath that are exposed or could become exposed in an impact (i.e., plumping lines, electrical exposures, protruding or impalement hazards, etc.)?	

Questions to Consider	Answers or Solutions
Will the work require special PPE (besides fall protection)?	
Will workers be utilizing the buddy system or will someone be monitoring the worker?	
How will the tools and equipment get to the work location (bucket with rope, tool belt, manlift, etc.)?	
Does the lower-level work area need to be barricaded to keep non-essential personnel away from the work area?	
Can the work be performed from the ground with extendable tools?	
Can the work be performed from a secured ladder?	
Can an aerial lift or scissor lift be used? Is the operator qualified to use this equipment?	
If not, can portable guardrails be installed?	
If not, can a fall arrest system be used?	
If yes, has a Fall Hazard Analysis and Rescue Plan been developed?	
Other?	

Fall Hazard Analysis for Fall Arrest

Are there any existing approved anchorage points that can be used? Where?	
Is the anchorage point labeled or obviously capable of holding 5000 pounds or more as determined by a qualified person?	
If not, can approved pre-engineered or manufactured anchorages be installed?	
Is the right equipment (full body harness, minimum length lanyard, shock absorber, connecting hardware, I-beam strap, self-retracting lifeline, etc.) available to affected employees?	
What is the distance a person may fall?	
Is there sufficient space from anchorage point before the next level down? (Calculate fall distance.)	
Will the worker hit anything on the way down during a fall?	
Has a Fall Rescue Plan been developed to determine how a fallen person will be rescued if suspended in the harness?	

Rescue Plan

A rescue plan must be developed whenever fall arrest systems are in use and when personnel may not be able to self-rescue if a fall occurs.

What is the emergency rescue service contact information (Emergency phone number and name of agency)?	
Are there any special instructions to give to the emergency rescue service when requesting assistance?	
Is basic (non-emergency) rescue equipment (i.e., ladders, aerial lifts, additional harnesses) immediately available at the work area for this task?	
Are there any obstructions in the way of reaching the suspended worker? If so, what.	
How will the rescue be assured within 15 minutes of the occurrence of the fall to minimize the risk of further injury or death due to suspension trauma?	
How will the safety of the rescuers be assured as well as that of the suspended worker?	
What communication systems will be used between the suspended worker and the rescue team?	

Appendix G
Control of Hazardous Energy Program

1. PURPOSE

It is Sevenson Environmental Services, Inc. (Sevenson) policy that before any work or maintenance is performed on any machine, equipment, tool, or electrical system, that they are made totally safe before work starts by removing any source of energy or power to them. The Control of Hazardous Energy Program also referred to as the Lockout/Tagout Program provides for a safe method of working on, near, or in machinery or equipment that can cause serious injury.

This Safety Management Procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It will be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

NOTE: This program will be available to all employees for review and a copy will be in the following area(s):

1. Director of Health and Safety electronic files
2. Health and Safety Office
3. Main Office Trailer

2. AUTHORITY AND REFERENCE

Occupational Safety and Health Administration (OSHA) 29 CFR 1910.147.

This standard covers the servicing and maintenance of machines and equipment in which the unexpected energizing or start up of the machines or equipment, or release of stored energy could cause injury to employees.

3. APPLICATION

This program applies to the control of energy during servicing and/or normal maintenance of machines and equipment if:

1. An employee is required to remove or bypass a guard or other safety device.
2. An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is being performed at or upon the point of operation, or when an associated danger zone exists during a machine operating cycle.

EXCEPTION: Minor tool changes and adjustments which take place during normal production operations are not covered by the OSHA Standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.

NOTE: The OSHA Lockout/Tagout Standard (See 29 CFR 1910.147) does not apply to work on cord-and-plug-connected electrical equipment when the employee performing the service or maintenance controls energizing by unplugging the equipment from the energy source. The standard also does not apply to hot tap operations involving transmission systems from substances such as gas, steam, water, or petroleum, when they are performed on pressurized pipelines. However, it must be demonstrated that the continuity of service is essential, shut off of the system is impractical, and special equipment is used which provides effective protection.

3.1. Affected Employees

Job Classification(s) required following Lockout/Tagout procedures include:

1. Mechanics
2. Service Technicians
3. Equipment Operators
4. Laborers
5. Electricians

3.2. Authorized Employees

Job classifications that have the authority and responsibility to perform lockout operations:

1. Mechanics
2. Service Technicians
3. Equipment Operators
4. Electricians
5. Laborers

3.3. Other Employees

Job classifications whose work operations are or may be in an area where energy control procedures may be utilized:

1. Health and Safety personnel
2. Site Superintendent
3. Project Manager

3.4. Sources of Energy and Stored Energy Requiring Lockout

1. Electrical: service panels, outlets, transformers, motors, and capacitors
2. Mechanical: spring-loaded equipment, tensioning devices
3. Hydraulic: rams, oil-powered equipment

4. Pneumatic: compressed-air equipment
5. Kinetic/Gravity: counterweights, flywheels
6. Fluids/Steam: heating pipes, steam lines

4. Compliance with this Program

4.1. All Employees

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout procedures. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment, which is locked out to perform servicing, or maintenance will not attempt to start, energize, or use that machine or equipment. Any employee who does not follow this lockout/tagout program will be subject to disciplinary action including written warning, suspension, or dismissal from the company. If a particular assignment makes it impractical to follow all the provisions of this program, the supervisor directing the work activities will be notified immediately and before work starts.

4.2. Site Safety Professional

The Site Safety Professional or approved alternate will be responsible for the following:

1. Development of a facility-specific energy control policy.
2. Definition and procurement of authorized lockout and tagout devices.
3. Training of supervisors and employees on facility policy and procedures for hazardous energy control.
4. Implementation of the Energy Control Policy and review of supervisory/employee performance.
5. Assurance that newly acquired equipment or overload equipment can accommodate locks.
6. Master file maintenance of specific policies, lockout procedures review and training records.

The Site Safety Professional or approved alternate shall:

1. Identify specific hazards and develop hazard isolation procedures within the facility.
2. Assure that the facility's hazardous energy control policy and procedures are communicated to employees in the work unit.
3. Monitor hazard isolation procedures for effectiveness.
4. Enforce hazard isolation procedures within his/her work unit and between work units or employers in the case of outside contractors.

5. Maintain work unit files documenting employee training.
6. Specify controls capable of being locked out when replacing or updating equipment controls.

5. Transfer of Lock/Tagout Responsibility

No employee shall remove a lockout or tagout device affixed by another employee unless authorized. Responsibility for lockout or tagout remains that of the authorized employee who affixes the lockout or tagout device subject to the following exception.

When an incoming authorized employee is to assume lock/tagout responsibilities on a piece of equipment from a departing employee due to shift or personnel changes, the incoming employee shall affix his/her properly labeled locks and/or tag devices to the equipment. If it is intended that the equipment remain securely locked out until the departing employee returns, responsibility does not need to be passed on to the incoming employee.

6. Definitions

6.1. Affected Employee

An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which servicing or maintenance is being performed.

6.2. Authorized Person

A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

6.3. Energy Isolating Device

A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches, emergency stops, and other control circuit type devices are not energy isolating devices.

6.4. Energy Source

Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal or other potential energy source that could have potential to endanger personnel.

6.5. Entry Point of Power

The point at which energy enters the system, machine or unit, such as the main electrical disconnect. Changes in power routing at the entry point should be shown on the circuit diagrams for the machines.

6.6. Lockout

The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

6.7. Other Employees

All other employees whose work operations are or may be in an area where control procedures may be utilized.

6.8. Power

Any type of energy that can operate equipment, cause movement, or cause injury directly from the energy source. Common types of power are electricity, air or gas under pressure, gravity, springs, oil or water under pressure and steam.

6.9. Residual Electrical Power:

Electrical energy, which is retained in a system, machine or unit when the supply line disconnect, is placed on the "OFF" position. Power capacitors and electric or magnetic fields are examples that may have residual power if not properly dissipated.

6.10. Residual Pressure:

The differential pressure remaining within a component after the pressure source is closed off.

6.11. Tagout:

The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

7. Energy Control Procedures

Procedures will be developed and documented when employees are engaged in activities that potentially could be hazardous, due to exposure from an energy source. The following exceptions to required documentation include:

1. The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees.
2. The machine or equipment has a single energy source, which can be readily identified and isolated.
3. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.

4. The machine or equipment is isolated from that energy source and locked during servicing or maintenance.
5. A single lockout device will achieve a locked-out condition
6. The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
7. The servicing or maintenance does not create hazards for other employees.
8. The employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

Energy control procedures shall clearly and specifically outline the purpose, rules and techniques to be utilized for the control of hazardous energy. (See Form #1) These procedures must include the following:

1. A specific statement of the intended use of the procedures.
2. Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.
3. Specific procedural steps for the placement, removal and transfer of lockout or tagout devices and the responsibility for them.
4. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

8. Equipment for Lockout/Tagout

For the purpose of achieving lockout/tagout, employees will be provided with appropriate lockout equipment. Equipment shall include, but not be limited to:

8.1. Padlocks

One or more padlocks will be issued to each authorized employee. Each employee will have an individual key. Only one key per lock shall be issued. These locks may be used only for lockout purposes. Locks will be identified by a number assigned to each employee and/or by the use of a nametag. Only the authorized person may apply and remove the lock, and the key may never be given to another person.

Note: A second or master key for each lock will be issued to designated supervisors to enable them to open and remove a padlock after taking the required precautions.

8.2. Lockout Tags

Authorized employees will be issued warning tags, which must be used whenever a padlock cannot be applied. The tag must be affixed as closely as possible to the energy disconnect with a single purpose 50-pound strength plastic tie. Extra caution must be exercised since there is no physical restraint when only a tag is used and energy can be restored without removing a padlock. In addition, where possible, energy source

components should be altered, removed, or obstructions should be placed to restrict access to energy disconnects. Electricians may remove fuses but must attach a tag to the panel involved and remove it when the machine is ready for service and the fuse is replaced.

Tag legends may include, but are not limited to:

DANGER Do Not Start
DANGER Do Not Energize
DANGER Do Not Open
DANGER Do Not Operate
DANGER Do Not Close

Warning tags shall bear the name of the authorized person and the date of application. Tags must be durable, weather proof and not easily damaged

8.3. Lockout Hasps

These devices are designed to accommodate more than one lockout padlock when more than one person is working on de-activated equipment. Each person, to assure his or her safety, will apply a lock and warning tag and remove it when the task is completed.

8.4. Circuit Breaker Lockout Devices

These devices are designed to attach to circuit breakers inside a panel box. Once attached a lock and tag may be applied to the device to prevent the breaker from being energized.

9. Sequence of Lockout

1. The authorized employee shall notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance. It is the responsibility of the equipment operator to notify all affected supervision and employees when a piece of equipment is to be repaired.
2. The authorized employee will refer to the company procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, will understand the hazards of the energy, and will know the methods to control the energy.
3. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).
4. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source. (Examples: main switch, circuit breaker, flow/control valve, etc).
5. Lock out the energy isolating device(s) with assigned individual lock(s). If more than one person is exposed to the hazard or is working on the machine or equipment, each person must attach his or her individual lock. Only the person who attaches the lock is authorized to remove their lock.

6. Dissipate or restrain any stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam or water pressure, etc.) by such actions as grounding, repositioning, blocking, bleeding down, etc.
7. Ensure that the machine or equipment is disconnected from the energy source(s) by first checking that no persons are exposed, then verify the machine or equipment is isolated by operating the push/on button or other normal operating control(s) or by testing to make certain the machine or equipment will not operate. Cautions: Return operating control(s) to neutral or "off" position after verifying the isolation of the machine or equipment. For any electrical work, voltage checks will be made of any circuit elements and electrical parts on which work is to be performed and any exposed adjacent parts.
8. The machine or equipment is now locked out, and servicing or maintenance may proceed.

10. Procedures Involving More Than One Person (Group Lockout)

In the preceding steps, if more than one individual is required to lock the energy-isolating device(s), they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. When an energy-isolating device cannot accept multiple locks, a multiple lockout or tagout device (hasp) may be used.

11. Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps will be taken.

1. Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact, and all guards are installed.
2. Check the work area to ensure that all employees have been safely positioned or removed from the area. Notify all affected employees that the lockout/tagout is going to be removed.
3. Verify that the controls are in the neutral position.
4. Remove the lockout/tagout device and reenergize the equipment. Except in emergencies, only the person who attached the lockout device may remove it!

   Note: The removal of some forms of blocking may require reenergization of the machine before safe removal.
5. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

12. Abandoned Lock Removal Procedures

If an employee who has departed the building has left a safety lock in place, it shall be removed only by adherence to the following procedure:

Before the lock is removed:

1. A thorough inspection of the equipment is to be made by the supervisor responsible for the area.
2. The supervisor must confirm that the authorized employee who applied the lockout device is not at the facility.
3. The supervisor shall make all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed.
4. The supervisor shall remove the lock providing he/she has determined starting up the equipment will not endanger other personnel.
5. Each time it is necessary to remove/cut a safety lock, the person authorized to remove the lock shall prepare a written report and a copy will be sent to the H&S Officer (Position designated).
6. The supervisor shall ensure that the authorized employee has knowledge of this release before he/she resumes work at the facility.

13. TRAINING

Lockout/Tagout training will be conducted for all employees who are required to perform work on any equipment as referenced in this program. The training will address all components and procedures of this program. It will include methods to ensure employees understand the purpose and function of the program, that they can recognize applicable lockout/tagout situations, and that they have acquired the knowledge and skills required for applying, using, and removing the locks and tags.

1. Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control. The training will be documented on Form #2.
2. Each affected employee will be instructed in the purpose and use of the energy control procedure. The training/instruction will be documented on Form #3.
3. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, will be instructed about the procedure and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out. The instruction will be documented on Form #4.
4. When employees are assigned to work in or on equipment that could potentially endanger personnel should it be activated, the supervisor assigning employees to this work is responsible for ensuring that these workers are provided with specific equipment and instructions to comply with this power lockout procedure.
5. Authorized and affected employees will be retrained whenever there is a change in their job assignments that could affect their lockout responsibilities, a change in the

machines that presents a hazard or when there is a change in energy control procedures.

6. Additional retraining will be conducted whenever the periodic inspection reveals that there are deviations from or inadequacies in the employee's knowledge or use of energy control procedures.
7. The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

14. Periodic Inspection/ Assessment

The SSHO or approved alternate will conduct a comprehensive inspection/audit of the energy control procedures at least annually to ensure that the facility follows the OSHA Power Lockout/Tagout Standard 29 CFR 1910.147 and the procedures outlined in this policy. The results of the annual inspection will be recorded on the Annual Power Lockout/Tagout Certified Inspection Worksheet. (See Form #5) Each machine/equipment-specific lockout procedure must be assessed at least annually to ensure that the procedure remains valid or if any changes are warranted. This assessment must be machine-procedure specific and be documented.

15. Outside Personnel (Contractors, etc.)

Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures. The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program. The exchange of this information shall be documented on Form #6.

LIST OF SAMPLE FORMS

Form 1: Specific Energy Control Procedures

Form 2: Authorized Employee Training Certification

Form 3: Affected Employee Training Certification

Form 4: Other Employee Training Certification

Form 5: Annual Power Lockout/Tagout Certified Inspection Worksheet

Form 6: Documentation of Information Given to Contractors Pertaining to Lockout/Tagout Procedures

Form 7: Lockout/Tagout Inventory Form

Form 8: Lockout/Tagout Inspection Form

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #1

SPECIFIC ENERGY CONTROL PROCEDURES FOR EACH PIECE OR TYPE OF MACHINE OR EQUIPMENT

Procedure Number/ Name: _____ Date: _____

Completed By: _____

Machine(s) or Equipment utilizing this procedure: _____

_____

Number of Locks required: _____

Other Lockout Devices required: _____

PROCEDURES FOR CONTROLLING HAZARDOUS ENERGY

1. Sources of Hazardous Energy (examples)
   - Electrical Natural Gas Springs
   - Hydraulic Gravity Steam
   - Chemical Pneumatic Thermal
   - Other: _____

2. Notify affected employees that the machine is about to be shut down and locked out. Specific Instructions

_____

_____

_____

_____

_____

3. Shut down the machine using normal stopping procedures.
Specific Instructions:

_____

_____

_____

_____

_____

4. Isolate all energy sources listed above.
Specific Instructions:

5. A) Apply locks to all isolate devices operated in Step Four.
Specific Instructions:

B) If a tag is used in lieu of a lock when the energy-isolating device is incapable of lockout, the following additional safety precaution will be taken:
Specific Instructions:

6. Block or dissipate all stored energy in rams, flywheels, springs, pneumatic or hydraulic systems, etc.
Specific Instructions:

7. Verify that the machine is locked out by testing the machine operating controls.
RETURN ALL CONTROLS TO THE "NEUTRAL" OR "OFF" POSITION AFTER TESTING.
Specific Instructions:

PROCEDURE FOR REMOVING LOCKS/TAGS

1. Check the machine to be sure it is operationally intact, tools have been removed, and guards have been replaced.
Specific Instructions:

2. Check to be sure all employees are safely positioned.
Specific Instructions:

3. Notify all affected employees that locks/tags are going to be removed and the machine is ready for operation.
Specific Instructions:

4. Remove all locks, blocks, or other energy restraints.
Specific Instructions:

5. Restore all energy to the machine/equipment.
Specific Instructions:

Other Comments/Special Precautions:

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #2

"AUTHORIZED" EMPLOYEE TRAINING CERTIFICATION

Date of Training: _____

Instructor's Name: _____

Instructor's Signature: _____

The following employees have received "AUTHORIZED" employee training on lockout/tagout procedures:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Employee Name (Please Print):_____

Employee Signature:_____

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #3

"AFFECTED" EMPLOYEE TRAINING CERTIFICATION

Date of Training:_____

Instructor's Name: _____

Instructor's Signature: _____

The following employee have received "AFFECTED" employee training on lockout/tagout procedures:

Employee Name (Please Print):_____

Employee Signature: _____

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #4

"OTHER" EMPLOYEE TRAINING CERTIFICATION

Date of Training:_____

Instructor's Name: _____

Instructor's Signature: _____

The following employees have received "OTHER" employee training on lockout/tagout procedures:

Employee Name (Please Print):_____

Employee Signature: _____

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #5

ANNUAL POWER LOCKOUT/TAGOUT CERTIFIED INSPECTION WORKSHEET

DATE: _____ DEPT.: _____

MACHINE/EQUIPMENT NAME: _____

REVIEW WITH EMPLOYEE (S) PERFORMING SERVICE OR MAINTENANCE ON THE FOLLOWING:

HAVE YOU HAD LOCKOUT TRAINING? ☐ YES, ☐ NO

DO YOU HAVE A SAFETY LOCK? ☐ YES, ☐ NO

ARE LOCKOUT PROCEDURES FOR ABOVE MACHINE/ EQUIPMENT AVAILABLE AND/OR POSTED? ☐ YES, ☐ NO

DOES EMPLOYEE (S) UNDERSTAND HIS/HER LOCKOUT RESPONSIBILITIES?
☐ YES, ☐ NO

OBSERVATION:
WERE LOCKOUT PROCEDURES FOLLOWED? ☐ YES, ☐ NO

NONE REQUIRED:
LIST DEVIATION (S) OR INADEQUACIES OBSERVED: _____

_____

_____

CORRECTIONS/CHANGES/COMMENTS:
EMPLOYEE (S) INSPECTED:

NAME: _____ DEPT.: _____

NAME: _____ DEPT.: _____

NAME: _____ DEPT.: _____

NAME: _____ DEPT.: _____

INSPECTED BY:

NAME: _____ POSITION: _____

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #6

DOCUMENTATION OF INFORMATION GIVEN TO CONTRACTORS PERTAINING TO LOCKOUT/TAGOUT PROCEDURES

Date	Contractor	Information Given

Contractor's Signature: _____ Date: _____

Authorized Employee Signature: _____ Date: _____

Authorized Supervisor's Signature: _____ Date: _____

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #7

LOCKOUT - TAGOUT INVENTORY FORM

Location: _____

1. Machine/Equipment: _____

2. Maintenance or service performed on this machine/equipment in this work area?

☐ YES, ☐ NO

3. Type of Power/Energy Source(s)
Electrical_____

Hydraulic_____

Gas_____

Pneumatic_____

Water_____

Gravity _____

Other _____

4. Energy Source Type
Main Source/Location_____

Source on Machine/Equipment_____

5. What type of lockout processes can be used on this equipment?
(Check all available)
Keyed locks with tags _____Blocks _____
Tags only _____Wedges _____
Chains _____
Other (list) _____
_____
_____
_____

6. What steps should be taken to secure this machine/equipment from accidental start-up?
_____

_____

_____

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Lockout/Tagout Form #8

LOCKOUT - TAGOUT INSPECTION FORM

Agency/Institution: _____

Department: _____

Type of Machine Locked Out: _____

Employee: _____ Job Title: _____

Employee Observed by: _____ Job Title: _____

Date and Time of Inspection: _____

Employee obeying safe procedures for locking and tagging:

_____

_____

Unsafe procedures or practices observed:

_____

_____

Recommendations:

_____

_____

Corrective actions taken:

_____

_____

Inspection reviewed with employee observed: _____

Date/Time: _____

Observed Employee's signature: _____ Date: _____

Inspection Performed by: _____ Date: _____

Appendix H
Confined Space Program

1. PURPOSE

The purpose of Safety Management Procedure (SMP)-42, *Confined Space Program* is to protect the health and safety of employees who are exposed to or enter confined spaces and/or are assigned to serve as attendants or rescue personnel. This program is also intended to ensure compliance with 29 CFR 1910.146, 29 CFR 1926.1203, and EM 385-1-1 (2024) Section 34.

2. APPLICATION

This program applies to:

- All employees, who are authorized to enter a confined space
- All employees assigned to serve as attendants
- Provide assistance during a confined space emergency rescue
- Employees who serve as Confined Space Entry Supervisors or Confined Space Entry Program Administrators.

3. DEFINITIONS

3.1. ACCEPTABLE ENTRY CONDITIONS

Conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit required confined space can safely enter and perform work.

3.2. ATTENDANT

An individual stationed outside the permit required confined space who had specific training and monitors the authorized entrants inside the space.

3.3. AUTHORIZED ENTRANT

Employee who is authorized to enter a permit required space.

3.4. BLANKING OR BLINDING

Absolute closure of a pipe, line, or duct by fastening across its bore a solid plate that completely covers the bore and can withstand the maximum upstream pressure.

3.5. CONFINED SPACE

A space that meets all the following criteria:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work;
2. Has limited means of entry and egress; and
3. Is not designed for continuous employee occupancy.

   Examples may include tanks, silos, boilers, pits, bins, manholes electrical vaults, degreasers, and hoppers.

3.6. ENGULFMENT

surrounding and effective capture of a person by a liquid or finely divided solid substance (i.e., sand, corn. grain, sawdust, etc.).

3.7. ENTRY

A person's intentional passing through an opening into a permit required confined space.

3.8. ENTRY PERMITS

A written or printed document that allows and controls entry into a permit space.

3.9. ENTRY SUPERVISOR

Person responsible for:

1. Determining if acceptable conditions are present before entering a permit space;
2. For authorizing entry;
3. Coordinating and supervising all entry operations; and
4. Terminating entry.

3.10. HAZARDOUS ATMOSPHERE

An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes.

1. Flammable gas, vapor, or mist more than 10% of its Lower Explosive Limit (LEL).
2. Airborne combustible dust at a concentration that meets or exceeds its LEL.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent (22% for ships and vessels).
4. Atmosphere concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environment Control, or in Subpart Z, Toxic and Hazardous Substances, of 29 CFR 1910 and which could result in employee exposure more than its dose or PEL.
5. Any other atmospheric condition that is immediately dangerous to life or health.

3.11. HOT WORK PERMIT

Employer’s written authorization to perform operations (for riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

3.12. IMMEDIATELY DANGEROUS TO LIFE OR HEALTH

Any condition that poses an immediate threat to life, or a delayed threat to life, or that would cause irreversible adverse health effects, or interfere with an individual's ability to escape unaided from a permit space.

3.13. ISOLATION

Process by which a permit space is removed from service and completely protects against the release of hazardous energy or material into the space.

3.14. LOWER EXPLOSIVE LIMIT (LEL)

The lowest concentration of gas or vapor, expressed in percent by volume in air, that burns or explodes if an ignition source is present at room temperature.

3.15. LINE BREAKING

Intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas or any fluid at a volume, pressure, or temperature capable of causing death or serious physical harm.

3.16. NON-PERMIT CONFINED SPACE

A confined space that does not contain or have the potential to contain an atmospheric hazard or any other serious safety or health hazard.

3.17. OXYGEN DEFICIENT ATMOSPHERE

An atmosphere containing less than 19.5% oxygen.

3.18. OXYGEN ENRICHED ATMOSPHERE

An atmosphere containing more than 23.0% oxygen (22% for ships and vessels).

3.19. PERMISSIBLE EXPOSURE LIMIT

The airborne concentration of a hazardous material that must not be exceeded over a specified time. This value is established by the Occupational Safety and Health Administration (OSHA).

3.20. PERMIT-REQUIRED CONFINED SPACE

A confined space that has one or more of the following characteristics:

1. Contains or has a reasonable potential for hazardous atmospheres.
2. Contains a material that has the potential for engulfment.
3. Is internally configured so an employee could become trapped or asphyxiated by inwardly converging walls or a floor that slopes downward into a smaller cross section.
4. Contains any other recognized serious safety or health hazard.

3.21. PROHIBITED CONDITION

Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

3.22. RESCUE SERVICE

Personnel designated to rescue employees from permit spaces.

3.23. RETRIEVAL SYSTEM

Equipment used for a non-entry rescue of persons from permit spaces (i.e., tripod).

3.24. TESTING

Process by which hazards that may affect entrants of a permit space are identified and evaluated.

3.25. THRESHOLD LIMIT VALUE (TLV)

The airborne concentration of a hazardous material that should not be exceeded over a specified time. This value is established by the American Conference of Governmental Industrial Hygienists (ACGIH).

3.26. WELDING/CUTTING PERMIT OR HOT WORK PERMIT

Written authorization to perform operations that can provide a source of ignition (e.g., welding, cutting, burning, or heating) or a hazardous atmosphere.

4. RESPONSIBLE FOR COMPLIANCE

4.1. CONFINED SPACE PROGRAM ADMINISTRATOR

The Confined Space Entry Program Administrator is the Site Safety Professional, or Superintendent if a Site Safety Professional is not assigned to the project. The responsibilities of this individual shall include:

1. Conducting/coordinating hazard assessments.
2. Determining the classification (permit required/non permit space and location of each confined space.
3. Coordinating the posting of appropriate danger/caution signs by each confined space.
4. Supervising the selection and use of respirators in conjunction with the Respiratory Protection Program Administrator.
5. Coordinating the medical screening of respirator users.
6. Conducting/coordinating supervisory and employee training (including attendants) and maintaining all training records.
7. Conducting an annual evaluation of the overall program to determine its continued effectiveness.
8. Consulting employees and their authorized union representatives on the development and implementation of the Confined Space Entry Program.

4.2. MANAGERS AND SUPERVISORS

The responsibilities for these people shall include:

1. Actively supporting the Confined Space Entry Program and providing funding to purchase equipment when needed.
2. Ensuring all assigned personnel are knowledgeable of all aspects of the Confined Space Entry Program.
3. Ensuring their employees comply with all elements of Confined Space Entry Program.
4. Ensuring appropriate PPE and equipment is properly utilized and maintained.

4.3. CONFINED SPACE ENTRY SUPERVISOR

The responsibilities of this individual shall include:

1. Providing confined space entry personnel with a copy of the most current Confined Space Entry Program and any future changes.
2. Knowing the hazards that may be encountered during entry and informing the entrants about the hazards, including information on the mode, signs, or symptoms and consequences of exposure.
3. Verifying that the proper atmospheric tests have been conducted and that all procedures and equipment, mentioned in the permit, are in place before signing the Confined Space Entry Permit.
4. Assuring that the Confined Space Entry Permit is completed prior to each entry.
5. Terminating the entry and canceling the permit when needed.
6. Verifying that rescue or other emergency personnel are available and that the means for summoning them are operable if an emergency occurs.
7. Removing unauthorized individuals who have entered or who attempt to enter the confined space.
8. Determining whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, and that entry operations remain consistent with terms of the entry permit.
9. Maintaining completed entry permits and equipment calibration records.
10. Providing employees and their authorized union representative(s) an opportunity to observe the atmospheric testing of the confined space.

    NOTE: The Confined Space Entry Supervisor may also serve as an attendant or as an authorized entrant providing that person is properly trained and equipped. The duties of the Confined Space Entry Supervisor may also be passed from one individual to another during an entry operation as long as the alternate is qualified.

4.4. AUTHORIZED ENTRANTS

All authorized entrants shall be responsible for:

1. Knowing and recognizing the hazards that may be faced during entry including information on the mode, signs, or symptoms and consequences of exposure.
2. Using and maintaining the proper PPE and other equipment.
3. Communicating with the attendant as necessary.
4. Alerting the attendant when hazardous conditions are detected, identified, or suspected.
5. Exiting the confined space immediately whenever:
    a. Ordered to do so by other entrants, the attendant or the Confined Space Entry Supervisor.
    b. Warning signs/symptoms are identified,
    c. Prohibited conditions are identified,
    d. An evacuation alarm is activated.
6. Complying with all other aspects of the Confined Space Entry Program.

4.5. ATTENDANT(S)

All authorized attendants shall be responsible for:

1. Knowing the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
2. Knowing the possible behavioral effects of the hazard exposure in the authorized entrants.
3. Maintaining an accurate count of authorized entrants in the confined space and ensures that the means used to identify the authorized entrants accurately identifies who is in the space.
4. Remaining outside the confined space during entry operations until relieved by another attendant.

    Note: Attendants may enter a confined space to attempt a rescue if they have been trained and equipped for rescue operations and if they have been properly relieved.
5. Communicating with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the confined space.
6. Monitoring activities inside and outside the confined space to determine if it is safe for authorized entrants to remain in the space and order the authorized entrants to evacuate the space immediately under any of the following conditions:
    a. If the attendant detects a prohibited condition.
    b. If the attendant detects a behavioral effect of the hazard exposure in an authorized entrant.

c. If the attendant detects a situation outside the confined space that could endanger the authorized entrants; or

d. If the attendant cannot effectively and safely perform all the duties required.

7. Summoning rescue and other emergency services as soon as the attendant determines that entrants need assistance to escape from the confined space hazards.

8. Taking the following actions when an unauthorized person(s) approach or enter a confined space while entry is underway:

   a. Warn the unauthorized person(s) that they must stay away from the confined space.

   b. Advise the unauthorized person(s) that they must exit immediately if they have entered the confined space.

   c. Inform the authorized entrants and the entry supervisor if an unauthorized person(s) have entered the confined space.

   d. Performing non entry rescues as specified in *SMP-42 Confined Space Program* Section 6.8.2.

9. Performing no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

5. PERMIT SYSTEM

5.1. PERMIT

Before entry is authorized, an entry permit shall be prepared to document the completion of safety measures required (as discussed in section 6.0 of this Program). The completed permit shall be made available to all authorized entrants or their authorized representatives, at the time of entry, by posting it at the entry portal or by any other equally effective means.

1. The Confined Space Entry Supervisor shall sign a completed Confined Space Entry Permit or in his absence another member of the health and safety staff (if properly trained) to authorize entry into a permit required confined space.

2. The Confined Space Entry Supervisor shall ensure that the permit specifies the location, type of work, personal protective measures, authorized entrants, monitoring equipment, hazards of the permit space, hazard control measures and any required rescue equipment. The procedure for contacting rescue services will also be included on the permit.

3. The permit shall be dated and carry an expiration time limiting the work to one shift.

4. The duration of the permit may not exceed the time required to complete the assigned task or job.

5. The Confined Space Entry Supervisor shall terminate the permit if a potential hazardous situation occurs which exceeds the conditions authorized on the permit or the entry operations, documented on the permit have been completed.
6. Cancelled entry permits shall be retained for at least 1 year.
7. The permit must be available at the work area outside the confined space entry point.
8. All confined space entry permits must be given to the Confined Space Entry Supervisor after the work is completed.
9. Hot work (potential ignition sources) must be authorized on a separate hot work permit that is attached and noted on the confined space entry permit.
10. Individuals authorizing entry into a permit required confined space may serve as entrants or attendants if they have received the proper training.

5.2. ENTRY PROCEDURE

Supervisors, attendants and authorized employees must complete the general requirements, discussed in the next section. Entry procedure to permit required confined space are as follows:

1. The Confined Space Entry Supervisor shall be notified prior to the time that an entrant enters a permit required confined space.
2. A Confined Space Entry Permit shall be properly completed and signed by the Confined Space Entry Supervisor or in their absence another member of the health and safety staff (if properly trained) prior to entry into the permit required confined space.
3. Only properly trained and authorized individuals will be allowed to enter a permit required confined space. Authorized entrants will maintain contact with the attendant either visually or verbally.
4. Everyone entering a permit required confined space will, whenever practical, have a safety or retrieval line attached to a body harness or wristlets. The other end of the line must be secured to a secure anchor point or lifting device (i.e., tripod) outside the entry portal. Note: The anchor point shall not be secured to a motor vehicle in a manner that would pull the line out of the space if the vehicle moved unless proper Lockout/Tagout controls are in place. A retrieval line is not required if:
    a. A permit space has obstructions or turns that would prevent pull on the retrieval line from being transmitted to the entrant, or
    b. A permit space from which an employee being rescued with the retrieval system has projections which would injure the employee if forcefully removed,

c. A permit space when entered by an entrant using an air supplied respirator and retrieval lines could pose an entanglement hazard, or

d. A permit required excavation other than a trench.

5. A properly trained individual shall test the atmosphere for oxygen content, flammable gases, and potential toxic air contaminants prior and during entry. Each entrant shall be required to wear an air-monitoring instrument if the confined space is large enough and/or has a potentially hazardous atmosphere, excavations are exempt from this requirement unless working with unknown drums or containers.
6. During any confined space entry, all safety rules and procedures shall be followed.
7. At least one attendant should be provided outside the permit space into which entry is authorized for the duration of entry operations.
8. Personal protective equipment, including respirators, shall be provided to entrants as necessary for safe entry into the confined space and used properly.
    a. All PPE must be approved by the Confined Space Entry Supervisor.
    b. An atmosphere supplied breathing apparatus shall be used for entry into an unknown atmosphere. The Rescue Team, with self-contained breathing apparatus (SCBA) must be present on site and immediately available if entry is into an atmosphere that is actually or potentially immediately dangerous to life or health.
9. Electrical equipment used in the confined space shall be appropriate for the hazard and meet the requirements of the National Electric Code if a hazardous atmosphere is present.
10. Any condition making removal of an entrance cover unsafe (i.e., pressured differential, physical obstacles, etc.) shall be eliminated before the cover is removed.
    a. When the cover has been removed, the opening(s) shall be promptly guarded to prevent accidental fall into the opening and prevent objects from falling into the opening.
    b. Appropriate vehicle and pedestrian barriers shall be used to protect workers.
11. Metal ladders shall not be used when working around electrical equipment.
12. Any use of chemicals or welding, soldering, or cutting operations must be approved by the Confined Space Entry Supervisor.

6. General Requirements

6.1. Workplace Evaluation

The Confined Space Program Administrator will coordinate/conduct an evaluation of the workplace to determine if confined spaces are present. A detailed assessment will be

made of each space to determine type and location of each space, its dimensions and number of exits, the reason(s) for entry, actual or potential health and safety hazards, and its classification (permit or non-permit). The assessment will also specify the equipment and personal protective equipment (PPE) required for entry and any special precautions that must be followed for safe entry and work in the confined space. The results of the assessment will be recorded on a Confined Space Hazard Assessment Form (See SMP-42 Form I, Parts 1 and 2). It is required that all affected employees be trained for their respective duties, prior to their entry.

6.2. IDENTIFICATION OF CONFINED SPACES

Effective means of identifying confined spaces (i.e., training, etc.) may be used to prevent unauthorized entry.

1. Warning Signs and Posting
    a. When using warning signs or placards for the identification of Confined Spaces, all types shall be printed both in English and (if applicable) in the predominant language of any non-English reading employees.
    b. Where confined space entry symbols are established, they shall also be used in conjunction with a warning sign.
    c. Signs shall include, but not necessarily be limited to, the following information:

DANGER: PERMIT REQUIRED CONFINED SPACE - DO NOT ENTER UNLESS AUTHORIZED

    d. The following statements shall be added in large letters to the warning sign when a specific work practice must be performed or when specific safety equipment is necessary:
        i. Respirator Required For Entry
        ii. Lifeline Required For Entry
        iii. Hot Work Permit Required
    e. Signs are not required at manholes, or any other entry, located in public traffic areas.

6.3. ATMOSPHERIC REQUIREMENTS PRIOR TO ENTRY

The atmosphere in the confined space within the entrant's immediate area may be continuously monitored for oxygen and combustible gas and any other hazardous substance which the employer has reason to believe may be present in the confined space.

Before entering a confined space, the following atmospheric conditions must be met:

1. The oxygen level is between 19.5% and 23.0% (22% for ships and vessels).
2. The concentrations of flammable gas, vapors, or mists are below 10% of their Lower Explosive Limits (LEL).

3. The level of airborne hydrogen sulfide (H_2S) is below 10 parts per million (ppm).
4. Toxic air contaminates are less than the OSHA Permissible Exposure Limit (PEL). Note: If the substance does not have a PEL, use the Threshold Limit Value (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH).
5. Atmospheric concentrations of toxic substances are below what is considered as the IDLH.
6. The level of carbon monoxide (CO) is less than 35 ppm.

Entry into a confined space is not allowed if monitoring indicates deficiency in any of these categories. Respirators or a self-contained breathing apparatus (SCBA) shall not to be used to allow entry into deficient atmospheres unless specifically approved in writing by Sevenson's Safety and Health Manager (and the USACE Contracting Officer's Representative on USACE sites).

To achieve and maintain a safe atmosphere, one or more actions may have to be taken to render the space safe for human occupancy. This could include:

1. Isolation - precautions taken to prevent release of material and/or energy into the space. This can be achieved through blinding, blanking, disconnecting, lockout/tagout, or removal of incoming pipes or related energy sources.
2. Ventilation - purging, inserting, flushing, or otherwise ventilating the space with fresh air. The replacement air will displace the contaminated air allowing for safe entry. This can be accomplished by removing ports and openings or by mechanically ventilating the vessel.
3. Separation - where there is a possibility of external hazards, the space may require barricades to protect the entrants from falling objects or from unauthorized entry.

6.4. VENTILATION

If a confined space being entered is found to contain a hazardous atmosphere, forced ventilation may be provided for a period of time in order to bring the air quality within the acceptable limits. Once the determined ventilation period expires, employees shall monitor the confined space according to subsection entitled "Air Monitoring". If the sampling shows that a hazard still exists, then additional ventilation and sampling may be required.

Note: Control of atmospheric hazards through forced ventilation does not constitute elimination of hazards.

If the hazard still exists after repeated ventilation steps, the confined space shall then be considered a permit required confined space and the Confined Space Entry Team (entrant, attendant, and Confined Space Entry Supervisor) must follow the proper procedures for permit required confined space entry.

Note: Forced ventilation may not be used in lieu of monitoring. Consideration must also be given to the possibility of static discharge that could be a source of ignition.

Forced air ventilation should be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees leave.

Whenever ventilation is used, employees shall:

1. Keep the blower controls at least 10 feet from the confined space, and out of the wind or downwind from the entrance to the confined space.
2. Use a ventilation blower that is designed to be intrinsically safe if the possibility of an explosive atmosphere could exists.
3. Ensure that the exhaust systems are designed and placed so that they protect employees in the surrounding area from being contaminated.
4. Ensure that the ventilation system is fully operational and air is supplied from a clean source.
5. Ensure that contaminated air is not recirculated into the confined space.
6. Purge the ventilation hose outlet for at least one-minute (at street or blower level if possible) before inserting the hose into the confined space.
7. Maintain continuous local ventilation when toxic atmospheres are being produced as part of a work procedure (i.e., welding, painting or cleaning operations).

6.5. LOCKOUT/ISOLATION

Each confined space (if applicable) shall have its own specific written lockout/isolation procedures. These procedures will be posted above and/or next to the entrance of the confined space, where feasible.

6.5.1. ELECTRICAL ISOLATION

In order to prevent employees from being exposed to activation of moving parts, or from being exposed to energized objects, authorized entrants shall lockout circuit breakers and/or the disconnect in the open (off) position with a key type lock. If more than one authorized entrant is to be inside the confined space, each employee must place his/her own lock on the circuit breaker or disconnect.

6.5.2. MECHANICAL ISOLATION

All equipment with moving mechanical parts that could unexpectedly rotate or move will be blocked in such a way that there can be no accidental rotation or movement. Isolation of mechanical parts can be performed by disconnecting linkages or removing drive belts and/or chains.

6.5.3. BLANKING

A solid plate or cup capable of withstanding the maximum pressure of the gas or liquid inside the pipe may be placed across a pipe or duct to prevent unexpected release of the contents.

6.5.4. LINE ISOLATION

Lines can be isolated by:

1. Double blocking and bleeding the line, or
2. By blocking two closed in line valves, or
3. Blocking or bleeding open to the outside atmosphere the drawn or the bleed in line between the two closed valves.

6.6. AIR MONITORING

Before any permit required confined space may be entered by any employee, the entry supervisor (or designee if qualified) must monitor the atmosphere of the confined space to determine that the characteristics of the air for all levels and all areas within the confined space are safe. The atmosphere within the authorized entrant's immediate area should be continuously monitored for oxygen, combustible gases, and any other hazardous substance.

When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

Note: Authorized entrants and/or their authorized representatives shall be provided an opportunity to observe the atmospheric testing of the confined space that is conducted prior to entry and subsequent testing. Reevaluation of the permit space shall be done in presence of the authorized entrant or employee's authorized representative who requests the reevaluation.

6.6.1. SAMPLING DEVICES

1. A direct readout sampling device which can simultaneously test for oxygen, hydrogen sulfide and/or carbon monoxide and combustible gas without manual switching shall be used to sample the atmosphere of the confined space.
2. The sampling device shall be equipped with an audible and visible warning device that warns the entrant and/or attendant of the hazardous atmosphere in the permit space.
3. Sampling devices shall be calibrated relative to the oxygen content of the ambient air at the time of sampling. Calibration of the sampling device relative to the oxygen content shall be performed where the 20.9% natural content of oxygen in the air is most likely to occur.

   Note: Oxygen calibration should not be performed near a confined space opening
4. A sampling device, which has a zero set, shall be zeroed in a clean atmosphere before each sampling. Calibration of a sampling device shall be conducted daily before each use.
5. Non-sparking Equipment: When sampling the atmosphere of a confined space, the sampling device shall have an attached non sparking probe.

6. Manhole Sampling: When a confined space entry is by means of a manhole, a probe shall be inserted through the pick hole of the manhole cover, or the manhole cover shall be preyed open on the downwind side to allow just enough room for insertion of the probe or other sampling device.
7. Intrinsically Safe: When the confined space to be entered is expected to have combustible vapors present, employees shall be required to use an approved explosion proof or intrinsically safe sampling device.

6.7. ASSESSMENT OF ADDITIONAL HAZARDS

Before entering a confined space, the Confined Space Entry Supervisor or in his absence another member of the health and safety staff, shall conduct an assessment of any additional hazards which the entrant may encounter during the confined space entry. This assessment shall include, but is not limited to, a review of the following additional hazards:

1. Thermal hazards due to extremes in hot and cold temperatures.
2. Engulfment Hazards due to loose, granular materials, such as sand, coal, or ash, stored in bins or hoppers.
3. Noise hazards, which can affect hearing and emergency communications.
4. Slick/wet surfaces, which can increase the risk to slips and falls. Wet surfaces also increase the risk and effects of shocks from electrical tools, machinery, and circuitry.
5. Falling Objects from work being performed above an employee or by objects falling through open confined space entrances.
6. Mechanical equipment that is required to be operating during the entry.
7. Electrical Hazards from exposed wires, power lines, etc.
8. Fall Hazards.
9. Biological Hazards.

6.8. EMERGENCY RESCUE

The OSHA Confined Space Standard allows two options for rescue operations for Permit Required Confined Space Entries. The Confined Space Administrator and Confined Space Entry Supervisor must select one of the following types of rescues for each permit required confined space identified at the Site.

6.8.1. EMERGENCY SERVICE PERMIT REQUIRED CONFINED SPACE RESCUE

Prior to utilizing a rescue service/contractor, the Confined Space Program Administrator shall:

1. Evaluate the prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.

Note: What is considered "timely" will vary according to the specific hazards involved in each entry;

2. Evaluate the prospective rescue service's ability, in terms of proficiency with rescue related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;
3. Select a rescue team or service that has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified, and is equipped for and proficient in performing the needed rescue services;
4. Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and
5. Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

   Note: OSHA 29 CFR 1910.146 Appendix F contains examples of criteria that employers can use in evaluating prospective rescuers.

6.8.2. ON-SITE PERMIT REQUIRED CONFINED SPACE RESCUE

If a confined space related emergency is expected, all employees involved in the rescue shall be provided with the proper emergency rescue training, PPE, and rescue equipment needed to make a safe rescue attempt, at no cost to the employees.

6.8.2.1. EQUIPMENT

Before a confined space rescue attempt is made, the following equipment must be available near the entrance of the confined space:

6.8.2.1.1. PERSONAL PROTECTIVE EQUIPMENT

1. Fully charged SCBA with at least a 30-minute air supply or a Type C airline respirator with an emergency escape air tank.
2. Protective clothing/gloves, if needed
3. Head protection, if needed
4. Hearing protection, if needed
5. Eye protection
6. Communication devices

6.8.2.1.2. RETRIEVAL EQUIPMENT

1. Full body harness and lifeline

Note: Wristlets may be used in lieu of the full body harness if the employer can demonstrate that the use of a full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest way and most effective alternative.

2. Winch/hoist fully capable of retrieving personnel from a vertical type confined space more than five feet deep.
3. Retrieval line shall be attached at the center of the entrants back near shoulder level, above the entrant's head, or at another point which presents a profile small enough for the successful removal of the entrant. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.
4. Ladders.

6.8.2.1.3. EMERGENCY EQUIPMENT

1. First aid kit
2. Automated External Defibrillator
3. Fire extinguisher(s) appropriate for the situation.

6.8.2.2. DUTIES OF RESCUING ATTENDANTS (NON-FIRE EMERGENCY)

If either a permit required confined space non fire related emergency rescue occurs, rescuing attendants shall follow the following procedures:

1. Alert the employees in the confined space to immediately vacate the space and verify that the employees understood these instructions.
2. Notify the following personnel via a two-way radio or telephone with detailed information about the emergency.
    a. Rescue Service
    b. Confined Space Entry Supervisor and SSHO

Note: The Confined Space Entry Supervisor or Area Supervisor will then request assistance from the Local Fire Department if medical attention is needed.

3. Begin emergency extraction from outside of the confined space:
    a. Verify that all employees are exiting the confined space. If not, then perform the following:
    b. Notify the Confined Space Entry Supervisor that the employee(s) are disabled.
    c. Begin winching/hoisting employee(s) from the confined space.
    d. Do not enter the confined space until help arrives, and you have been relieved of your attendant duties by another qualified attendant.

6.8.2.3. DUTIES OF RESCUING ATTENDANTS – FIRE EMERGENCY

1. No attempt should be made to enter a burning confined space.
2. Standby personnel shall immediately call 911 and will indicate that a fire emergency is involved and the location of the confined space.
3. The attendant(s) shall attempt to remove the employee or employees via the hoist/winch from outside the confined space.

6.8.2.4. RESCUE ATTEMPT

Upon arriving at the confined space, the rescue service shall:

1. Sample the air in the confined space.

    Note: Entry is not permitted if the air quality in the confined space is outside the acceptable limit for combustible gas. If the combustible gas content is more than 10% of the LEL, the confined space must be ventilated and/or the source of the combustible gas shut off or removed before entry is permitted.

2. Assess the potential hazards that rescue personnel could encounter by entering the space.
3. If entry conditions are determined safe, enter the confined space with the proper retrieval equipment, personal protective equipment, and a fully charged SCBA or a

supplied airline respirator equipped with an emergency air tank.

4. Search for the disabled employee(s).
5. Assess the type of accident/injuries.
6. Administer proper first aid/CPR/AED, if needed.
7. Begin extraction procedures, taking care not to cause further injury.

6.8.2.5. SUBSTANCE INFORMATION

If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other written information is required to be kept at the work site, that SDS or written information shall be made available to the medical facility treating the exposed entrant.

7. WORK INVOLVING SUBCONTRACTORS

When the Site Superintendent arranges to have employees of a subcontractor perform work that involves confined space entry, the Confined Space Entry Program Administrator or the Confined Space Entry Supervisor shall:

1. Inform the contractor that the workplace contains permit spaces and the permitted space entry is allowed only through compliance with a permit space program that complies with 29 CFR 1910.146 for general industry or 29 CFR 1926.1203 for construction.
2. Inform the contractor of the hazards identified and Sevenson's experience with the confined space that made the space in question a confined space.
3. Coordinate entry operations with the subcontractor when personnel from both employers will be working in or near the confined space.
4. Verify that the subcontractor has an appropriate Confined Space Entry program.

Debrief the contractor at the conclusion of the confined space entry operation(s) regarding the permit space entry procedures that were followed (if applicable) and the hazards that were confronted or created during entry operations.

8. NON-PERMIT REQUIRED CONFINED SPACE ENTRY

No employee shall enter or work in a non-permit confined space unless the following steps have been performed:

1. Obtains permission to enter the confined space from the Confined Space Entry Supervisor, or in their absence another member of the health and safety staff.
2. Obtains and uses the proper PPE, tools, and other equipment.
3. Complies with all other applicable confined space entry procedures.
4. An Activity Analysis or Safe Plan of Action has been prepared to support entry operations, hazards, and controls.

Note: Atmospheric testing of a non-permit confined space is not required by the OSHA Confined Space standard. However, testing the atmosphere for toxic gases and oxygen deficiency prior to entering the confined space is recommended if a suitable, and properly calibrated, sampling devise is available. The OSHA Standard also does not require an attendant for entry into a non-permit required confined space, however having an attendant present (if practical) is again strongly recommended. Other OSHA standards (i.e., Personal Protective Equipment, Respiratory Protection, etc.) still apply to entry into all confined spaces.

9. Reclassification of a Permit Required Confined Space to Non-Permit Confined Space

A permit required confined space may be entered as a non-permit confined space if the permit space contains no actual or potential atmospheric hazard, and all other hazards within the space can be eliminated without entry into the space. Hazards may be eliminated, for example, by:

1. Following all designated lockout/tagout procedures for the space in question;
2. Emptying a vessel to remove an engulfment or other content hazard;
3. Draining chemical tanks of their contents, purging any residual chemicals with water, and ventilating the space after purging is complete;
4. Shutting boilers down, opening all access ports to allow for temperature reduction and natural ventilation, and by taking all appropriate measures to control hazardous energy (i.e., locking out machines, etc.) or other physical hazards present.

   If the hazards arise within a permit space that has been declassified to a non-permit space, each employee in the space shall exit the space as soon as possible. The Entry Supervisor or Administrator shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions.

10. Other Rules and Work Practices

To protect the safety and health of all employees associated with the confined space entry, employees (and supervisors) shall comply with the following safety rules and work practices:

10.1. General Rules

1. All employees within the confined space and those employees assigned to serve, as attendants shall be in constant two-way communication.
2. All employees required to wear respiratory protection must properly use and maintain properly the respirator in accordance with *SMP-24 Respiratory Protection Program* and the specific instructions provided to them by their supervisor and during training.
3. Smoking is not permitted within the confined space or within a 10 feet radius of the entrance of a confined space.
4. All employees shall comply with the requirements and limitations on the confined space entry permit, including the maximum number of employees permitted to work in the confined space.

10.2. UNDERGROUND AND ABOVE GROUND STORAGE TANKS

Before any employee enters a boiler or any other vessel type confined space, the following safety precautions shall be implemented:

1. Ensure there is only residual material left in the bottom of the underground storage tank (UST) before an entry.
2. Ensure that all lines leading into and away from the tank(s) are blanked, blinded, and/or double blocked and bled before an entry is allowed.
3. Ensure that all employees entering a tank are secured by a lifeline to a winch or other retrieval device outside the confined space.
4. Treat all boilers and other vessel type confined space in a manner consistent with that of other confined spaces.

   Note: If a confined space entry is required for fuel oil (diesel fuel) tank the LEL must be determined with a Photoionization Detector (PID). This is due to LEL sensor[1] technology and its response to heavy hydrocarbon fuels is unreliable. The PID reading must be less than 250 ppm for entry into the tank in Level C PPE with Organic Vapor Cartridges.

10.3. TRAFFIC CONTROL

1. Entrances to confined spaces that are in streets shall be guarded in accordance with the following requirements:
   a. 1. Employees shall activate the following warning lights:
      i. Vehicle's beacon light
      ii. Four-way hazard flashers
2. Employees shall park the vehicle used to transport their confined space equipment in such a way that the vehicle does not obstruct the normal traffic flow and shall, when possible, use the vehicle to provide protection for the employees.
3. Employees shall park the vehicle in such a manner that the vehicles exhaust fumes cannot accumulate in the confined space. If this is not possible, the vehicle's exhaust pipe shall be extended away from the confined space.
4. Employees shall properly place traffic safety cones around the manhole and any vehicle in accordance with state and federal traffic ordinances to adequately warn oncoming traffic.
5. Traffic safety cones shall be visible to traffic in all directions and in such a manner as to protect the employees from the traffic flow. Traffic cones should also be placed far enough form the confined space to give drives adequate notice.

[1] Application Note AP-219, "Using PID for 10% of LEL Decisions" Revision 1, RAE Systems, Inc., San Jose, CA.

When working on the street or an easement surface, all standby and flag person employees shall always wear a traffic safety vest or the equivalent. A flag person(s) shall be added to the Confined Space Entry Team when the need arises. The flag person(s) shall not be considered as the required attendant for a permit required confined space.

10.4. CLEANING PURPOSES

When a confined space entry is required for cleaning purposes, the Confined Space Entry Supervisor or in their absence another member of the health and safety staff, shall review and authorize the procedures and processes to be used while cleaning the confined space before entry can take place.

The following specific cleaning methods shall be used depending upon the product or products in the space:

10.4.1. FLAMMABLE/COMBUSTIBLE ATMOSPHERE:

The atmosphere within the confined space shall be purged with an inert gas if the atmosphere is above the upper flammable limit to remove the flammable and/or combustible substance before forced ventilation of the space. Initial cleaning shall be done, if possible, from outside the tank.

10.4.2. CLEANING PROCESS HAZARDS

When additional hazards are created by the cleaning process, the Confined Space Entry Supervisor shall develop additional safety procedures to address the newly created hazards. These special procedures shall be developed before a confined space cleaning process takes place.

10.5. USE OF EQUIPMENT AND TOOLS

When the confined space entry requires the use of equipment and tools inside the space, this equipment shall be inspected and must meet the following requirements:

1. Hand tools must be in good repair and be kept clean.
2. Portable electrical tools, equipment, and lighting shall be listed Class I, Division I, Group D. All grounds must be checked before electrical equipment is used in a confined space. Note: Ground Fault Protectors should be used whenever possible to protect employees from electrical shock when working in damp or wet locations.
3. All electrical cords, tools, and equipment must be constructed of a heavy duty, double insulated cord and equipped with a 3-prong plug.

   Note: double insulated tools with a 2-prong pug may be appropriate in some cases.
4. All electrical cords, tools, and equipment must be visually inspected for defects before being used in a confined space. If found defective, they will be replaced, repaired, or destroyed before any employee enters the confined space.

5. Cylinders of compressed gases must never be taken into a confined space and will be turned off at the cylinder valve when not in use. Exempt from this rule are cylinders that are part of SCBA or resuscitation equipment.
6. Ladders must be adequately secured or of a permanent type which provides the same degree of safety. Note: Permanent ladders must be inspected for rust or corrosion and repaired or replaced if necessary.
7. All equipment that may be used in a flammable atmosphere shall be approved as either explosion proof or intrinsically safe for the atmosphere and shall be approved by a recognized testing laboratory (i.e., UL, FM).

11. RECORDKEEPING

The following records will be maintained on file for at least one year:

1. Employee Training Records - including dates and the names of attendees.
2. Confined Space Entry Equipment Inspections - including dates, results, and corrective action.
3. Monitoring Equipment Calibration/Servicing Reports - indicating calibration dates and any service conducted by the manufacturer.
4. Confined Space Permits - for all Permit Required confined space entries.

12. ANNUAL REVIEW

The Confined Space Entry Program Administrator shall review the Confined Space Program at least annually using cancelled Confined Space Permits and other available information and records to determine if:

1. Changes should be made to improve the program's overall effectiveness;
2. Additional hazards have been identified within a given space;
3. Additional measures should be taken to protect the entrants;
4. Additional confined spaces should be included within the program; and
5. Some locations can be removed from the program.

13. EMPLOYEE TRAINING

All employees who are required to enter a Permit Required Confined Space or serve as an attendant shall be trained and properly equipped to recognize, understand, and control hazards that may be encountered in the confined space. Training records (certification) shall be available for inspection by employees and their authorized representative.

13.1. TRAINING

Training shall be provided to each affected employee.

a. Before the employee is first assigned duties under this section.
b. Before there is a change in assigned duties.

c. When there is a change in the permit space operations that present a hazard about which an affected employee has not previously been trained.

d. Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.

e. Annually when working on project covered by USACE EM 385-1-1 (2024).

13.2. CONFINED SPACE ENTRY

All employees who are required to either enter a confined space or serve, as attendants shall receive training in the following areas:

1. Associated safety and health hazards of the confined space entry
2. Duties of entrants and attendants
3. Air monitoring and attendants
4. Respiratory protection
5. Emergency rescue procedures
6. Lockout isolation procedures'

13.3. FREQUENCY

Training shall be provided to each affected employee:

1. Before the employee is first assigned confined space entry duties.
2. Before there is a change in assigned duties.
3. Whenever there is change in confined space operations that presents a hazard about which the employee has been previously trained.
4. Annually when working on project covered by USACE EM 385-1-1 (2024).

13.4. PERSONAL PROTECTIVE EQUIPMENT

All employees who are required to either enter a confined space and/or serve as attendants, shall receive training on the proper use of any PPE needed to perform the job safely, such as, protective clothing and suits, gloves, respiratory protection; confined space rescue equipment, body harnesses, hearing protection, and eye/face, hand, foot and head protection.

13.5. EMERGENCY RESCUE TRAINING

An emergency rescue employee(s) who is designated to provide permit space rescue and emergency services shall be trained in the following measures with an adequate level of proficiency shown in:

1. The use of personal protective equipment (PPE) needed to conduct permit space rescues safely.
2. The assigned rescue duties (same as entrants).

3. Basic first aid and CPR - At least one member of the rescue team or emergency service shall hold a current certification in first aid and CPR.

Emergency rescue personnel shall perform a permit space rescue at least once every 12 months by means of simulated rescue operations in which dummies, manikins, or actual persons are removed from the actual permit spaces or from representative permit spaces.

Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

CONFINED SPACE HAZARD ASSESSMENT FORM
PART I

Hazard Codes

1. Atmosphere is within acceptable limits.
2. Contains or has a potential to contain a hazardous atmosphere.
3. Contains a material that has the potential for engulfing an entrant (i.e., soil, sand)
4. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.
5. Contains moving parts or machinery.
6. Contains any other recognized health or safety hazard.

Confined Space (Tank, Manhole, etc)	Location	Reason(s) for Entry	Classification (Permit Required/Non Permit)
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

CONFINED SPACE HAZARD ASSESSMENT FORM
PART II

Confined Space (Part I)	Tools/Equipment Required for Entry	PPE Required for Entry	Special Precautions Required for Entry
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Sevenson Environmental Services, Inc.

CONFINED SPACE PERMIT

Date_____ Time of Issue_____ Length of Permit_____
Location _____ Equipment ID_____
Purpose of Entry & Description of Work _____

Authorized Entrant(s)_____
Will "HOT" Work be authorized for this Entry? ☐ No; ☐ Yes (describe)_____

HAZARDOUS IDENTIFICATION

Indicate ALL potential Hazards of this Permit Space:	YES	N/A
a. Contains or may contain a hazardous atmosphere	☐	☐
b. Contains a material for potential engulfment	☐	☐
c. Has an internal configuration for potential entrapment	☐	☐

If "Yes", describe _____

d. Contains the following serious safety or health Hazards:_____

PRE-ENTRY PREPARATION

		YES	N/A	Done			Removed		
				Date	Time	By	Date	Time	By
1. Lines broken and/or blanked:									
Line Contents	Location								
a.									
b.									
c.									
2. Drain or at a workable level									
3. Purge - flush and vent									
4. Force air to bottom & vent									
5. Lock out power feeds:									

Equip/Location of Lock out								
a.								
b.								
c.								
6. Shut-off heating systems								
7. Other:								

TEST TO BE TAKEN

	P.E.L.	Time Tester Yes	Time Tester N/A	Time Tester Results	Time Tester Results	Time Tester Results
% of Oxygen	19.5% to 23%					
% of LEL	Any % over 10					
Carbon Monoxide	25 ppm					
Hydrogen Sulfide	10 ppm					
VOC						
Temperature	< 110ºF/43ºC					

PREVENTION OF UNAUTHORIZED ENTRY

	YES
1. Have Worker(s) to enter been trained for this specific entry?	☐
2. Have Attendants been trained for this specific space?	☐
3. Post "WORKER IN CONFINED SPACE" Sign	☐

4. Set-up the following additional barriers:

_____

_____

MANDATORY SAFETY EQUIPMENT REQUIRED

	YES	N/A
1. Fire Extinguisher	☐	☐
2. Retrieval Lines	☐	☐
3. Respirator	☐	☐
4. Goggles	☐	☐

5. Hearing Protection	☐	☐
6. Protective Clothing	☐	☐
7. Special Boots or Shoes	☐	☐
8. Gloves	☐	☐
9. Other Safety Equipment Required	☐	☐

_____ _____
_____ _____
_____ _____
_____ _____

COMMUNICATION PROCEDURES AND EQUIPMENT TO BE USED FOR THIS ENTRY

(Verify that chosen equipment is in place and operation.)

Verified by:

1._____ _____

2._____ _____

RESCUE EQUIPMENT TO BE PROVIDED ON-SITE

		YES	N/A
a.	Two chest harnesses or two wristlets	☐	☐
b.	Two five-minute supplied air escape respirators	☐	☐
c.	One 30-minute S.C.B.A.	☐	☐
d.	One emergency siren	☐	☐
e.	Man basket	☐	☐
f.	Retrieval winch	☐	☐
g.	Other necessary Rescue Equipment	☐	☐

_____
_____
_____

IN CASE OF EMERGENCY

Rescue Service Phone Number or Ext.

1._____ _____
2._____ _____
3._____ _____

Appendix I
Excavation and
Trenching Program

1. INTRODUCTION

This Safety Management Procedure (SMP) provides the minimum requirements for safe work practices during excavation and trenching operations. This procedure is intended to assure compliance with the Occupational Safety and Health Act (OSHA) standards for these activities (29 CFR 1926, Subpart P).

This SMP applies to all excavation and trenching operations conducted by Participant personnel. Subcontractors working for a Participant must also adhere to this procedure unless they have their own standard operating procedure that complies with the OSHA regulations.

1.1. DEFINITIONS

The following definitions apply specifically to excavation and trenching operations.

1.1.1. COMPETENT PERSON

A worker who is trained (National Underground Contractors Association or equivalent) and capable of identifying existing and predictable hazards of excavations. Such workers must have the authority to shut down operations if new hazards are identified.

1.1.2. REGISTERED PROFESSIONAL ENGINEER

A person who is registered as a Professional Engineer (PE) in the state where the work is to be performed. OSHA recommends using civil engineers or those with licenses in a related discipline and experience in the design and use of slopping and shoring systems. PE qualifications must be documented in writing.

1.1.3. EXCAVATION

Any man-made cut, cavity, trench, or depression in an earth surface, formed by dirt or rock removal. This includes landfills and piping trenches and openings caused by underground storage tank removal.

1.1.4. CAVE-IN

Soil or rock falling into an excavation from the sides; soil or rock falling out from under a trench or support system. Cave-ins are usually sudden movements that can trap, bury, or crush workers in the excavation.

1.1.5. BENCHING

A method of protecting workers from cave-ins by excavating the sides of an excavation to form a series of horizontal levels or steps.

1.1.6. SHORING

Wooden, metal, or hydraulic bracing systems that support the sides of an excavation to prevent cave-ins.

1.1.7. SLOPING

Flattening the sides of an excavation at an angle to maintain stability and prevent cave-ins. Sloping angles are stated as the horizontal distance back from the foot of the slope, versus the vertical height of the slope. For example, 1.5 feet horizontal to 1 foot vertical (1.5:1). Slopes may also be stated as the number of degrees in the angle formed by the slope. A 1.5:1 slope is also a 34° angle. The larger the angle, the steeper the slope. A vertical wall is a 90° angle.

2. RESPONSIBILITIES

2.1. PROJECT MANAGER

It is the Project Manager's responsibility to communicate to the Site Superintendent that project activities will need to comply with the OSHA standards for excavation activities.

2.2. SUPERINTENDENT

It is the responsibility of the Site Superintendent to implement the following components of this Trenching and Excavation Program. The Site Superintendent shall ensure the following occur:

i. All excavations are completed in accordance with this Trenching and Excavation Program.

ii. The proper protective materials and equipment are available to complete the excavation and/or trenching procedures.

iii. All inspections of the excavation as required are completed; and

iv. Any subcontractor's excavation and trenching standard operating procedures shall be submitted to Sevenson's Manager of Health and Safety or a designated representative for review prior to initiating excavation activities.

3. REQUIREMENTS

3.1. PRE-PLANNING

Excavation and trenching operations require pre-planning to determine whether sloping or shoring systems are required, and to develop appropriate designs for such systems. *SMP-41 Excavation and Trenching Program - Daily Excavation Checklist* will be completed daily to evaluate trenching conditions.

3.2. BURIED UTILITIES

The estimated location of all underground installations must be determined before digging begins. The local 811 Dig Safe agency must be contacted and requested to locate such underground public utilities at least three business days prior to the start of work. Property owners and facility operators must also be contacted prior to project

startup, to locate underground private utilities and installations. Ground-penetrating radar or other equipment may be useful in locating such utilities.

When excavations approach the estimated location of the underground utilities, exact locations must be determined by hand shoveling, potholing, poking wood or brass rods into the ground, or some other means of safely identifying and uncovering them.

All underground installations must be protected, supported, or removed to prevent injuries and damage during excavation. Where utilities or underground installations will be removed, they must be drained, flushed, blocked, and blanked, de-energized, and locked out and tagged prior to removal.

Any underground utility strikes must be reported to the Director of Health and Safety so the strike can be reported to the Common Ground Alliance tracking system.

3.3. ABOVEGROUND STRUCTURE AND LANDSCAPING

If there are any nearby buildings, walls, sidewalks, tress, or roads that may be threatened or undermined by the excavation, where the stability of any of these items may be endangered by the excavation, they must be removed or supported by adequate shoring, bracing, or underpinning.

Excavations may not go below the base of footings, foundations, or retaining walls, unless they are adequately supported, or a Professional Engineer has determined that they will not be affected by the soil removal.

3.4. PERSONNEL ENTRY INTO EXCAVATIONS

Personnel required to enter or work in the excavation at any time must be protected from the hazards of cave-ins. This requires the use of sloping and/or shoring systems that comply with State and Federal OSHA standards. The Site Superintendent will be responsible for determining if an excavation can be entered by workers. The Site Safety and Health Officer will be responsible for ensuring the Site Superintendent is fulfilling their duties as described in this program and in accordance with OSHA regulations.

3.5. MAXIMUM EXCAVATION DEPTHS

Excavations less than 5-feet deep do not require sloping or shoring IF the Competent Person examines the ground and finds no indication of a potential cave-in (see the definition of "competent person" above).

Excavations deeper than 5 feet in depth must be subjected to soil classification, regardless of whether workers enter the excavation/trench or not. Sloping and/or shoring systems for such excavations must be approved by a PE who is licensed in the state where the work will take place or as described in 29 CFR 1926 Subpart P.

3.6. PERSONNEL ENTRANCE AND EXIT LADDERS/ RAMPS

Where personnel must enter excavations and trenches greater than 4-feet deep, ladders, stairs, or ramps (when allowed by law) must be provided so that workers are not

required to travel more than 25-feet of lateral or side trave to reach a ladder, stairway, or ramp to exit the excavation or trench.

3.7. VEHICLE TRAFFIC

Personnel exposed to vehicle traffic must wear high-visibility warning vests. Measures must be put in place to route traffic away from or safely around excavations. This includes placing traffic barriers, traffic cones, and high-visibility warning signs.

Vehicle traffic and heavy equipment can create vibration that may make the excavation unstable. Where such hazards exist, sloping and shoring systems must be designed to withstand these vibrations.

3.8. OXYGEN DEFICIENCY AND HAZARDOUS ATMOSPHERES

All excavations greater than 4-feet deep will be monitored prior to personnel entering the excavation for oxygen deficiency and any hazardous atmospheres (such as methane, hydrogen sulfide, or volatile organic compounds) if there is any risk of these accumulating in the excavation. If a hazardous atmosphere is present, ventilation or other control systems must be used to remove the hazard. In addition, where ventilation is used, air monitoring must be continuous to verify that the excavation remains safe for workers to enter.

Emergency rescue equipment and a safety standby person must be present at the excavation whenever hazardous atmospheres could reasonably exist.

3.9. WATER ACCUMULATION

The height of the local water table must be determined if there is any possibility of water entering or accumulating in the excavation and if there is any possibility of rain or snowfall occurring during excavation operations.

If rain or snow falls or water enters the excavation between work shifts, the excavation must be thoroughly inspected and certified safe by the "competent person" on site before anyone re-enters the hole.

Personnel are not permitted to work in excavations where water is accumulating or has accumulated UNLESS the water is continuously pumped out and the sloping or shoring system has been designed to withstand exposure to water without cave-ins.

3.10. SPOIL PILES, EQUIPMENT, AND TOOL STORAGE

Small equipment, tool storage, shoring supplies, and spoils piles must be placed at least two feet away from the top edge of the excavation. In addition, heavy equipment and vehicles must be positioned at least two feet away from the top edge of the excavation.

3.11. EQUIPMENT OPERATOR VISIBILITY DURING EXCAVATION ACTIVITIES

Assess whether heavy equipment operators will be able to clearly see the excavation edge while working. When equipment operators do not have a clear and direct view of

the edge, barricades, stop logs, or hand signals must be used to warn them of their positions.

3.12. PERSONNEL WORKING ON EXCAVATION FACE

If personnel will be working on the excavation face at more than one level, they must be protected from falling rock or soil that may be generated by others working at levels above them. Protective barricades will be necessary at intervals along the face to provide this protection. The excavation face may also be scraped to remove loose materials.

Personnel are prohibited from working, standing, or traveling below loads being lifted or moved. Such loads include the buckets of excavators, backhoes, and loaders. Drivers of vehicles that are being loaded must remain in the vehicle cabs during loading.

3.13. PERSONNEL AND EQUIPMENT CROSSOVER POINTS

Where personnel or equipment will be required to cross over the excavation, walkways, or bridges with standard guardrail and mid rail system must be provided across the excavation. These bridges must be strong enough to withstand the weight of people, objects, and vehicles traveling across them.

4. SOIL TYPES

OSHA classifies soils into one of three types: A, B, or C. OSHA sloping and shoring requirements are based on the types of soil present at each work site.

Note that the definitions of these soil types are specific to compliance with OSHA excavation and trenching regulations. These definitions do not necessarily match terms used in geology or engineering soil studies.

4.1. TYPE A

Type A soils are defined as cohesive. They stick together easily and resist breaking apart under pressure. Clay, silty clay, sandy clay, and clay loam are examples of cohesive soils,

Type A soils must have an unconfined compressive strength greater than or equal to 1.5 tons per square foot.

Soil cannot be classified as Type A if it is fissured, subject to vibration, or if it has been previously disturbed or backfilled.

4.2. TYPE B

Type B soils include cohesive soil that has an unconfined compressive strength between 0.5 and 1.5 tons per square foot. Soil that has an unconfined compressive strength greater than 1.5 tons per square foot and is fissured or subject to vibration is also classified as Type B.

Some other soils that are granular and exhibit poor cohesion may be included as Type B materials. Angular gravel (like crushed rock), silt, silty loam, and sandy loam are examples of these materials.

4.3. TYPE C

Type C soils include cohesive soil that has an unconfined compressive strength less than 0.5 tons per square foot. Loose granular soils such as gravel, sand, and loamy sand are also classified as Type C.

5. OSHA SOIL CLASSIFICATION PROCEDURE

Soil classification must be done in accordance with methods described in the OSHA excavation standard. Visual examination will be followed by at least one manual test until the material is classified as Type A, B, or C.

A large chunk of soil, about the size of a backhoe bucket, should be used to make the classification. Samples must be collected in an undisturbed area before excavation begins.

It may be necessary to examine multiple samples to address the possibility of layering or multiple soil types in the proposed excavation or trench. If layers are present, each layer must be classified separately.

5.1. VISUAL EXAMINATION

Is the material entirely solid rock without cracks or fissures?

YES: Type A. Verify this by testing the unconfined compressive strength as described in Section 5.2, below.

Is the material submerged under water, saturated with water, or seeping water?

YES: Type C

Does the excavated soil remain in clumps?

NO: Type C

YES: Perform manual testing as described in Section 5.2, below.

5.2. MANUAL TESTING

Test the material for its unconfined compressive strength by one or both of the following methods.

5.2.1. METHOD A

Can a thumb be pressed into the soil several inches with very little effort?

YES: Type C. Compressive strength is less than 0.5 tons per square foot (tsf)

NO: Is the material fissured, cracked, or subject to vibration?

YES: Type C

NO: Type A or B

5.2.2. METHOD B – MOST ACCURATE

Press a pocket penetrometer into a ball of soil.

- Less than 0.5 tsf, Type C
- Between 0.5 and 1.5 tsf, Type B
- Greater than 1.5 tsf, Type A

If the material is fissured, cracked, subject to vibration, previously disturbed, or backfilled, it drops a level in the hierarchy of stability.

To confirm the decision to classify soil as Type B or C, perform a plasticity test. Roll a lump of soil into a rope that is no more than 1/8-inch thick and is at least two inches long. Does the rope break when it is lifted into the air by one end?

YES: Type C

NO: Type B

5.3. DOCUMENTATION

Soil classifications must be documented in writing. This may be done as part of the site's daily operating logs. Documentation must include, as a minimum:

i. Date and time of sample collection and testing.
ii. Location of soil sample collection.
iii. Physical condition and description of sample and any layering observed.
iv. Methods used for classifying soil types.
v. Results of soil classification; and.
vi. Name of the "competent person" who performed the soil classification.

6. LAYERED SOILS

In situations where different soil layers are present, each layer must be classified separately as Type A, B, or C. Where unstable soil is present underneath a stable soil layer, the sloping or shoring system for the entire excavation must meet the requirements for the most unstable soil. For example: if Type C soil is present under a layer of Type B, the entire excavation or trench must use the sloping or shoring requirements for Type C soil.

If Type B soil is present under Type C, the lower layer may be sloped or shored to meet Type B requirements and the upper layer to meet Type C.

7. SELECTION AND DESIGN OF SLOPING SYSTEMS

Sloping systems must be selected to meet the requirements of Appendix B of the OSHA excavation standard 29 CFR 1926, Subpart P. This appendix provides detailed diagrams and

specifications for the allowable angle of sloped excavations and trenches based on the types of soil present.

Sloping designs for excavations greater than 20 feet deep must be prepared by a PE. OSHA allows four options for sloping excavations less than 20 feet deep.

7.1. ONE AND ONE-HALF TO ONE SLOPING

Excavations may be sloped to a 34° angle or flatter without classifying the soil types or consulting a PE. This angle is equal to cutting the excavation back 1.5 feet horizontally for every 1 foot of depth.

This option may be impractical if the excavation is very deep or if the area around the excavation is restricted. Using the flattest slope, without classifying soil types, may result in removing substantially more soil than necessary. For example, a 10-foot deep hole would require removal of at least 2,250 cubic feet using 1.5:1 slope. If the soil is classified as Type B, with an allowable slope of 1:1; less than half as much soil (about 1,000 cubic feet) must be removed. This can provide significant savings in man-hours and disposal costs for contaminated soils.

7.2. STEEPER SLOPES

If soils are classified as Type A, B or C, in accordance with the OSHA standard, steeper sloping angles may be possible. In excavations less than 20 feet deep, Type A soils may be sloped at 0.5 foot horizontal to 1 foot vertical and Type B soils at 1 foot horizontal to 1 foot vertical. Type C soils must still use the 1.5 feet horizontal to 1 foot vertical slope.

7.3. ALTERNATIVE SLOPING DESIGN BY PE

If soils are classified as Type A, B, or C, an alternative sloping system may be designed by a PE, based on other tabulated data or previous work experience. Where an alternative sloping system is used, at least one written copy of the design must be kept at the job site while the slope is being constructed. This copy must include the data or other information used to develop the design, a description of the soil classification procedure and results, the specified measurements for sloping, and the name of the PE who developed and approved the design.

7.4. BENCHING

Benching is a method of protecting personnel from cave-ins by cutting a series of horizontal levels or steps in the sides of an excavation. Benching may only be used when soils have been classified as Type A or B according to the OSHA excavation standard. The benching design must meet the requirements of Appendix B of the standard. Any alternative benching systems must be approved by a PE with the same written documentation as described in Section 6.3.

8. SELECTION AND DESIGN OF SHORING SYSTEMS

Shoring systems must be selected to meet the requirements of Appendix C or D of the OSHA excavation standard 29 CFR 1926, Subpart P. This appendix provides detailed specifications for the strength, physical size, and number of timbers or other structural materials used to build shoring systems.

Shoring systems for excavations greater than 20 feet deep must be designed by a PE. OSHA allows similar options to those described for sloping, when selecting shoring for excavations less than 20 feet deep.

8.1. WOOD AND ALUMINUM SHORING SPECIFICATIONS

If soils are classified as Type A, B, or C in accordance with the standard, a wood, steel, or aluminum shoring system may be selected from Appendices C or D of the OSHA excavation standard 29 CFR 1926, Subpart P.

Note that lumber used to construct shoring must be new, previously unused, and free of knots or cracks.

The size of wooden timbers listed in Appendix C of 29 CFR 1926, Subpart P, is the actual size of the lumber, NOT the nominal size that is usually quoted when pre-cut timbers are sold. Timbers used for shoring systems must usually be special ordered from a lumber yard or sawmill in the exact sizes listed in Appendix C of the OSHA excavation standard.

8.2. PRE-MANUFACTURED SHORING SYSTEMS

After classifying the soil types, OSHA also allows the employer to use pre-manufactured shoring systems. This involves using the manufacturer's specifications to determine which shoring system will be used. The manufacturer must approve any design changes in writing before there is any deviation from their original recommendations.

A written copy of the manufacturer's specifications and any approved changes, must be kept at the job site while the shoring is constructed.

8.3. ALTERNATIVE SHORING SYSTEMS DESIGNED BY A PE

If soils are classified as Type A, B, or C, an alternative shoring system may be designed by a PE, based on any other tabulated data or previous work experience.

Where an alternative shoring system is used, at least one written copy of the design must be kept at the job site while the shoring is being constructed.

This copy must include the data or other information used to develop the design, a description of the soil classification procedure and results, the specified measurements for shoring, and the name of the PE who developed and approved the design.

8.4. SHORING INSTALLATION AND REMOVAL

Shoring systems must be installed from the top down as excavation or trenching progresses. Removal must take place from the bottom up, with the hole being backfilled as the shoring is removed.

Workers may not enter the excavation until adequate shoring is in place to prevent a cave-in. Workers will not remain in the excavation during removal of shoring unless an alternate means of support is provided to prevent cave-ins.

9. TRENCH SHIELDS

Trench shields are structures designed to prevent workers from being injured in a cave-in. These devices are reinforced metal boxes that are placed inside trenches using a crane or excavator. The boxes may be stacked or placed side by side to fill the depth and width of a trench.

The top of the trench shield must extend at least 18 inches above the top of the excavation.

Workers are to always remain within the trench shield in the excavation. Trench shields will not prevent cave-ins. They do not support the walls of the trench. They only protect workers inside the box if the trench caves in. An arm or leg outside the trench shield may be torn off or crushed by falling soil if a cave-in occurs.

All personnel will leave the excavation or trench while the trench shield is moved or repositioned.

Stacked trench shields must be bolted together and ladders must be provided for workers to enter and exit the boxes. The ladders must be placed inside the trench shield and must extend at least 3-feet above the top of the shield. Workers must have no more than 25-feet of travel to reach one of the ladders in an emergency.

10. COMPETENT PERSON INSPECTIONS

When personnel enter excavations, the excavations must be inspected at the start of each work shift by a "competent person" (see the definition of "competent person" above).

Inspections must include checking for any evidence of damage, defects, or loose parts in the shoring system. Personnel may not enter the excavation until any such problems have been corrected.

Inspections must also include looking for any evidence of possible cave-ins, hazardous atmospheres, water accumulation, undermining, or material breaking off the sides of the excavation. Any changes or new hazards must be addressed before workers enter the excavation.

Inspections must be repeated after rain or snowfall, after freezing or thawing, and after any other hazard-increasing occurrence.

When a new hazard is identified while workers are in the excavation, all exposed personnel must be evacuated from the excavation until the situation is corrected.

Daily inspections will be documented in writing in the site's daily operating logs.

11. BARRICADES AND WARNING SIGNS

Unattended excavations, and those in remote areas, require barricades or covers with warning signs to prevent persons and equipment from falling into them. Large excavations may require temporary fencing to prevent unauthorized access. Barriers with flashing warning lights will be used when excavations are left open after dark.

SMP-41 Excavation and Trenching Program - Daily Excavation Checklist

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
Safety Management Procedures

Safety Management Procedure
Daily Excavation Checklist

Location of Excavation: _____

Name of Qualified Person: _____

Date of Inspection: _____ Utility Locate No.: _____

Soil Type: ☐ Stiff Clay ☐ Firm Clay ☐ Dry Granular ☐ Wet Granular ☐ Saturated Granular ☐ Running

Hydrostatic Conditions: ☐ Dry ☐ Wet ☐ Saturated

Weather Conditions: ☐ Sunny ☐ Overcast ☐ Rain

Angle of Repose: (width and height) _____

Unsupported Wall Height: (measurement required) _____

Protection Required: ☐ Trench Box ☐ Shoring ☐ Sheeting ☐ Benching ☐ Sloping

Personal Protection Requirements: (list) _____

_____

Egress/Ingress: (identify) _____

Ladders/Ramps Location: _____

Location of Spoils: _____

Location of Overhead Lines: _____

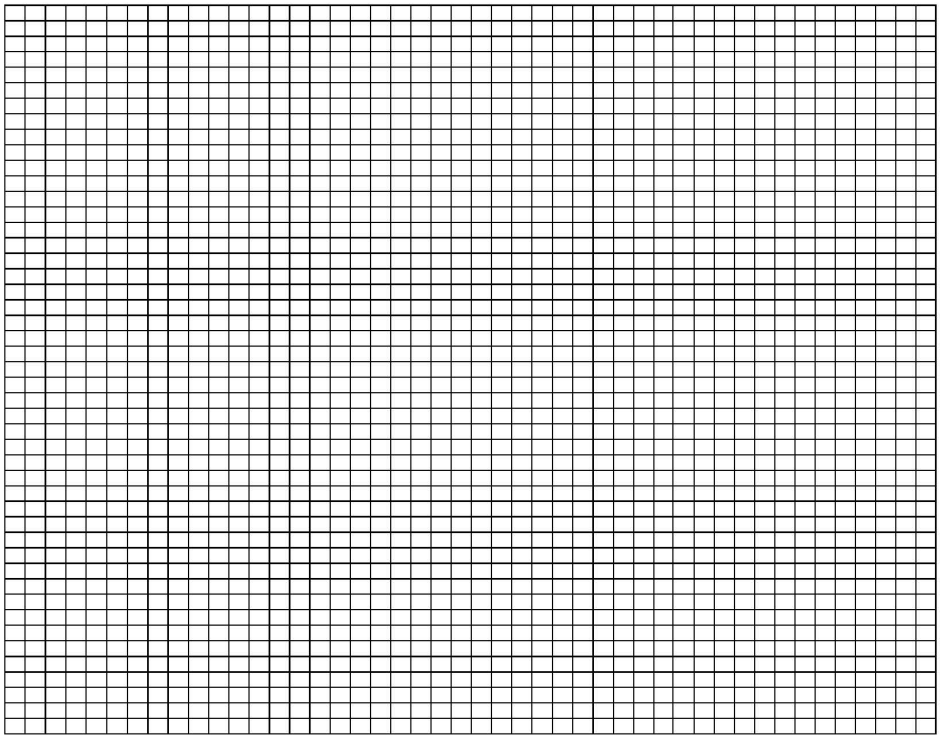
Name of Spotter for Overhead Lines: _____

Sketch excavation plan on reverse side and retain in file for 3 years.

Sevenson Environmental Services, Inc.
Niagara Falls, USA | Established 1917
SAFETY MANAGEMENT PROCEDURES

Safety Management Procedure
Daily Excavation Checklist

EXCAVATION SITE PLAN **LOCATION**



ABOVE GROUND CONSIDERATIONS

- ☐ Building Overhangs
- ☐ Electrical Lines
- ☐ Canopies
- ☐ Tree Overhangs
- ☐ Traffic Lights
- ☐ Street Lights

GROUND LEVEL CONSIDERATIONS

- ☐ Buildings
- ☐ Manholes
- ☐ Trees
- ☐ Hydrant
- ☐ PIVs
- ☐ Parking Lots
- ☐ D-Islands
- ☐ Curbs
- ☐ Walls
- ☐ Ditches/Drains
- ☐ Towers
- ☐ Shrubs
- ☐ Fences
- ☐ Signs
- ☐ Lamp Posts
- ☐ Guard Posts
- ☐ Gate Arms
- ☐ TV Cameras

BELOW GROUND CONSIDERATIONS

Site Prints

- ☐ Site Lightings
- ☐ Comm. Duct Bank
- ☐ 13.2 kV Electricity
- ☐ Fire Line
- ☐ Water
- ☐ Natural Gas
- ☐ Lawn Irrigation
- ☐ Chilled Water
- ☐ Steam
- ☐ Sanitary

Building Prints

- ☐ Fuel Lines
- ☐ Electricity for Gate Arms
- ☐ Electricity for TV Cameras
- ☐ UST (Tanks)

Appendix L
Revised Vernal Pool Pilot Study Performance Monitoring Plan



June 2026
GE-Pittsfield/Housatonic River Site

ANCHOR QEA AECOM

Revised Vernal Pool Pilot Study Performance Monitoring Plan

June 2026
GE-Pittsfield/Housatonic River Site

Revised Vernal Pool Pilot Study Performance Monitoring Plan

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, Inc
54 Genesee Street, Suite 100A
Camillus, New York 13031

In Conjunction with
AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067

Project Number: 170469-01.01

TABLE OF CONTENTS

1 Introduction 1

1.1 Vernal Pools Selected for Pilot Study 1

1.2 Pilot Study Overview 2

1.2.1 Amendment-Based Pilot Study Overview 3

1.2.2 Removal-Based Pilot Study Overview 4

1.3 Work Plan Organization 5

2 Pilot Study Performance Criteria 6

2.1 Removal-Based PCB Performance Criterion 6

2.2 Porewater PCB Performance Criterion and Compliance Depth 6

2.3 Ecological Performance Criterion 7

3 Summary of Vernal Pool Baseline Monitoring 9

4 Pilot Study Monitoring Plan 10

4.1 Amendment-Based Pools 10

4.1.1 Supplemental Baseline Monitoring 11

4.1.2 Post-Construction Porewater PCB Monitoring 12

4.1.3 Post-Construction Soil AC Content Monitoring 13

4.2 Removal-Based Pools 14

4.3 Vernal Pool Ecological Monitoring 15

4.4 Hydrological and Surface Water Monitoring 17

4.5 Vernal Pool Monitoring Summary 18

4.6 Restored Adjacent Area Ecological Monitoring 20

4.7 Maintenance and Corrective Action 21

5 Data Evaluation and Reporting 22

5.1 Application of Performance Criteria 22

5.1.1 Evaluation of Achievement of PCB Performance Criteria 22

5.1.2 Evaluation of Achievement of Ecological Performance Criterion 23

5.2 Reporting 23

6 References 25

TABLES

Table 1-1 Vernal Pool Pilot Study Summary 2

Table 4-1 Vernal Pool Pilot Test Monitoring Summary 19

FIGURES

Figure 1-1 Summary of Vernal Pools Selected for Pilot Study

Figure 1-2 Pilot Study Vernal Pools: Test Pool (5A-VP-4); Control Pools (5A-VP-3; 5A-VP-5)

Figure 1-3 Pilot Study Vernal Pools: Test Pools (5A-VP-7; 5A-VP-9; 5A-VP-12); Control Pool (5A-VP-10)

Figure 1-4 Pilot Study Vernal Pools: Test Pools (5A-VP-15; 5A-VP-16)

Figure 1-5 Pilot Study Vernal Pools: Test Pool (5A-VP-22); Control Pool (5A-VP-21)

Figure 1-6 Pilot Study Vernal Pools: Test Pool (5A-VP-27); Control Pool (5A-VP-26)

Figure 1-7 Pilot Study Vernal Pools: Test Pools (5A-VP-52; 5A-VP-57); Control Pool (5A-VP-55)

Figure 1-8 Pilot Study Vernal Pools: Control Pool (5A-VP-61)

Figure 4-1 Pilot Study Porewater and Soil Monitoring Locations: 5A-VP-9

Figure 4-2 Pilot Study Porewater and Soil Monitoring Locations: 5A-VP-12

Figure 4-3 Pilot Study Porewater and Soil Monitoring Locations: 5A-VP-15

Figure 4-4 Pilot Study Porewater and Soil Monitoring Locations: 5A-VP-22

Figure 4-5 Pilot Study Porewater and Soil Monitoring Locations: 5A-VP-27

ATTACHMENTS

Attachment A Vernal Pool Habitat Inventory Standard Operating Procedure

ABBREVIATIONS

AC	activated carbon
bgs	below ground surface
EPA	U.S. Environmental Protection Agency
Final Pilot Work Plan	*Final Revised Vernal Pool Pilot Study Work Plan*
FSP/QAPP	*Field Sampling Plan/Quality Assurance Project Plan*
GE	General Electric Company
mg/kg	milligram per kilogram
N/A	Not applicable
ng/L	nanogram per liter
PAC	powdered activated carbon
PCB	polychlorinated biphenyl
Pilot Monitoring Plan	*Vernal Pool Pilot Study Performance Monitoring Plan*
Pilot SIP	*Vernal Pool Pilot Study Supplemental Information Package*
Revised Final Permit	*Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*
Revised Pilot Monitoring Plan	*Revised Vernal Pool Pilot Study Performance Monitoring Plan*
RPOEC Report	*Restoration and Performance Objectives Evaluation Criteria Report*
SIP	Supplemental Information Package
SOP	standard operating procedure
SPME	solid-phase microextraction
SWAC	spatially weighted average concentration
TBD	to be determined

1 Introduction

On June 30, 2025, the General Electric Company (GE) submitted a *Final Revised Vernal Pool Pilot Study Work Plan* (Final Pilot Work Plan; Anchor QEA and AECOM 2025). As stated in that work plan, the principal objective of the vernal pool pilot study is to evaluate the effectiveness and potential adverse impacts of amendment-based and removal-based remediation of the vernal pools that require remediation. To achieve that objective, one of the activities to be performed prior to implementation of the study was to develop a monitoring program to assess the performance of the amendment-based and removal-based alternatives. Accordingly, the Final Pilot Work Plan included, as Appendix I, a *Vernal Pool Pilot Study Performance Monitoring Plan* (Pilot Monitoring Plan) that provided the details regarding the post-construction monitoring that will be done to evaluate the effectiveness of the vernal pool pilot testing.

By letter dated December 22, 2025, the U.S. Environmental Protection Agency (EPA) provided conditional approval of the Final Pilot Work Plan, including the Pilot Monitoring Plan. That letter required GE to submit a revised Pilot Monitoring Plan with the Supplemental Information Package (SIP) for the vernal pool pilot study to address several conditions in EPA's letter. Accordingly, GE has developed this Revised Pilot Monitoring Plan and is submitting it as an appendix to GE's *Vernal Pool Pilot Study Supplemental Information Package* (Pilot SIP). This plan has been revised for consistency with the Pilot SIP, to address the relevant conditions in EPA's December 22, 2025, conditional approval letter for the Final Pilot Work Plan, and to provide certain other updates.[1]

1.1 Vernal Pools Selected for Pilot Study

As described in the Final Pilot Work Plan, 10 vernal pools were selected for inclusion in the pilot study, as approved by EPA. Several criteria were used to select those ten pools, including the following: (1) the total polychlorinated biphenyl (PCB) spatially weighted average concentrations in the surface soil of the pools; (2) pool size; (3) pool accessibility; (4) surrounding habitat; (5) location outside of Core Area 1 habitat; (6) known species within the pool; (7) vegetative cover within the pool; and (8) pool hydrology. Five of these 10 pools will receive removal-based remediation, and the remaining five pools will receive amendment-based remediation (all 10 pools collectively referred to hereafter as "test pools") during the pilot study. These 10 pools were summarized in Section 1.4 and Table 1-3 of the Final Pilot Work Plan and are shown on Figure 1-1. The five amendment pools are 5A-VP-9, 5A-VP-12, 5A-VP-15, 5A-VP-22, and 5A-VP-27. The five pools that will be subject to removal are 5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57.

[1] In addition, this Revised Pilot Monitoring Plan, like the prior version, describes certain supplemental baseline (pre-construction) sampling of porewater in the amendment-based vernal pools that is necessary to effectively evaluate the effectiveness of the pilot study in those pools.

Seven additional vernal pools were selected to be used as field controls (referred to hereafter as "control pools") during the pilot study. The seven control pools are 5A-VP-3, 5A-VP-5, 5A-VP-10, 5A-VP-21, 5A-VP-26, 5A-VP-55, and 5A-VP-61. These control pools will be used to differentiate any changes that may occur in vernal pool ecology as a result of remediation from changes that may occur naturally in response to environmental conditions. The control pools were likewise listed in Table 1-3 of the Final Pilot Work Plan and are shown on Figure 1-1.

1.2 Pilot Study Overview

As described in the Final Pilot Work Plan, the pilot study construction activities to be implemented include removal and backfill of soil in the removal-based pools, application of activated carbon (AC) in the amendment-based pools, and site restoration. A summary of the remedial approach for each vernal pool is provided in Table 1-1, which also shows, for each of the amendment-based pools (or portion of such pools), the particular type of amendment (described in the Final Pilot Work Plan). The 17 vernal pools to be included in the pilot study, including pertinent information about the pools subject to remediation, are shown on Figures 1-2 through 1-7. The performance criteria for these remediation methods are described in Section 2.

Table 1-1
Vernal Pool Pilot Study Summary

Vernal Pool	Area (acres)	Pool Type	Remediation Approach
5A-VP-9	0.60	Amendment	PAC/sand with mixing (mixing method TBD)
5A-VP-12	0.27	Amendment	SediMite™ (or equivalent) surface application
5A-VP-15 (West)	0.19	Amendment	PAC/sand with till mixing
5A-VP-15 (East)	0.18	Amendment	PAC/sand with tine mixing
5A-VP-22 (North)	0.41	Amendment	PAC/sand surface application
5A-VP-22 (South)	0.41	Amendment	SediMite™ (or equivalent) surface application
5A-VP-27	0.08	Amendment	PAC/sand surface application
5A-VP-4	0.23	Excavation/Restoration	Remove/backfill soil (0- to 1-foot bgs); habitat restoration
5A-VP-7	0.41	Excavation/Restoration	Remove/backfill soil (0- to 1-foot bgs); habitat restoration
5A-VP-16	0.04	Excavation/Restoration	Remove/backfill soil (0- to 1-foot bgs); habitat restoration
5A-VP-52	0.06	Excavation/Restoration	Remove/backfill soil (0- to 1-foot bgs); habitat restoration

Vernal Pool	Area (acres)	Pool Type	Remediation Approach
5A-VP-57	0.49	Excavation/Restoration	Remove/backfill soil (0- to 1-foot bgs); habitat restoration
5A-VP-3	0.39	Control	N/A
5A-VP-5	0.33	Control	N/A
5A-VP-10	0.17	Control	N/A
5A-VP-21	1.65	Control	N/A
5A-VP-26	0.08	Control	N/A
5A-VP-55	0.25	Control	N/A
5A-VP-61	0.26	Control	N/A

1.2.1 Amendment-Based Pilot Study Overview

As described in Section 4.1 of the Pilot SIP, the target application rate for all amendment-based pools in the pilot study is placement of 0.70 pound per square foot of powdered activated carbon (PAC) within the top six inches of soil. As discussed in that section, the amendment will be placed on the surface of the vernal pools using two different application methods – placement of a PAC/sand blend and placement of SediMite™. The PAC/sand blend will be placed with a by-weight ratio of 50% sand and 50% PAC. SediMite™ is a pelletized PAC delivery method of approximately 50% PAC, 30% sand, and 20% bentonite clay. When wet, the pellets rapidly disintegrate, releasing the fine-grained PAC. Amendment application methods are described in the Pilot SIP.

Following surface application of the amendment, it is anticipated that the amendment will be incorporated into the subsurface over time via natural processes such as bioturbation as well as via burial due to input of new sediment from the surrounding watershed, and decomposition of leaf litter deposited within the pools. Measurements of PAC mixing depths over time will be made to further evaluate the appropriate depth over which the porewater criterion should be applied, as discussed in Section 4.

Reliance on natural processes to incorporate the PAC into the vernal pool soils will minimize adverse impacts to the habitat within those pools; however, natural mixing is anticipated to be a relatively slow process, and the depth of bioturbation is uncertain. Therefore, mechanical mixing will be tested during the pilot study in two of the five pools (5A-VP-9 and 5A-VP-15) to evaluate the potential effectiveness and implementability of mechanical mixing at increasing the rate of PAC incorporation into the vernal pool soils. The mechanical mixing methods will be tested where the PAC/sand blend is applied. Specifically, three different mixing approaches will be tested in 5A-VP-15.

The first mechanical mixing approach will include tilling of the top six inches of soil following PAC/sand placement. This approach will be more aggressive than other methods and is expected to

result in more thorough mixing, but would likely be difficult to implement due to obstructions from existing vegetation, roots, and woody debris.

Two mechanical mixing methods will be tested in the eastern portion of 5A-VP-15: tining and discing. Each mixing method will be evaluated in a limited area; and based on the results, the most effective approach will be applied throughout the eastern portion of 5A-VP-15. These methods are anticipated to be easier to implement than tilling, but may result in less thorough mixing. The tine mixing approach will use tines to repeatedly penetrate the surface soil following PAC/sand placement. The tines will promote mixing by pushing some PAC into the subsurface and by creating openings for the PAC to migrate downward into the soil. For the discing approach, a custom-fabricated disc attachment mounted to an excavator that will be used to mix the upper approximately six inches of soil, blending the pre-placed sand/PAC into the native soil. The disc system is designed to promote homogenous mixing while minimizing excessive disturbance to the surface soil and to above dragging of existing vegetation.

Pool 5A-VP-15 was selected to test the mechanical mixing methods because of the type of vegetation present in this pool (i.e., non-persistent emergent vegetation) is expected to present less challenging mixing conditions and to recover relatively quickly subsequent to mixing.[2] The mixing methods to be tested in pool 5A-VP-9 (which generally consists of dogwood shrubs, woody debris, and some open areas) will be selected in the field based on effectiveness of the mixing in pool 5A-VP-15. The proposed mixing methods for 5A-VP-9 will be reviewed with EPA prior to implementation. The vernal pool amendment application and mixing activities will be conducted using construction mats to minimize impacts to the vernal pools and surrounding areas. The specific equipment and tools that will be used for mechanical mixing are detailed in the Pilot SIP.

1.2.2 Removal-Based Pilot Study Overview

As part of the pilot study, soil removal and backfill areas have been delineated in the five removal-based vernal pools selected for the pilot study (5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57), as shown on Figures 1-1, 1-2, 1-5, and 1-6. Vernal pool soils will be removed and backfilled such that the resulting surface area weighted average concentration (SWAC) of PCBs achieves the performance standard of 3.3 milligrams per kilogram (mg/kg) in the upper one foot of soil (discussed in Section 2.1). The vernal pool removal and backfill activities will be conducted using low-ground-pressure mechanical excavation equipment and/or construction mats to minimize impacts to the vernal pools and surrounding areas. Following excavation and verification that design

[2] In addition to the mixing to be tested in pools 5A-VP-9 and 5A-VP-15, the implementability of both types of mixing (till and tine mixing) will be evaluated for different vegetation types at relatively small plots within other amendment-based pools, as discussed later in this Revised Pilot Monitoring Plan.

elevations have been achieved, topsoil will be obtained from an off-site source and placed within the removal areas to re-establish original grades.

1.3 Work Plan Organization

The remainder of this Revised Pilot Monitoring Plan is organized into the following sections:

- Section 2 summarizes the PCB and ecological performance criteria for the amendment-based and removal-based vernal pools, as described in Section 2 of the Final Pilot Work Plan.
- Section 3 summarizes the baseline PCB and ecological monitoring that has been completed. (Additional details were provided in the Baseline Monitoring Report in Appendix C to the Final Pilot Work Plan.)
- Section 4 describes the post-construction PCB and ecological monitoring and evaluation to be conducted to evaluate performance of the remediation methods used in the pilot study. It also discusses the post-construction monitoring of the restored staging areas used in the pilot study.
- Section 5 describes the vernal pool pilot test and data evaluation and reporting.

2 Pilot Study Performance Criteria

The pilot study PCB performance criteria for removal-based and amendment-based test pools are detailed in Sections 2.1 and 2.2. The ecological performance criterion applicable to both sets of test pools is detailed in Section 2.3.

2.1 Removal-Based PCB Performance Criterion

As discussed in Section 1.2, the performance standard for vernal pools, as set forth in the Revised Final Permit issued by EPA for the Rest of River (Revised Final Permit), is to achieve a SWAC of 3.3 mg/kg for total PCBs in the upper one foot of soil of each pool. This standard was used to establish the pilot study design for the five pools selected for the removal-based alternative. PCB-containing soils will be excavated to the depth of one foot and then backfill material will be placed to grade to achieve a post-remediation PCB SWAC equal to or less than 3.3 mg/kg in each vernal pool. This standard will be the performance criterion for the removal-based pools.

2.2 Porewater PCB Performance Criterion and Compliance Depth

As specified in Section II.B.3.b.(1).(b).i of the Revised Final Permit, the treatment of vernal pools with an amendment is required to reduce the bioavailability of PCBs in the vernal pool soil "to a level less than or equivalent to the bioavailability of PCBs associated with 3.3 mg/kg total PCBs in sediment." As described in Section 2.2 of the Final Pilot Work Plan, a porewater-based performance criterion of 40 nanograms per liter (ng/L) was established (but not to date approved by EPA) to assess whether an appropriate reduction of PCB bioavailability has been achieved within these pools. Similar to the removal-based criterion, the porewater-based performance criterion will be assessed on a SWAC-basis.

The appropriate depth over which to apply the porewater performance criterion will be evaluated as part of the pilot study. Following surface application of the amendment, it is expected that the amendment will be incorporated into the sediment over time via natural processes such as bioturbation as well as via burial due to new sediment and leaf litter deposition. As discussed in the Final Pilot Work Plan, the rate and depth to which bioturbation will mix the PAC into the native soils of the vernal pools are uncertain.

The purpose of in-situ treatment with carbon amendment is to reduce the bioavailability of PCBs in porewater to achieve the porewater-based performance criterion. The depth over which the performance criterion is applied should be consistent with the depth over which the organisms to be protected may be exposed. Measurements of PAC mixing depths over time will be completed to further evaluate the appropriate depth over which the PCB porewater criterion should be applied, as discussed in Section 4.1. Because the mixing is primarily a result of bioturbation in the pools not subject to mechanical mixing, the observed mixing depths will be indicative of the depth of

biological exposure and, therefore, will be used to develop the appropriate compliance depth over which the porewater criterion will be applied.

2.3 Ecological Performance Criterion

Both the removal-based and amendment-based remediation will also be evaluated based on their potential adverse ecological impacts. As indicated in Section II.B.3.b.(2)(e) of the Revised Final Permit, the criterion for success and the means of assessing the ecological effects of these alternatives are to be based upon comparisons of pre-remediation and post-remediation conditions. To accomplish this, the selection of parameters to be evaluated needs to consider the availability of background data, as well as the natural variability in vernal pool dynamics that occurs within and among years. These considerations indicate that the ecological performance criterion should be based on a relatively basic set of parameters that are amenable to being designed, controlled, and managed and can be readily documented and compared with pre-remediation conditions while considering the contemporaneous dynamics as represented through monitoring of the control pools.

Given these considerations, as provided in the Revised Pilot Work Plan and approved by EPA, the overall ecological performance criterion for evaluating the impacts of amendment application or removal and restoration activities on vernal pool environments is that the remediation should not adversely affect the physical characteristics of the vernal pools so as to prevent their continued viability as vernal pools. Comparison of post-remediation results from the test pools to those from the control pools will be used to assess whether any observed deviations from pre-remediation conditions are a result of the remedial activities or natural year-to-year variation.

As discussed in Sections 2.3 and 8 of the Final Pilot Work Plan, numerous field parameters will be measured or monitored in both the test and the control vernal pools after the amendment and removal and restoration work is completed to assess potential ecological impacts of the remediation. Those parameters are described in Section 4.3 of this Revised Pilot Monitoring Plan and include pool hydrology, the presence of amphibian egg masses and fairy shrimp, amphibian larval development and recruitment, macroinvertebrate community structure, vegetative plant community, general water quality, soil chemistry, and other physical features of the pools. As previously described in the Final Pilot Work Plan, achievement of the ecological performance criterion will be evaluated by assessing the physical conditions of the restored pools relative to each pool's pre-remediation condition and by conducting within-year comparisons to control pools that have similar pre-remediation physical and biological conditions. Comparisons will consider key physical parameters that are recognized as determining vernal pool viability, including the following:

- Spring/early summer temporary flooding for a duration sufficient to allow obligate vernal pool species (obligate amphibians or fairy shrimp) to carry through their breeding cycle;

- Lack of surface inlets or outlets that would provide surface water conduits for predatory fish to access the pool; and
- Availability of habitat features that indicate development of primary productivity and food sources and provide refuge for developing larvae and egg attachment sites for adult amphibians.

3 Summary of Vernal Pool Baseline Monitoring

Baseline PCB sampling and ecological surveys were conducted in the various test and control pools prior to implementation of the pilot study. In the vernal pools receiving amendment-based treatment, baseline monitoring consisted of bulk soil and porewater PCB sampling, ecological monitoring, and a topographic survey. In the vernal pools receiving removal-based treatment, the baseline monitoring consisted of soil sampling, ecological monitoring, and a topographic survey. The bulk soil and porewater PCB sampling locations were the same locations sampled during the non-residential floodplain pre-design investigation, which was summarized in GE's *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas* (Anchor QEA and Arcadis 2023). In the control pools, only baseline ecological monitoring was performed. Additional details related to baseline sampling and ecological survey methods and results were provided in the *Vernal Pool Pilot Study Baseline Monitoring Report* in Appendix C (Baseline Monitoring Report) to the Final Pilot Work Plan.

4 Pilot Study Monitoring Plan

The pilot test pools will be monitored during construction to ensure that construction-based goals are achieved such as removal depth and amendment application rates, and to evaluate the ecological impacts resulting from construction activities, as described in the Pilot SIP. Post-construction monitoring of the pilot study vernal pools will be conducted for a period of five years (anticipated to be 2027 through 2031), which is expected to be ongoing while remediation is occurring in other areas of Reach 5A. This monitoring will be consistent with the substantive requirements specified for vernal pool habitats in the *Restoration and Performance Objectives Evaluation Criteria Report* (RPOEC Report; Arcadis and AECOM, 2024) and will include additional ecological monitoring to allow comparison and evaluation of the success of the excavation-based and amendment-based vernal pools. Within 60 days of receipt and validation of the final data from the third year of monitoring (2029), GE will submit a Vernal Pool Pilot Study Summary Report to summarize the results of the pilot study and provide recommendations regarding the method of remediation for the remaining the vernal pools in Reach 5A that require remediation; and this will be followed by an addendum to the *Final Remedial Design/Remedial Action Work Plan for Reach 5A* that will provide remedial design details for those remaining vernal pools in Reach 5A.[3] Ecological monitoring will then be completed for an additional two years (2030 and 2031). The subsequent two years of ecological monitoring will provide additional data that can be used to support future remedial decision-making for vernal pools in other reaches.

Post-construction monitoring will include monitoring specific to the amendment-based pools and removal-based pools, as described in Sections 4.1 and 4.2. It will also include ecological monitoring as well as water depth/hydroperiod and surface water monitoring of the amendment-based pools, removal-based pools, and control pools, as described in Sections 4.3 and 4.4. Post-construction monitoring will also include monitoring of the restored construction staging areas used in the pilot study, as discussed in Section 4.6.

4.1 Amendment-Based Pools

Monitoring in the pools subject to placement of amendments will include several elements, including: (1) limited supplemental baseline (i.e., pre-construction) monitoring; (2) periodic post-construction sampling and analysis of porewater PCBs; and (3) periodic post-construction sampling and analysis of soil PAC content. A detailed description of each of these elements of the monitoring program is provided in Sections 4.1.1 through 4.1.3. Porewater PCB and soil PAC content monitoring will be conducted at the locations shown on Figures 4-1 through 4-5. Post-construction

[3] As discussed in Section 5.2, GE will discuss with EPA a schedule for GE's submittal and EPA's review and approval of the Vernal Pool Pilot Study Summary Report and the subsequent Final RD/RA Work Plan Addendum that will allow remediation of the remaining vernal pools in Reach 5A to begin in 2030.

ecological monitoring, as well as water depth/hydroperiod and surface water monitoring, of amendment-based, excavation-based, and control vernal pools will also be conducted, as detailed in Sections 4.3 and 4.4, respectively.

4.1.1 Supplemental Baseline Monitoring

The pilot study baseline monitoring conducted in 2024 included collection of porewater PCB data to establish the initial porewater PCB concentrations in the five amendment-based pools prior to treatment. Additional baseline (pre-construction) data will be needed in these pools to effectively evaluate the short-term and long-term effectiveness of the pilot study. Supplemental baseline porewater monitoring will include the following elements:

- As discussed in Section 2.1.2 of the Baseline Monitoring Report, a cooler containing some of the samples was damaged during shipment to the laboratory and six samples could not be analyzed, including VP9-W/X-13/14, VP9-X-14, VP12-B/C-1/2, VP12-C/D-4, VP22-F/G-2/3, and VP27-F-5. Therefore, supplemental porewater PCB sampling will be conducted at these six locations prior to construction.

- As described in Section 5.4.2 of the Final Pilot Work Plan, pool 5A-VP-15 was divided into eastern and western subareas, with different mixing approaches being tested in those two subareas. To provide for an equal number of baseline and post-construction monitoring locations in each subarea, supplemental baseline porewater PCB sampling will be conducted at two new locations (VP15-G/H-13/14 and VP15-H/I-14/15), which will provide a total of five sample locations in each subarea. Similarly, pool 5A-VP-22 was divided into northern and southern subareas, with PAC/sand being placed in the northern subarea and SediMite™ being placed in the southern subarea. To provide for an equal number of baseline and post-construction monitoring locations in each subarea, supplemental baseline porewater PCB sampling will be conducted at one new location (VP22-E-3), which will provide a total of five sample locations in each subarea in that pool.

- Previous baseline porewater PCB monitoring was conducted over a depth of zero to six inches. As discussed in Section 2.2, the rate and depth to which bioturbation will mix the PAC into the native soils of the vernal pools are uncertain and thus a zero- to six-inch sampling interval may not be representative of the depth of amendment effectiveness and biological exposure. Therefore, additional baseline porewater PCB data will be collected from zero to three inches below ground surface (bgs) to evaluate shallower baseline porewater PCB concentrations within each vernal pool. The zero- to three-inch porewater samples will be collected from the locations shown on Figures 4-1 through 4-5, which include the original baseline monitoring locations and the supplemental sampling locations. This sampling will be conducted when these vernal pools are wet.

- As described in Section 4.2.3 of the Baseline Monitoring Report on ecological monitoring, soil samples were collected from all test pools and from five of the control pools and analyzed for percent moisture, percent solids, pH, and total organic carbon. Soil samples were analyzed as a composite of the top eight inches of soil collected from three discrete locations within each pool. However, soil sampling and analysis were not completed for control pools 5A-VP-21 and 5A-VP-61 and therefore will be conducted as part of the supplemental baseline monitoring. This sampling and analysis will be conducted consistent with the baseline ecological sampling conducted previously in the other pools.

- As required by Condition #42 in EPA's December 22, 2025, conditional approval letter, all baseline monitoring locations will be sampled and analyzed for bulk density, redox, permeability, texture, and nutrients in addition to the other specified parameters.

Similar to the prior baseline porewater PCB sampling, during the supplemental porewater PCB sampling, a solid-phase microextraction (SPME) passive sampler will be advanced into the surface soil at each location in accordance with the standard operating procedure (SOP) for in-situ SPME sampling in Appendix E2 of GE's 2023 *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP) (Arcadis 2023). Based on a conservative estimate of vernal pool porewater concentrations and the potential for boundary layer formation to limit the mass transfer, the SPME passive samplers will remain in place for at least two months, at which point they will be retrieved and analyzed for PCB congeners (by EPA Method 1668C). Because boundary layer formation can increase the time it takes for an SPME fiber to achieve equilibrium with the surrounding environment, all SPME fibers will utilize performance reference compounds to measure the degree of equilibration for each SPME sampler. Following installation, all sampling locations will be located and recorded using a differential global positioning system.

4.1.2 Post-Construction Porewater PCB Monitoring

Post-construction porewater PCB monitoring in the amendment-based pools will involve the collection and analysis of porewater PCB samples at the locations shown on Figures 4-1 through 4-5. Porewater samples will be collected from the five amendment-based vernal pools at approximately three months, six months, one year, two years, and three years after application of the amendments. The timing of the approximate three-month and six-month monitoring events during the first year will be scheduled to avoid sampling during frozen periods and during dry periods and are subject to adjustment due to weather constraints. In fact, the three-month monitoring event may be deferred to spring if warranted by winter weather conditions. The annual post-remediation monitoring events will be conducted at approximately the same time of year as the baseline PCB monitoring (late spring to early summer) to control for potential seasonal variations. These data will be used to evaluate the effectiveness of the amendment in reducing porewater PCB concentrations.

At each sampling location, porewater sampling will be conducted by advancing in-situ SPME passive samplers into the surface soils of each vernal pool in accordance with the above-referenced SOP for in-situ SPME sampling. Given the uncertainty related to the depth to which bioturbation/mixing will occur (see Section 2.2), porewater will be monitored at two depth intervals (zero to three inches and zero to six inches bgs). Because natural mixing of the amendment into the vernal pool soils is expected to occur slowly, the initial post-construction sampling events at three months and six months will include sampling of only the zero- to three-inch depth interval. The annual sampling events (one, two, and three years after construction) will include sampling of both the zero- to three-inch and the zero- to six-inch intervals. Based on a conservative estimate of vernal pool porewater concentrations, the SPME passive samplers will remain in place for at least two months, at which point they will be retrieved and analyzed for PCB congeners (by EPA Method 1668C). Sampling locations will be located and recorded using a differential global positioning system.

4.1.3 Post-Construction Soil AC Content Monitoring

The post-construction monitoring program will include collection and analysis of soil samples from the amendment-based vernal pools for AC content at the same locations used for baseline and post-construction porewater PCB monitoring (see Figures 4-1 through 4-5). These data will be used to evaluate PAC mixing depth over time. At each sampling location, three core composite samples will be collected in one-inch intervals to a depth of six inches. All three cores will be collected from within approximately 12 inches of each other. Each core sample will be collected by advancing a three-inch core tube, extracting the material, and sectioning the core material into one-inch intervals, or else by removing soil in one-inch intervals using a hand trowel (or similar device), in accordance with the SOP for vernal pool soil sampling in Appendix D to the 2023 FSP/QAPP.

All soil samples will be analyzed for AC (a form of black carbon) using the method developed by Grossman and Ghosh (2009) for quantification of AC and other black carbons. Since the Grossman and Ghosh method quantifies black carbon inclusive of AC, measurement of the background black carbon content will be conducted at all monitoring stations prior to the amendment application.[4] Post-construction samples from the top three one-inch intervals will be analyzed initially, and all other samples will be archived. Based on the results of this initial analysis and a comparison to the pre-construction black carbon results, additional depth intervals will be analyzed if results indicate AC mixing to at least three inches. This process will continue in a step-wise fashion until the black carbon results indicate that the depth of AC mixing has been identified.

Similar to the post-construction sampling, background samples will be collected from the same locations used for baseline and post-construction porewater PCB monitoring (see Figures 4-1

[4] While it is unlikely that significant native black carbon is present in the vernal pools, black carbon is naturally occurring in many environments and will be characterized prior to measuring in-situ AC content.

through 4-5). However, because the black carbon content is expected to be minimal and not show much variation with depth prior to construction, the one-inch sample intervals will be composited into three-inch intervals (zero to three inches and three to six inches) for analysis. The one-inch sample intervals will be retained at the laboratory and can be analyzed individually as needed.

As noted in the Final Pilot Work Plan and in the Pilot SIP, in addition to the mixing to be tested in pools 5A-VP-9 and 5A-VP-15, the implementability of the different types of mixing will be evaluated for different vegetation types at relatively small plots within other amendment-based pools (including areas of dogwoods, areas of other types of wetland vegetation, and areas where larger tree roots are present).[5] Therefore, post-construction monitoring of PAC will be conducted at three locations within each of these additional mixing areas. Sampling locations will be determined in the field following selection and delineation of these additional mixing test areas. Because the testing of mixing in these pools will be conducted to evaluate the implementability of mixing in various types of vegetation, monitoring of porewater PCB concentrations will not be conducted in these areas.

Samples for AC analysis will be collected prior to amendment application, immediately following amendment application, and then on the same frequency as the porewater PCB sampling (i.e., three months, six months, one year, two years, and three years after completion of the amendment application) using the methods described above. All sampling locations will be located and recorded using a differential global positioning system.

4.2 Removal-Based Pools

Post-construction monitoring of the removal-based pools will focus on evaluating the success of restoration efforts in those pools, as well as assessment of any colonization of invasive plant species. This will consist of the ecological monitoring described in Section 4.3 and the water depth/hydroperiod and surface water monitoring described in Section 4.4. Post-construction monitoring for the vernal pools receiving removal-based treatment will be conducted annually (starting in the spring vernal pool breeding season following completion of construction) for five years to assess yearly variance in ecological parameters. As discussed at the beginning of Section 4, results from the first three years of monitoring will be used to determine the preferred approach for remediation of the remaining vernal pools in Reach 5A, and the subsequent two years of ecological monitoring will provide additional data that can be used to support future remedial decision-making for vernal pools in other reaches. This monitoring will be conducted during the same seasons as the prior baseline monitoring and ecological surveys to control for seasonal variations and will include site visits in spring and summer. No additional soil PCB sample collection and analysis will be performed in the pilot study pools subject to removal.

[5] The exact number, areas, and sizes of these test plots will be determined in the field in consultation with a project wetland scientist, and the selected pools will be reviewed with EPA prior to implementation.

4.3 Vernal Pool Ecological Monitoring

Post-construction ecological monitoring will be performed in all test and control pools. Ecological monitoring will be performed annually during each of the five years after completion of construction. An initial post-construction review will be conducted to verify that grading, soils, habitat structures (e.g., large woody debris), and plant installations were completed in accordance with the approved plans and specifications. Subsequent annual post-remediation ecological monitoring events will be conducted during the same time of year as the baseline surveys to control for potential seasonal variations. These will include spring monitoring visits during the vernal pool breeding period and an additional site visit in the summer at the end of the growing season. The ecological monitoring will include the following elements:

- A survey of the plant community will be conducted using randomly placed monitoring plots, line-intercept sampling, or other standard accepted methods that will provide detailed species-specific information and allow an assessment of total percent vegetative cover, total percent herbaceous cover, total percent shrub and/or tree cover (if any), species identification and plant community composition, plant vigor and health (including any observations of stress or herbivory), and presence of invasive plant species, including a comparison with pre-remediation conditions. The plant community survey will be conducted between June 15 and August 15 during each of the five years of monitoring.

- Data will be collected on hydroperiod and maximum flooding depths, including an assessment of surface water flooding conveyance into and out of each pool as discussed further in Section 4.4.

- Amphibian egg mass counts and surveys for fairy shrimp presence will be performed following remediation from arrival of the first wood frogs and/or fairy shrimp until mature amphibians have left the pool or the pool is dry. These data will be collected each of the five monitoring years as early as possible during the vernal pool breeding season, and will consider seasonal trends in weather documented to be occurring in the specific year of the survey. Three rounds of egg mass counts will be conducted in each pool to encompass the entire egg-deposition period for both wood frogs and spotted salamanders. These surveys will be spaced out over approximately three weeks during the early portion of the breeding season but may be adjusted based on weather and local migration patterns.

- Dip net surveys will be conducted to monitor amphibian larval development and assess recruitment into the local population and to assess aquatic macroinvertebrate community structure within each pool. Up to three rounds of dip net surveys for amphibian larvae and macroinvertebrates will be conducted, spaced out through the larval development period.

This is expected to result in surveys every two to three weeks from mid-May to early July in each pool, but again they may be adjusted based upon weather and larval development rates.

- Soil profile descriptions within the removal-based treatment pools will be collected to assess development of hydric soil conditions in the top 12 inches, being careful not to extend into the underlying native floodplain soils. Soil profile descriptions are not needed in the amendment-based pools.

- Soil samples will be collected and tested for basic soil chemistry and composition parameters in the vernal pools—specifically, pH, organic carbon content, moisture content, grain size distribution, bulk density, redox, permeability, texture, and nutrients. These soil samples will be collected coincident with the vegetation sampling (i.e., between June 15 and August 15).

- Post-construction surface water monitoring will be conducted during each visit in which egg masses and/or dipnet sweeps are performed, and will include pH, temperature, alkalinity, hardness, dissolved oxygen, and specific conductivity.

- Qualitative observations will be made to ensure that each vernal pool holds water and has no permanently following outlet and that there are no fish present within the pool.

- An assessment will be conducted of the habitat surrounding each vernal pool and any potential vernal pool networking. This will specifically take into account habitat changes that may have occurred from the access, staging, and associated construction activities. Potential habitat changes surrounding vernal pools resulting from Reach 5A floodplain, river, or riverbank remediation activities that will be occurring during the monitoring period will be documented and evaluated.

Attachment A contains the Vernal Pool Habitat Inventory SOP that will be used for collection of the post-construction ecological information. That SOP provides for the collection of information on the plant community; hydrological conditions, vernal pool faunal species, and other relevant information and includes the completion of two forms – one on obligate and other faunal species present (based on an example form provided by the Massachusetts Natural Heritage and Endangered Species Program) and one on the physical vernal pool characteristics.

When conducting the post-construction monitoring, evidence of infectious disease observed in amphibians (if any) will be noted. The amphibian chytrid, Batrachochytrium dendrobatidis, is a fungal pathogen now prevalent throughout Massachusetts. In addition, Ranaviruses are established in Massachusetts, which may cause mass mortality of mature amphibian larvae at vernal pools. When monitoring larval development, larval malformations will be noted. Further, to avoid the spread of

pathogens, GE will implement appropriate decontamination procedures for all field crews and equipment used while conducting vernal pool monitoring efforts.

The post-remediation ecological monitoring data will be reviewed on a yearly basis to evaluate achievement and maintenance of the ecological performance criterion described in Section 2.3. In addition, the evaluation criteria for the removal-based pools will include those specified in Section 5.7 of the RPOEC Report, including, as applicable, restored topsoil conditions consistent with specifications, absence of significant erosion affecting vegetation establishment or floodplain hydrology, mean percent cover of native target species of at least 80%, and mean percent cover of invasive species of no more than 10% or no more than reference-site conditions where applicable.

4.4 Hydrological and Surface Water Monitoring

As described previously, ecological monitoring will be conducted in all test and control pools. All of these pools will also be monitored for surface water elevations and depth and hydroperiod throughout the designated vernal pool breeding period, using piezometers consistent with the procedures described in the Vernal Pool Habitat Inventory SOP in Attachment A. Piezometer locations are shown in Figures 1-2 through 4-5. Hydrologic monitoring will be conducted in 2026 prior to the vernal pool pilot test construction activities, as well as during long-term ecological monitoring. This monitoring will focus on documenting vernal pool hydrology during the period from arrival of the first wood frogs and/or fairy shrimp until mature amphibians have left the pool or the pool is dry, and it will be used to assess the effects of the pilot testing on vernal pool hydrology. Both the depth and duration of surface water flooding in pilot test pools will be compared to those in the control pools, as well as to background data on hydrology in such pools, to assess whether there are any hydrologic impacts of the pilot testing on the breeding habitat suitability.

This hydrologic impact assessment will require the consideration of multiple natural factors, which in combination could affect the depth and duration of flooding (in addition to any effects of the pilot testing). Several years of monitoring the vernal pools within Reach 5A have demonstrated significant yearly and seasonal variation in hydrology within and among vernal pools. Factors such as varying precipitation patterns, inflow-outflow conditions, basin microtopography, and soil conditions all contribute to determining vernal pool hydrology and will require consideration in a qualitative assessment of the effect of applying the amendments and/or the removal and restoration procedure. As part of the hydrologic impact assessment, other relevant data, such as monthly total precipitation, monthly average ambient air temperatures, and stream gauge data for the Housatonic River, will also be considered and used to aid in the assessment of yearly and seasonal variation in hydrology within and among vernal pools.

In addition, all test and control pools will be monitored for water quality characteristics (specifically pH, temperature, alkalinity, hardness, dissolved oxygen, and specific conductivity). These data will be

collected using a YSI field meter (or similar) at a frequency of one week, two weeks, three weeks, one month, three months, six months, one year, two years, three years, four years, and five years after completion of the selected remediation. The annual monitoring will occur during the spring flooding period of each pool.

4.5 Vernal Pool Monitoring Summary

A summary of the vernal pool monitoring program is provided in Table 4-1.

Table 4-1
Vernal Pool Pilot Test Monitoring Summary

Monitoring Component	Pre-Construction (2026)	Post-Construction						Year 4 (2030)	Year 5 (2031)
		Immediately Post-Construction (2026)	Approximately Month 3 (2027)[4]	Month 6 (2027)	Year 1 (2027)	Year 2 (2028)	Year 3 (2029)		
Control Pools									
Ecological[1]					X	X	X	X	X
Surface water characteristics[2]		X	X	X	X	X	X	X	X
Water depth/ hydroperiod	X				X	X	X	X	X
Amendment Pools									
Supplemental Baseline	X								
PCB porewater[3]			X	X	X	X	X		
AC content (via black carbon testing)	X	X	X	X	X	X	X		
Ecological[1]					X	X	X	X	X
Surface water characteristics[2]		X	X	X	X	X	X	X	X
Water depth/ hydroperiod	X				X	X	X	X	X
Removal Pools									
Ecological (including soil profile descriptions)[1]					X	X	X	X	X
Surface water characteristics[2]		X	X	X	X	X	X	X	X
Water depth/ hydroperiod	X				X	X	X	X	X

Notes:

1. Ecological parameters will be monitored seasonally during each of the five annual post-construction monitoring events consistent with pre-remediation monitoring. Vernal pool breeding activity will be monitored each spring; vegetative growth will be monitored each summer at the end of the growing season.
2. pH, temperature, alkalinity, hardness, dissolved oxygen, and specific conductance will be measured. The monitoring events immediately following construction will be conducted one week, two weeks, three weeks, and one month following construction completion, subject to adjustment due to weather constraints The annual monitoring will be conducted during the spring flood period of each pool for each of the five annual monitoring events.
3. Porewater PCBs will be analyzed in the 0- to 3-inch interval during month three and month six sampling events and in the 0- to 3- and 0- to 6-inch intervals during the annual sampling events.
4. The three-month monitoring event is approximate and subject to adjustment due to winter weather conditions. It will not be conducted during frozen conditions and may be deferred until spring if warranted based on weather conditions.

4.6 Restored Adjacent Area Ecological Monitoring

As described in the Pilot SIP, the primary access roads that will be used during implementation of the pilot study will also be used for the upcoming Reach 5A remediation. Therefore, no restoration of these primary access roads will be performed as part of the vernal pool pilot study. The secondary temporary access roads, the temporary staging areas, and additional areas cleared and/or disturbed for access to the vernal pools or to otherwise support the pilot study implementation will be restored as needed following pilot study construction activities. The restoration plan for these areas is provided in Section 4.4.5 of the Pilot SIP.

Post-restoration monitoring of the restored adjacent areas will be conducted in accordance with the requirements specified for upland floodplain habitats in the RPOEC Report. Such monitoring will extend for seven years following completion of the restoration in these areas. Monitoring of the restored adjacent areas will focus on the extent to which these restored floodplain upland areas are developing toward the approved design conditions and meeting the applicable restoration evaluation criteria.

An initial post-construction review of these areas will be conducted to verify that grading, soils, habitat structures, and plant installations were completed in accordance with the approved plans and specifications. Thereafter, qualitative field reviews of the restored adjacent areas will be conducted during annual spring monitoring visits through the applicable monitoring period. These visits will assess whether conditions are present that could adversely affect restoration performance, including erosion, instability, poor plant establishment, excessive mortality, invasive-species establishment, or failure of installed habitat structures. Areas of concern will be photo-documented and mapped with GPS so that trends and needed corrective actions can be tracked over time.

More detailed floodplain habitat assessments of the restored adjacent areas will be conducted using protocols consistent with the Baseline Restoration Assessment and RPOEC framework, including completion of a Floodplain Habitat Inventory Form (included as an appendix to the RPOEC Report) during later monitoring years. These assessments will evaluate, as applicable, soil development, plant community composition, invasive species cover, habitat structure, signs of erosion or degradation, and general habitat function. Quantitative vegetation monitoring will also be conducted during summer monitoring visits using permanent or repeatable transects and/or plots established in the restored staging areas. Parameters to be evaluated will include total vegetative cover, species composition, percent cover by target native species, percent cover by invasive species, woody stem density, evidence of stress or herbivory, and other measures needed to assess progress toward the applicable restoration criteria.

The principal evaluation criteria for the restored adjacent areas are those specified in Section 5.6 of the RPOEC Report and will include, as applicable, restored topsoil conditions consistent with specifications, absence of significant erosion affecting vegetation establishment or floodplain hydrology, mean percent cover of native target species of at least 80%, mean percent cover of invasive species of no more than 10% or no more than reference-site conditions where applicable, and successful establishment or natural recruitment of woody plants.

4.7 Maintenance and Corrective Action

Maintenance and corrective action for the vernal pools and restored adjacent areas will follow the adaptive management approach set forth in Section 7 of the RPOEC Report. Certain actions, particularly invasive species management, may begin during the first growing season and will not necessarily wait for later monitoring results. Where monitoring indicates that restoration criteria are not being met, the first step will be to evaluate whether additional information is needed to define the problem. Once sufficient information is available, corrective measures will be implemented. Potential corrective actions include erosion repairs; invasive species control using mechanical, chemical, biological, or other approved methods; maintenance or replacement of herbivory controls; reseeding of areas with inadequate native herbaceous establishment; replacement planting of trees and shrubs where stem-density or survival criteria are not being achieved; and repair or replacement of installed habitat structures. In areas where hydrology is not functioning as intended, corrective actions may also include drainage corrections or other measures identified through adaptive management review.

5 Data Evaluation and Reporting

5.1 Application of Performance Criteria

Post-remediation monitoring data collected from the test pools will be evaluated against the applicable PCB and ecological performance criteria, as described in Section 8.5 of the Final Pilot Work Plan and the following subsections. This information will be used to facilitate the selection of remediation approaches for the remainder of the vernal pools in Reach 5A (and eventually, following the completion of five years of post-construction monitoring, for additional vernal pools identified in downstream reaches). If both treatment approaches (i.e., removal-based and amendment-based) are able to meet the established performance criteria, other factors (such as sensitive habitat or ease of access) will be used to determine which remedial approach is best applied to the remaining vernal pools.

5.1.1 Evaluation of Achievement of PCB Performance Criteria

Post-remediation monitoring data collected from the amendment-based test pools will be evaluated against the applicable PCB porewater performance criterion described in Section 2. For these pools, the measured post-construction porewater PCB concentrations will be averaged within each pool to provide a post-remediation porewater PCB SWAC that will be used to compare to the current porewater-based performance criterion of 40 ng/L. Averaging areas for the porewater PCB SWAC calculation are provided in Table 1-1. It is expected that any pools receiving amendment placed directly on the vernal pool soil, either as a discrete thin layer or mixed into the surficial pool soils, will require more than one year for the amendment to mix and equilibrate with the vernal pool soils and produce the desired reductions in porewater PCB concentrations.

As discussed in Section 2.2, the depth over which the performance criterion is applied in the amendment pools should be consistent with the depth over which the organisms to be protected may be exposed. Measurements of PAC mixing depths and porewater PCB concentrations over time in two depth intervals (zero to three inches and zero to six inches) will be used to further evaluate the appropriate depth over which the porewater criterion should be applied. Because the mixing in the pools not subject to mechanical mixing is primarily a result of bioturbation, the observed long-term mixing depths at the conclusion of the monitoring period will be indicative of the depth of biological exposure and therefore will be used to develop the appropriate depth over which the porewater criterion will be applied.

In the removal-based pools, soils will be removed and replaced with clean backfill. As a result, the removal-based alternatives will achieve the removal-based PCB performance criterion (i.e., the Revised Final Permit performance standard of 3.3 mg/kg) immediately following construction. As

described in Section 4.2, no post-construction PCB monitoring is being conducted in the removal pools.

5.1.2 Evaluation of Achievement of Ecological Performance Criterion

For all test pools, the results of the ecological monitoring performed during the post-remediation period will be compared to pre-remediation conditions, as well as to conditions within one or more of the control pools, to evaluate impacts of amendment application or removal and restoration activities on the vernal pool environments and to evaluate whether any observed deviations from pre-remediation conditions are a result of the remediation activities or natural year-to-year variation. This evaluation will be used to assess the achievement of the ecological performance criterion specified in Section 2.3.

5.2 Reporting

Following each of the first and second years of post-construction monitoring (anticipated to be 2027 and 2028), an annual report will be submitted to EPA within 90 days after receipt and validation of the final monitoring data from the subject year. Each of these monitoring reports will include a discussion of monitoring methods, a summary of the chemical and ecological results and observations, comparisons to chemical and ecological performance criteria, and any recommendations for response actions or revisions to the pilot study monitoring program. If the pilot study monitoring indicates that the pilot study methods are not working as intended or if it appears the remediation may not achieve the performance criteria, a contingency plan will be developed by GE within the context of adaptive management to modify or adjust the pilot study monitoring program or other pilot study methods, as appropriate.

GE will submit a Vernal Pool Pilot Study Summary Report for EPA review and approval within 60 days after receipt and validation of the final data collected as part of the first three years of post-remediation monitoring program (anticipated to be in 2029). As provided in Section 9.2 of the Pilot SIP, that report will summarize the results of the pilot study and provide recommendations regarding the method of remediation for other vernal pools in the Reach 5A floodplain that require remediation. The report will include an evaluation of the effects of the AC placed in the pools (if any) on the vernal pool species using the pools. The raw data from all habitat inventory surveys will be included as an appendix in the Summary Report and will also be provided to EPA in an electronic format.

Within 90 days following EPA approval of the Vernal Pool Pilot Study Summary Report or sooner if possible, GE will submit an addendum to the Final RD/RA Work Plan for Reach 5A that provides remediation design details for the remaining vernal pools in Reach 5A. Prior to that time, GE will discuss with EPA a schedule for GE's submittal and EPA's review and approval of the Pilot Study

Summary Report and the subsequent Final RD/RA Work Plan Addendum that will allow remediation of the remaining vernal pools in Reach 5A to begin in 2030.

Results from the fourth year of post-construction ecological monitoring (anticipated to be 2030) will be provided to EPA in an annual report. Following the fifth year of ecological monitoring (anticipated to be 2031), GE will submit an addendum to the Vernal Pool Pilot Study Summary Report that summarizes the five years of ecological monitoring and implications for consideration of vernal pool remediation in reaches other than Reach 5A.

6 References

Anchor QEA and Arcadis, 2023. *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas*. September 2023.

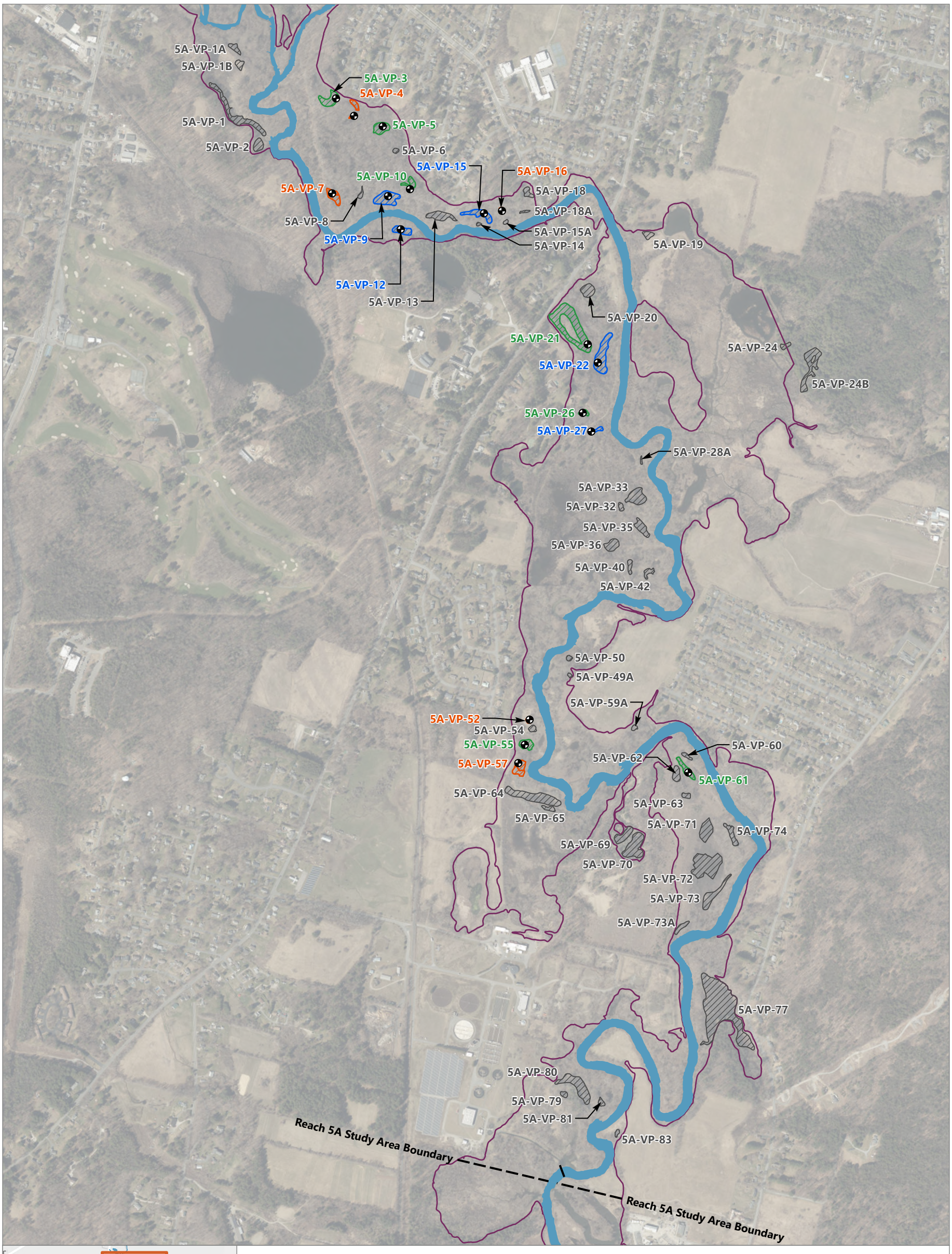
Anchor QEA and AECOM, 2025. *Final Revised Vernal Pool Pilot Study Work Plan.* Prepared for General Electric Company. June 2025.

Arcadis, 2023. *Field Sampling Plan / Quality Assurance Project Plan GE-Pittsfield/Housatonic River Site*. Prepared for the General Electric Company, Pittsfield, Massachusetts. December 2023.

Arcadis and AECOM, 2024. *Revised Reach 5A Baseline Restoration Assessment Report*. Prepared for the General Electric Company, Pittsfield, Massachusetts. February 2024.

Grossman A. and U. Ghosh, 2009. "Measurement of Activated Carbon and Other Black Carbons in Sediments." *Chemosphere* 75 (2009) 469–475.

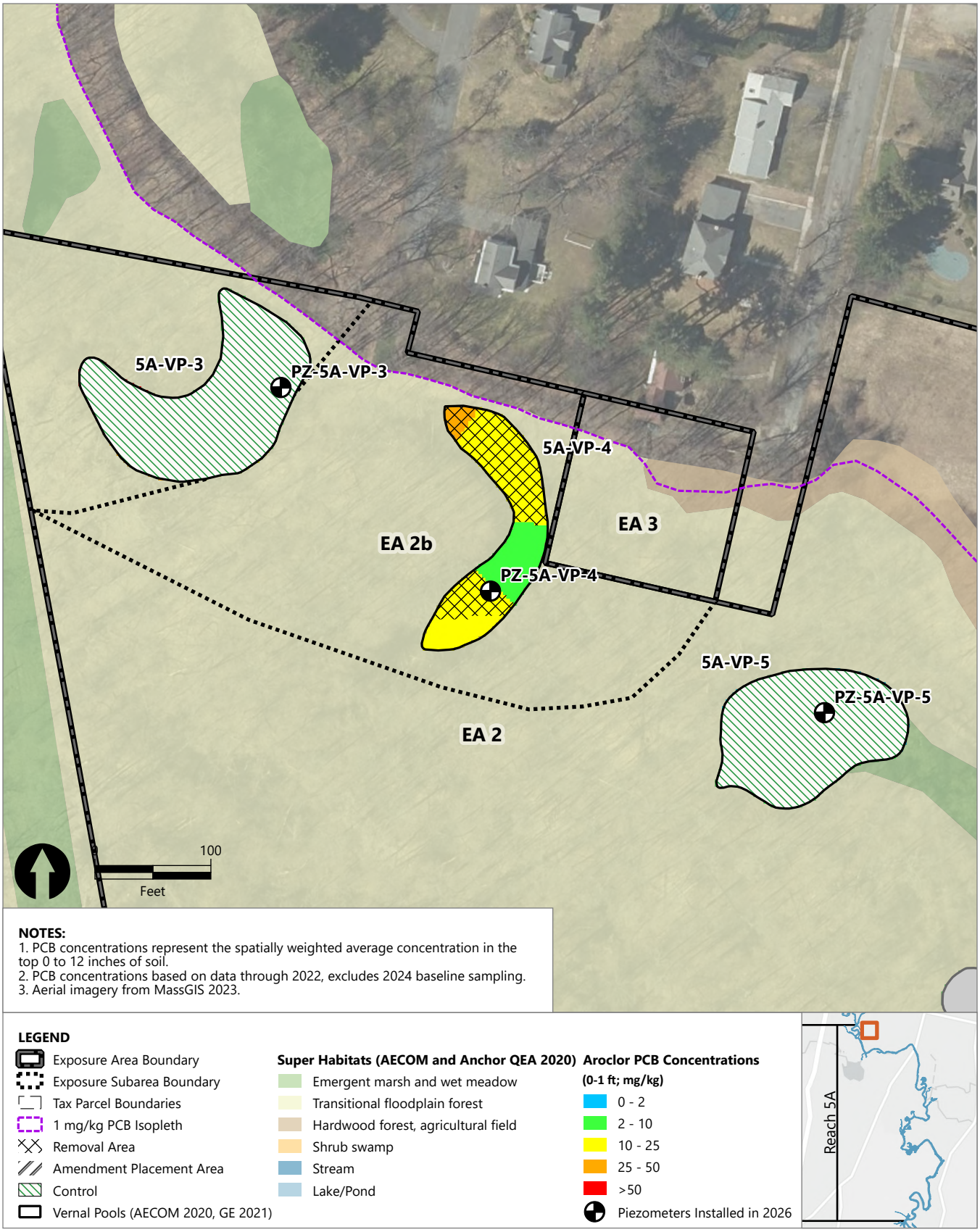
Figures



Publish Date: 2026/06/19, 3:05 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-1 Summary of Vernal Pools

ANCHOR QEA

Figure 1-1
Summary of Vernal Pools Selected for Pilot Study
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



NOTES:
1. PCB concentrations represent the spatially weighted average concentration in the top 0 to 12 inches of soil.
2. PCB concentrations based on data through 2022, excludes 2024 baseline sampling.
3. Aerial imagery from MassGIS 2023.

LEGEND

- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Removal Area
- Amendment Placement Area
- Control
- Vernal Pools (AECOM 2020, GE 2021)

Super Habitats (AECOM and Anchor QEA 2020)

- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond

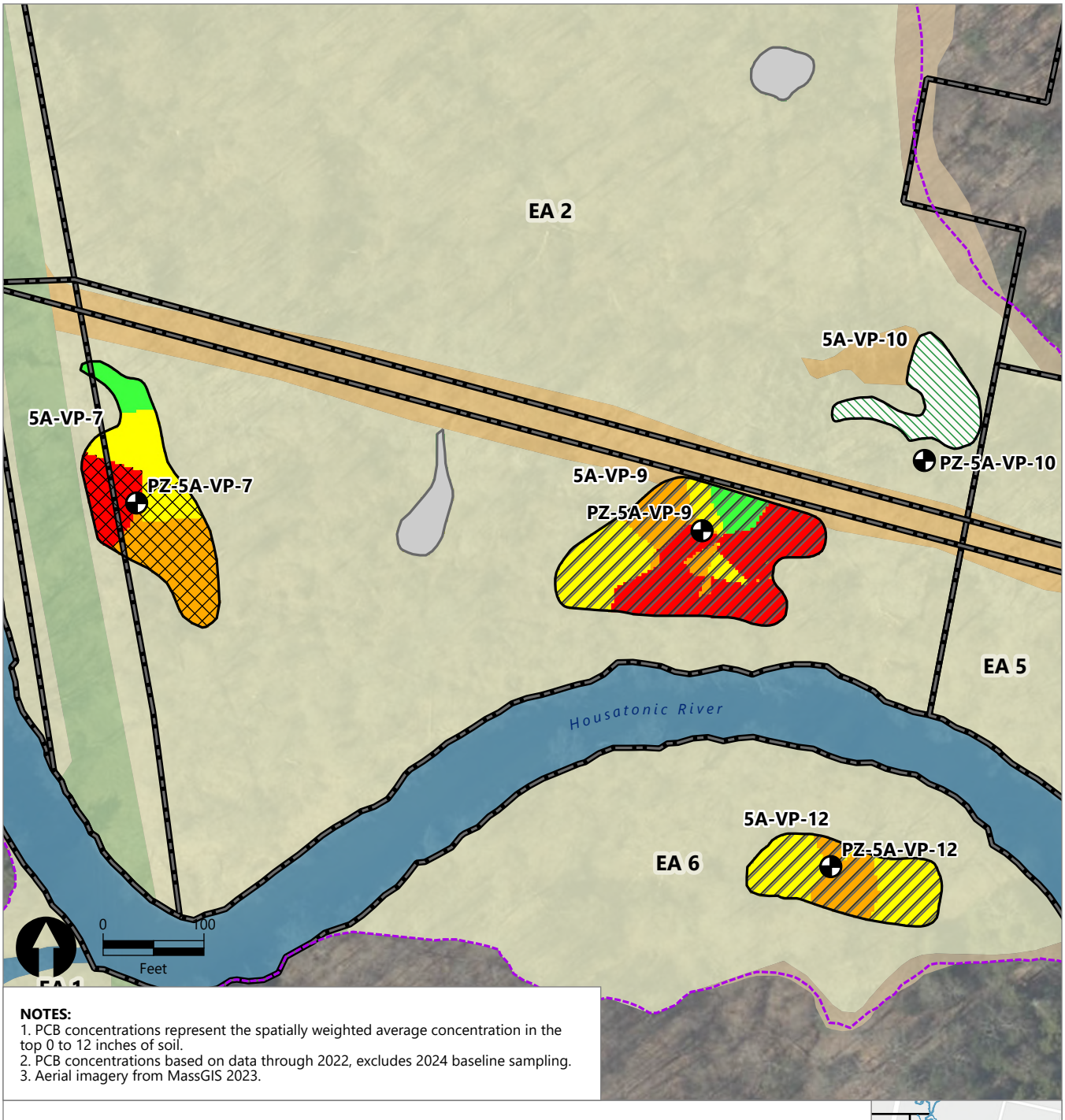
Aroclor PCB Concentrations (0-1 ft; mg/kg)

- 0 - 2
- 2 - 10
- 10 - 25
- 25 - 50
- >50
- Piezometers Installed in 2026

Publish Date: 2026/06/19, 3:06 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

Figure 1-2
Pilot Study Vernal Pools: Test Pool (5A-VP-4); Control Pools (5A-VP-3; 5A-VP-5)
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



NOTES:
1. PCB concentrations represent the spatially weighted average concentration in the top 0 to 12 inches of soil.
2. PCB concentrations based on data through 2022, excludes 2024 baseline sampling.
3. Aerial imagery from MassGIS 2023.

LEGEND

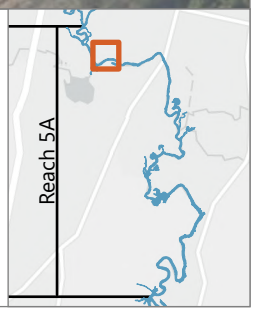
- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Removal Area
- Amendment Placement Area
- Control
- Vernal Pools (AECOM 2020, GE 2021)

Super Habitats (AECOM and Anchor QEA 2020)

- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond

Aroclor PCB Concentrations (0-1 ft; mg/kg)

- 0 - 2
- 2 - 10
- 10 - 25
- 25 - 50
- >50
- Piezometers Installed in 2026

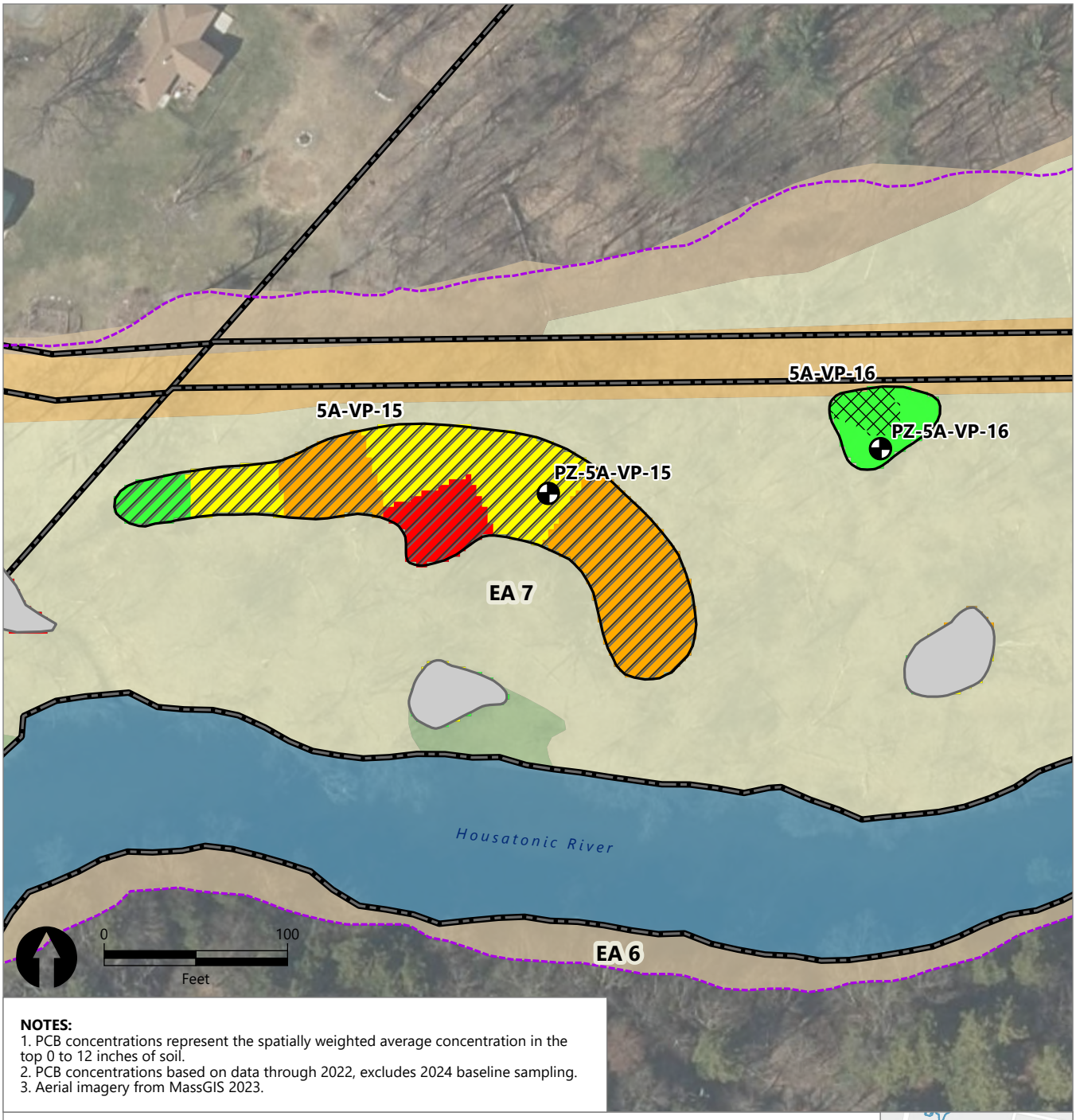


Publish Date: 2026/06/19, 3:06 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

Figure 1-3
Pilot Study Vernal Pools: Test Pools (5A-VP-7; 5A-VP-9; 5A-VP-12); Control Pool (5A-VP-10)

Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



NOTES:
1. PCB concentrations represent the spatially weighted average concentration in the top 0 to 12 inches of soil.
2. PCB concentrations based on data through 2022, excludes 2024 baseline sampling.
3. Aerial imagery from MassGIS 2023.

LEGEND

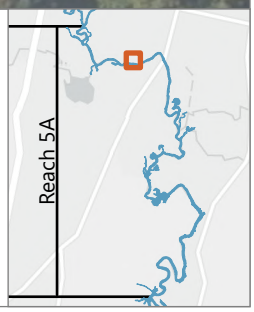
- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Removal Area
- Amendment Placement Area
- Control
- Vernal Pools (AECOM 2020, GE 2021)

Super Habitats (AECOM and Anchor QEA 2020)

- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond

Aroclor PCB Concentrations (0-1 ft; mg/kg)

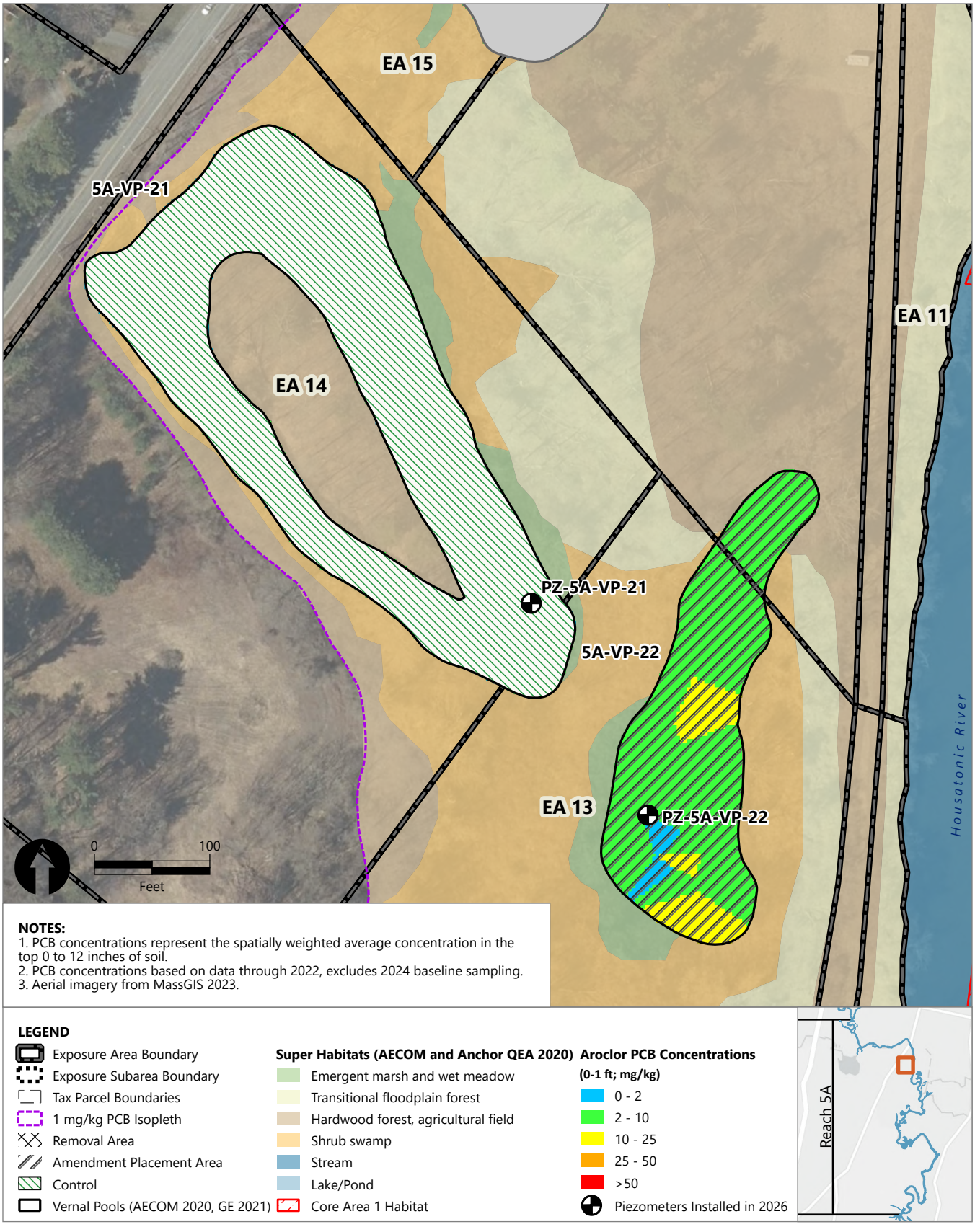
- 0 - 2
- 2 - 10
- 10 - 25
- 25 - 50
- >50
- Piezometers Installed in 2026



Publish Date: 2026/06/19, 3:06 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

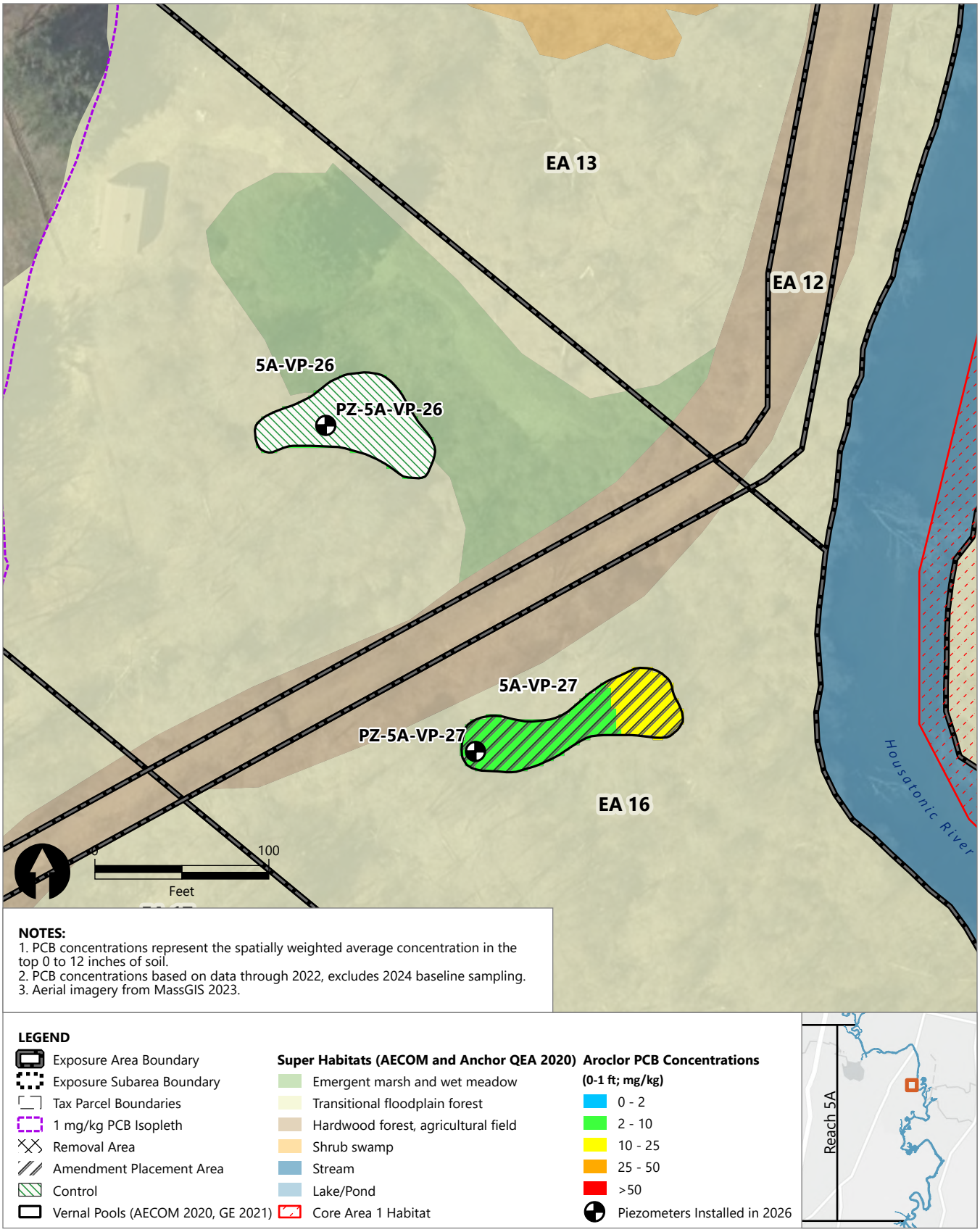
Figure 1-4
Pilot Study Vernal Pools: Test Pools (5A-VP-15; 5A-VP-16)
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



Publish Date: 2026/06/19, 3:06 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

Figure 1-5
Pilot Study Vernal Pools: Test Pool (5A-VP-22); Control Pool (5A-VP-21)
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



NOTES:
1. PCB concentrations represent the spatially weighted average concentration in the top 0 to 12 inches of soil.
2. PCB concentrations based on data through 2022, excludes 2024 baseline sampling.
3. Aerial imagery from MassGIS 2023.

LEGEND

- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Removal Area
- Amendment Placement Area
- Control
- Vernal Pools (AECOM 2020, GE 2021)

Super Habitats (AECOM and Anchor QEA 2020)

- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond
- Core Area 1 Habitat

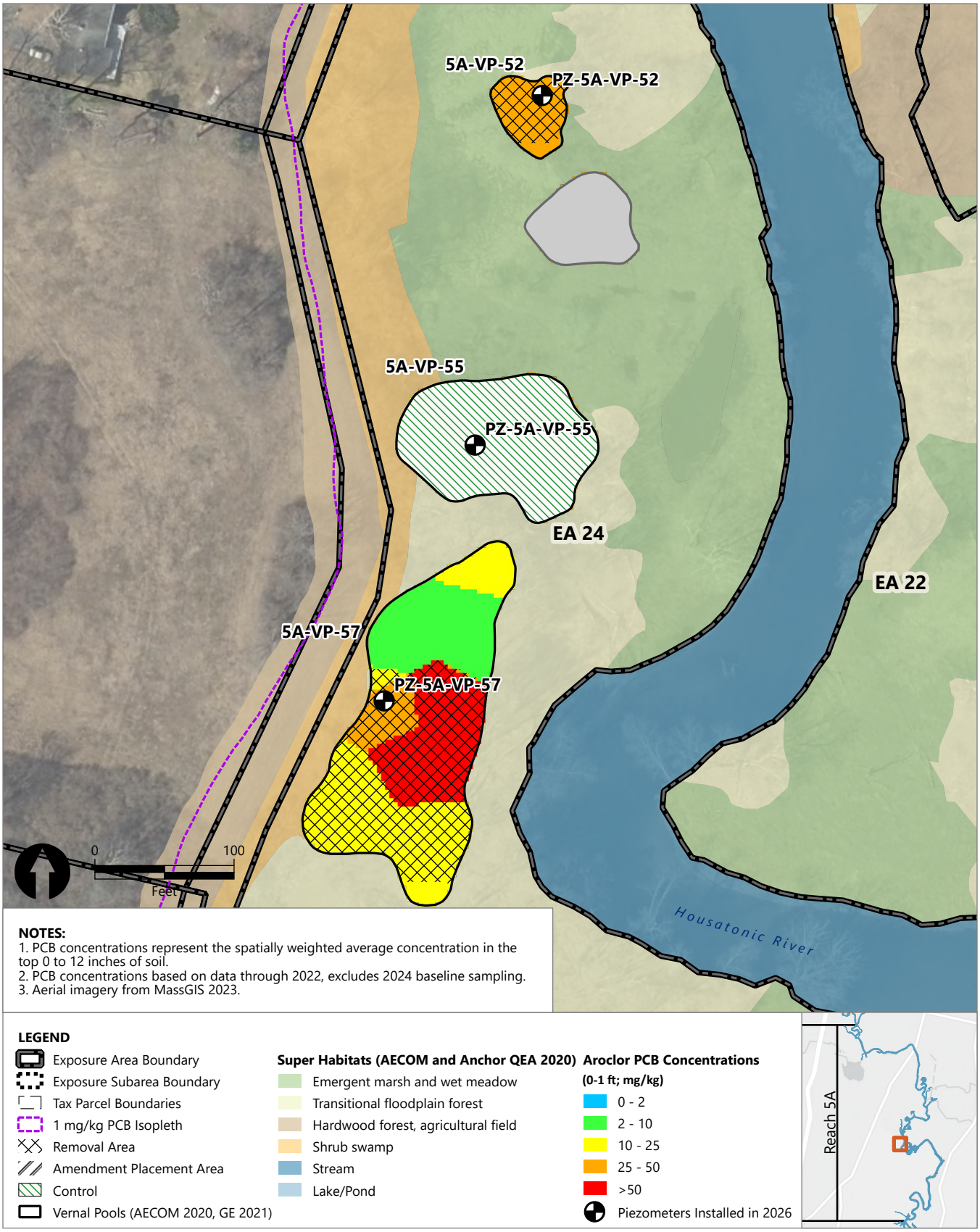
Aroclor PCB Concentrations (0-1 ft; mg/kg)

- 0 - 2
- 2 - 10
- 10 - 25
- 25 - 50
- >50
- Piezometers Installed in 2026

Publish Date: 2026/06/19, 3:07 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

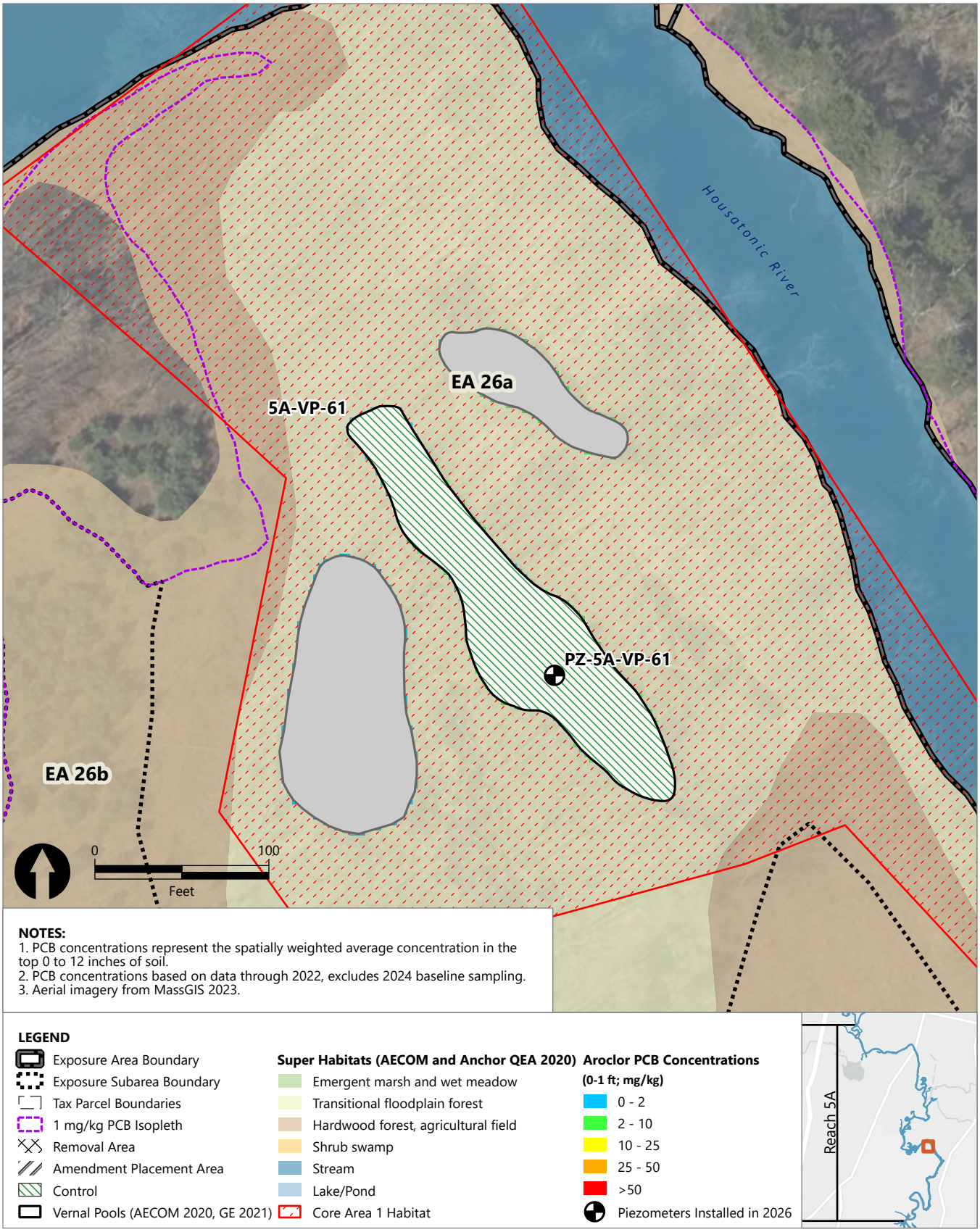
Figure 1-6
Pilot Study Vernal Pools: Test Pool (5A-VP-27); Control Pool (5A-VP-26)
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



Publish Date: 2026/06/19, 3:07 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

Figure 1-7
Pilot Study Vernal Pools: Test Pools (5A-VP-52; 5A-VP-57); Control Pool (5A-VP-55)
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



NOTES:
1. PCB concentrations represent the spatially weighted average concentration in the top 0 to 12 inches of soil.
2. PCB concentrations based on data through 2022, excludes 2024 baseline sampling.
3. Aerial imagery from MassGIS 2023.

LEGEND

- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Removal Area
- Amendment Placement Area
- Control
- Vernal Pools (AECOM 2020, GE 2021)

Super Habitats (AECOM and Anchor QEA 2020)

- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond
- Core Area 1 Habitat

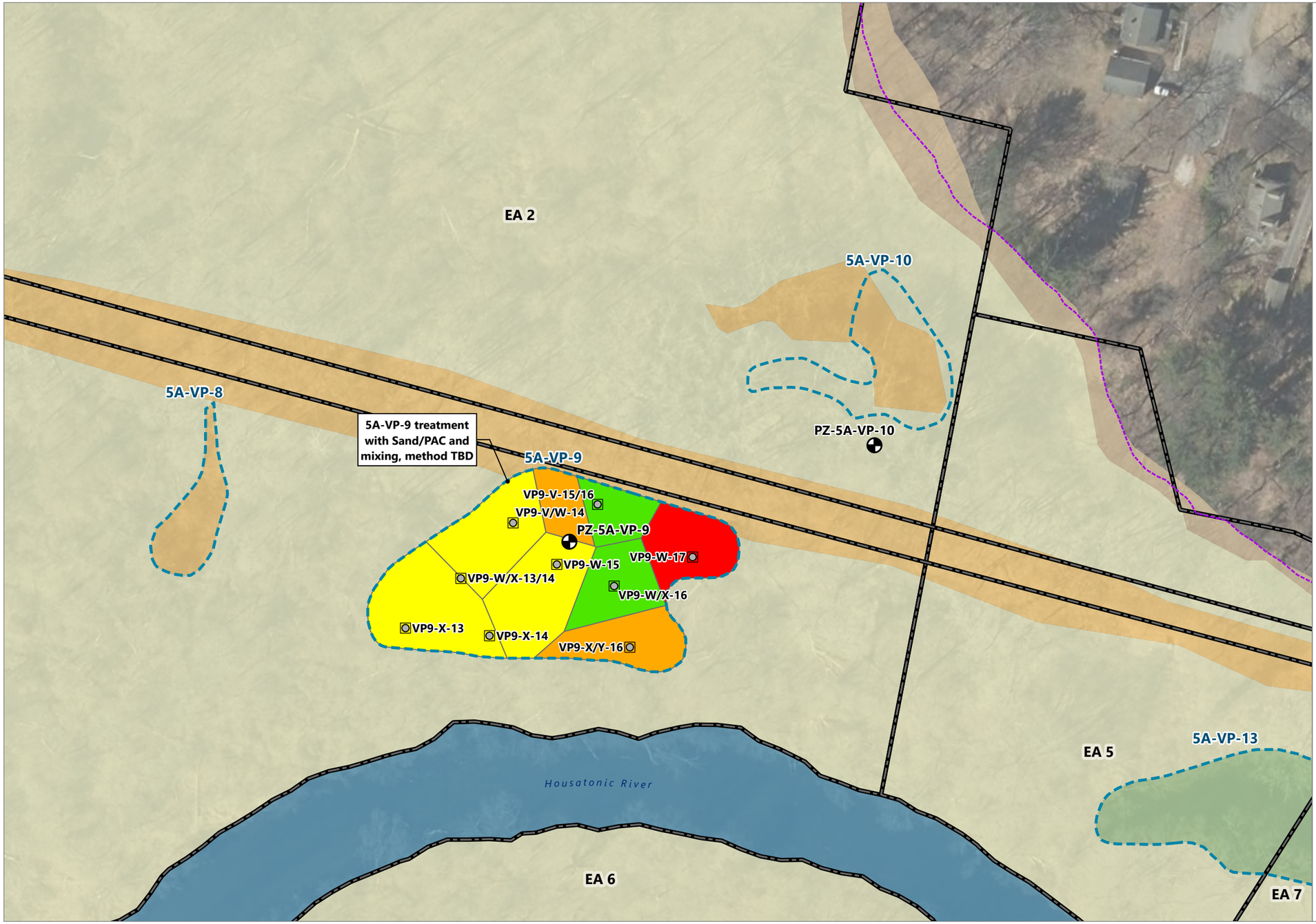
Aroclor PCB Concentrations (0-1 ft; mg/kg)

- 0 - 2
- 2 - 10
- 10 - 25
- 25 - 50
- >50
- Piezometers Installed in 2026

Publish Date: 2026/06/19, 3:07 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 1-2to8 Pilot Study Vernal Pools

ANCHOR QEA

Figure 1-8
Pilot Study Vernal Pools: Control Pool (5A-VP-61)
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



LEGEND:

- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat

Super Habitats (AECOM and Anchor QEA 2020)

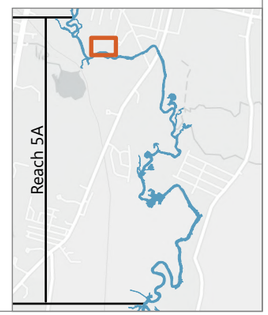
- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond
- Non-Residential PDI Sampling Locations (2022)
- Pilot Study Porewater and PAC Monitoring Location

Aroclor PCB Porewater Concentrations (mg/L)

- ≤50
- 50.1 - 100
- 100.1 - 500
- 500.1 - 1,000
- >1,000
- Piezometers Installed in 2026

NOTES:
1. PCB porewater concentrations based on 2024 baseline monitoring results.
2. Aerial imagery from MassGIS 2023.

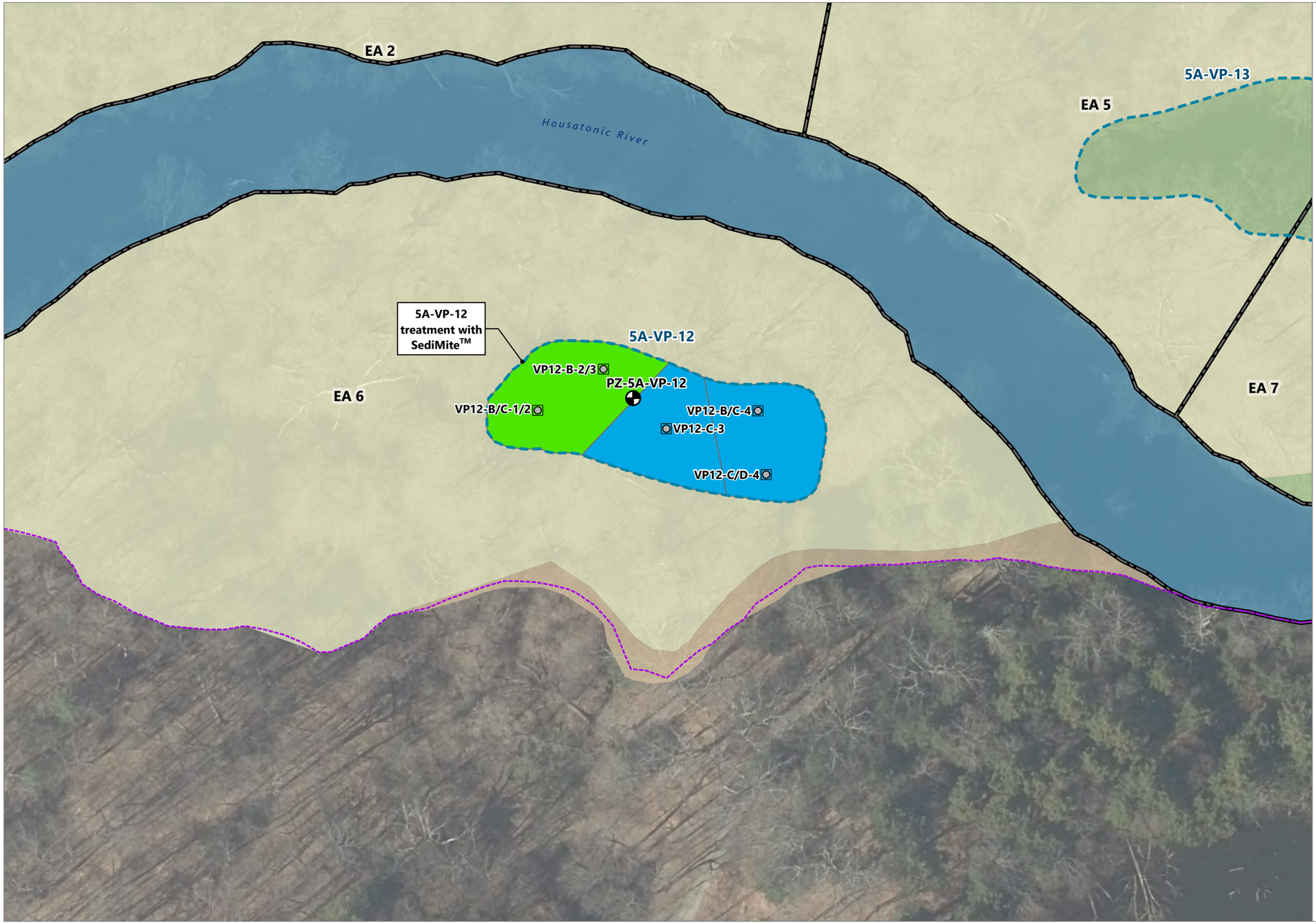
0 75
Feet



Publish Date: 2026/06/19, 3:07 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 4-1to5 Porewater Soil Monitoring

ANCHOR QEA

Figure 4-1
Pilot Study Porewater And Soil Monitoring Location: 5A-VP-9
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



LEGEND:

- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat

Super Habitats (AECOM and Anchor QEA 2020)

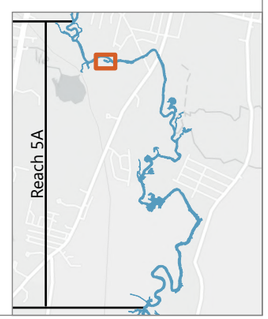
- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond
- Non-Residential PDI Sampling Locations (2022)
- Pilot Study Porewater and PAC Monitoring Location

Aroclor PCB Porewater Concentrations (mg/L)

- ≤50
- 50.1 - 100
- 100.1 - 500
- 500.1 - 1,000
- >1,000
- Piezometers Installed in 2026

NOTES:
1. PCB porewater concentrations based on 2024 baseline monitoring results.
2. Aerial imagery from MassGIS 2023.

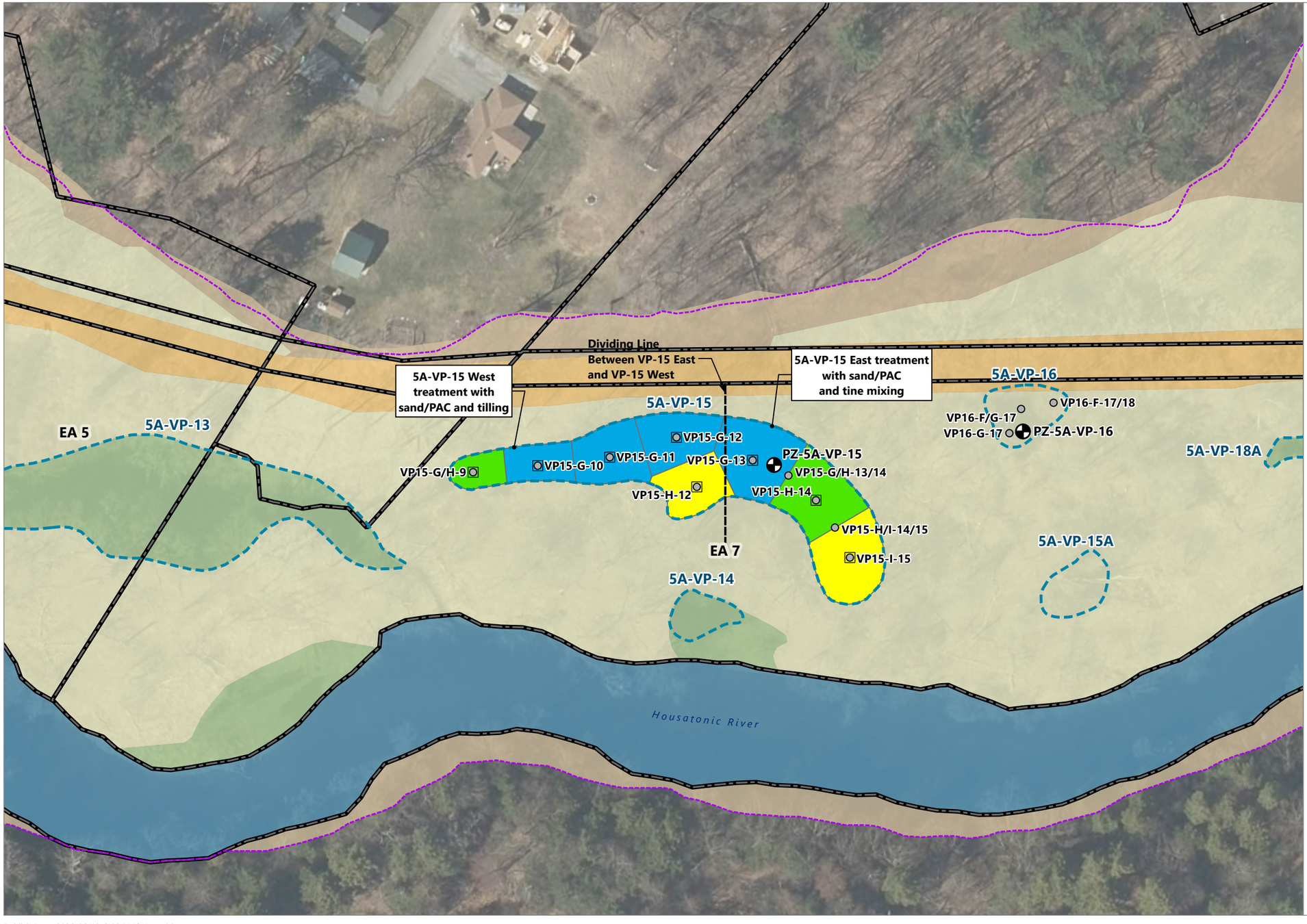
0 60
Feet



Publish Date: 2026/06/19, 3:08 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 4-1to5 Porewaster Soil Monitoring

ANCHOR QEA

Figure 4-2
Pilot Study Porewater And Soil Monitoring Location: 5A-VP-12
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



LEGEND:

- Exposure Area Boundary
- Exposure Subarea Boundary
- Tax Parcel Boundaries
- 1 mg/kg PCB Isopleth
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat

Super Habitats (AECOM and Anchor QEA 2020)

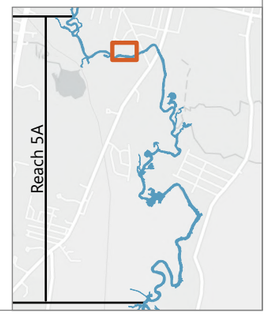
- Emergent marsh and wet meadow
- Transitional floodplain forest
- Hardwood forest, agricultural field
- Shrub swamp
- Stream
- Lake/Pond
- Non-Residential PDI Sampling Locations (2022)
- Pilot Study Porewater and PAC Monitoring Location

Aroclor PCB Porewater Concentrations (mg/L)

- ≤50
- 50.1 - 100
- 100.1 - 500
- 500.1 - 1,000
- >1,000
- Piezometers Installed in 2026

NOTES:
1. PCB porewater concentrations based on 2024 baseline monitoring results.
2. Aerial imagery from MassGIS 2023.

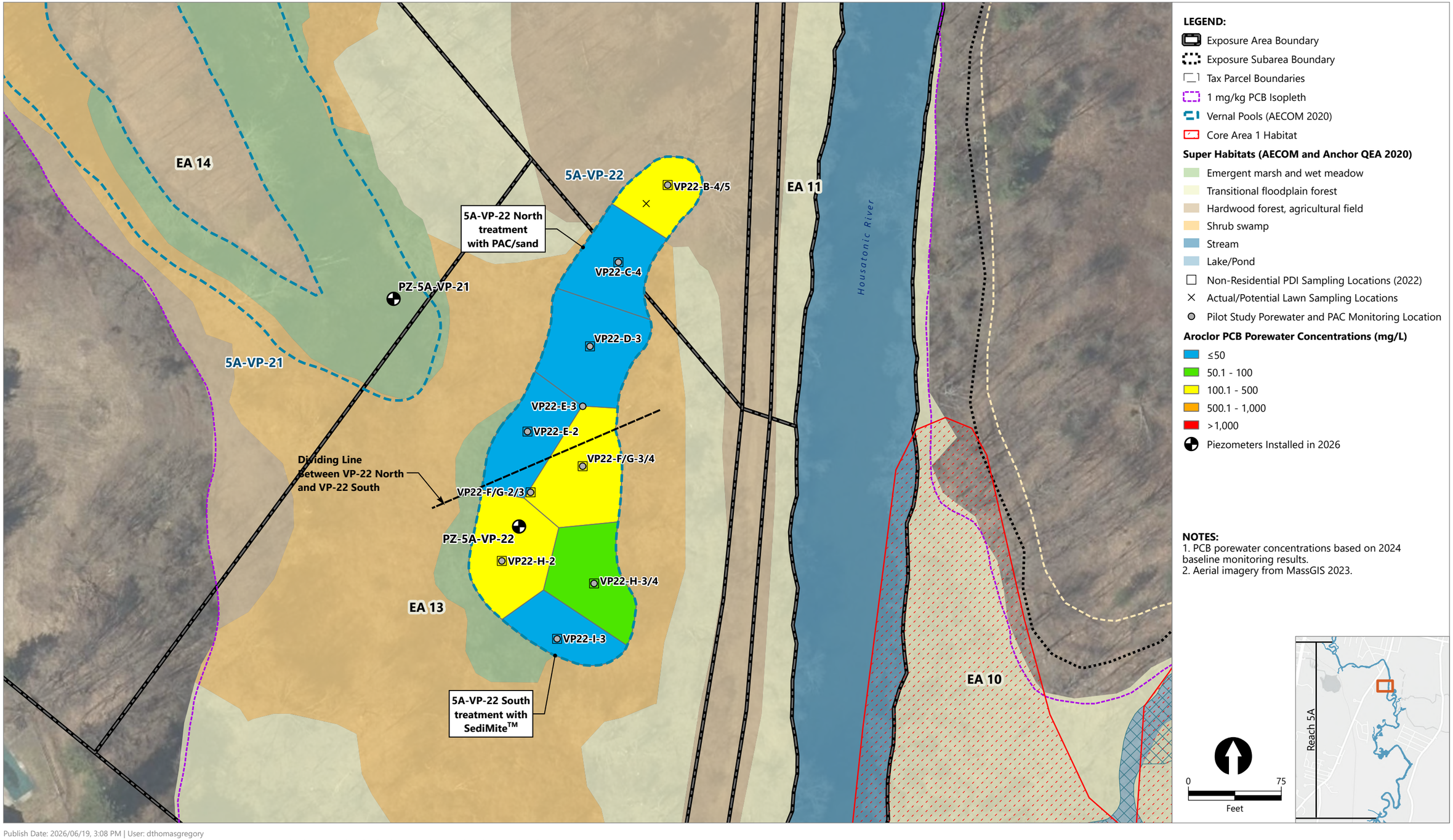
0 75
Feet



Publish Date: 2026/06/19, 3:08 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 4-1to5 Porewaster Soil Monitoring

ANCHOR QEA

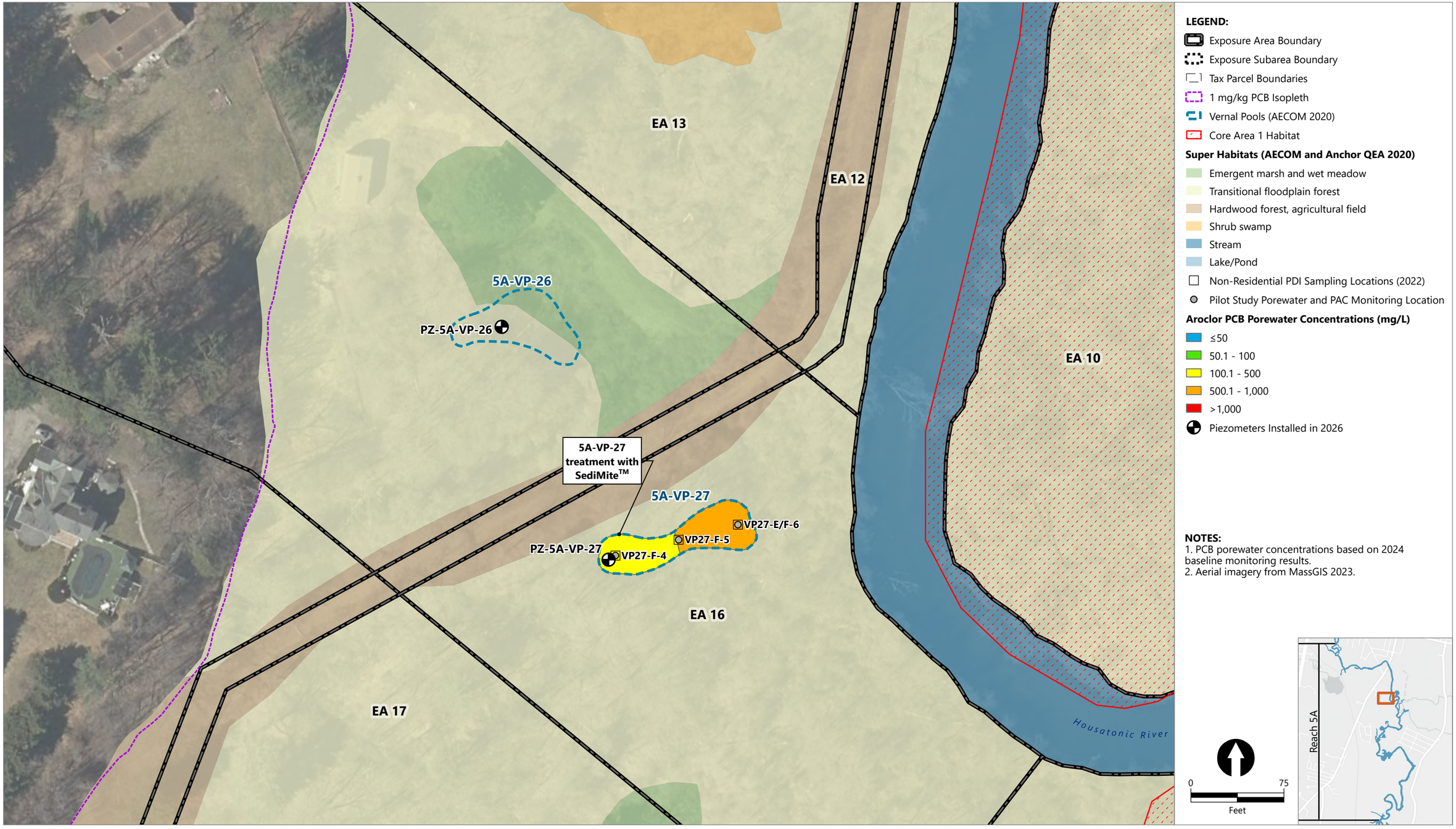
Figure 4-3
Pilot Study Porewater And Soil Monitoring Location: 5A-VP-15
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



Publish Date: 2026/06/19, 3:08 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 4-1to5 Porewaster Soil Monitoring

ANCHOR QEA

Figure 4-4
Pilot Study Porewater And Soil Monitoring Location: 5A-VP-22
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River



Publish Date: 2026/06/19, 3:08 PM | User: dthomasgregory
Filepath: \\gstfile01\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\VernalPools\PilotStudy\WorkPlan\R5APilotStudyWorkPlan.aprx\PMWP Figure 4-1to5 Porewater Soil Monitoring

ANCHOR QEA

Figure 4-5
Pilot Study Porewater And Soil Monitoring Location: 5A-VP-27
Revised Vernal Pool Pilot Study Performance Monitoring Plan
GE-Pittsfield/Housatonic River

Attachment A
Vernal Pool Habitat Inventory Standard Operating Procedure

Vernal Pool Habitat Inventory Standard Operating Procedure

Vernal Pool Habitat Inventory Procedure

The baseline survey assessment of vernal pools has consisted of: (1) compiling the existing information collected during previous surveys on relevant attributes of the selected vernal pools, namely, flora, topography, bottom sediment/soil composition, in-pool physical structure, surrounding land use, and relationship/proximity to other vernal pools; and (2) collecting additional information on those relevant attributes, as well as data on the general water and soil chemistry of the vernal pools. This Standard Operating Procedure (SOP) describes the field survey data to be collected in upcoming assessments of vernal pools, including those to be conducted prior to and after implementation of the vernal pool pilot study. These additional field survey data will be recorded on Form VP-1 (**Exhibit A**) and Form VP-2 (**Exhibit B**), as applicable.

Plant Community Survey

A survey of the plant community will be conducted using randomly placed monitoring plots, line-intercept sampling, or other standard accepted methods that will provide detailed species-specific information and allow for a quantitative assessment of plant community composition, canopy cover, plant vigor/health, and presence of invasive plant species. The plant community survey will be conducted between June 15 and August 15 of each survey year.

To estimate percent cover of tree canopy, woody shrubs, and herbaceous plants (including sedges, rushes, and grasses) within each vernal pool, an acceptable vegetative survey procedure will be conducted (e.g., see Barbour et al. 1999 for acceptable methods). This may consist of randomly placed monitoring plots, line-intercept sampling, or other standard accepted method. One acceptable method is line-intercept sampling. This involves stretching a 100-foot tape across the pool from shoreline to shoreline and tallying the total length of each cover type or plant species that projects through that plane over the line (Barbour et al. 1999). Percent cover is then calculated as a function of total length of a particular cover type or plant species divided by the total length of the transect. Two to three transects will be measured across each pool and the dominant plant species within each of the various plant strata will be recorded, including observations of any invasive plant. Pools less than 0.2 acre in size will have two transects, and pools between 0.2 and 1.0 acre will have three transects. Plant species will be identified using the U.S. Department of Agriculture Natural Resources Conservation Service Plants Database (USDA Plants Database) for the region (i.e., Massachusetts) (USDA NRCS 2022) or other acceptable source (e.g., Native Plant Trust).

Hydrologic Survey

Baseline data will be collected on hydroperiod and maximum flooding depths, including an assessment of surface water flooding conveyance into and out of each pool. These hydrologic data will be collected through the installation of monitoring wells outfitted with pressure transducers and possibly placement of staff gauges, if necessary, in the deepest parts of the pool as described below.

Hydrologic monitoring will be conducted at all pilot study vernal pools, including those subject to amendment, those subject to removal, and control pools. This monitoring will be performed as part of both baseline (pre-remediation) and post-remediation surveys. The hydrologic data generated on depth and duration of surface water flooding will be used in part to assess the potential impact of the remedial action on the vernal pool habitat.

This survey will include a cross-sectional transect at the widest point of each pool. Water chemistry measurements will be taken at the water's surface (i.e., approximately three inches below the water surface) and at the deepest part of the pool, which coincides with installed monitoring well locations and was determined through pre-construction bathymetric data collected in each pool. Photo points with known elevations and compass bearings will be established and photos will be taken before, during, and post-study.

Hydrologic monitoring may be done with the use of either pressure transducers or staff gauges, with preference for the use of pressure transducers to allow for continuous monitoring. If a staff gauge is used, it will be installed at each pool in the deepest portion of the pool. The staff gauge will be anchored to a steel rebar driven into the ground to a sufficient depth to ensure that it remains stable. All water depths and surface topographic data will be referenced to an established height on the staff gauge. In pools that will be subject to excavation and restoration backfilling, the staff gauge will be referenced to the North American Vertical Datum of 1988 (NAVD 88), which is used for the excavation and backfilling work. Water level readings will be collected at a minimum frequency of once per week with an additional check required following precipitation events of greater than 0.5 inch. Precipitation data will be obtained from the Pittsfield Municipal Airport weather station and may be accessed through the National Weather Service or Weather Underground web pages.

When pressure transducers are used, monitoring of hydrologic conditions within each applicable vernal pool will be accomplished through the installation of one- to two-inch slotted polyvinyl chloride (PVC) pipe monitoring wells, with slotted portions of the well extending above the bottom elevation of the pool to capture surface water fluctuations relative to the deepest part of the pool. The monitoring wells will be installed using an auger with extensions (or equivalent) to achieve depths of approximately three to four feet below the ground surface. Once installed, annular space around the PVC monitoring wells will be filled with appropriately sized filter sand. Monitoring well locations and elevation will be surveyed so that the water elevations can be referenced to an established vertical datum (i.e., the North American Vertical Datum of 1988 [NAVD88]). One pressure

transducer datalogger (e.g., Solinst® 3001 Levelogger) will be installed in each well to collect quasi-continuous data on water levels (e.g., at six- or 12-hour intervals) throughout the monitoring period. To document rapid water level changes (e.g., after rain events), GE will collect water level data at no greater than 60-minute intervals. One barologger (e.g., Solinst® Barologger Edge) will also be deployed on site to monitor barometric pressure. This will provide accurate compensation for impacts of atmospheric pressure on water level measurements taken with the pressure transducer. Manual readings with an electronic water-level probe will be taken at times of deployment and removal of pressure transducers to enable conversion of water level readings to an elevation.

Vernal Pool Breeding Survey

Surveys will be conducted to collect data on use of the vernal pool by obligate vernal pool species,[1] consistent with Appendix D of the November 2023 *Revised Vernal Pool Pilot Study Work Plan* (Anchor QEA and AECOM 2023). These surveys will include the collection of the data specified in Form FP-1 (**Exhibit A**) (which was provided by the Massachusetts Natural Heritage and Endangered Species Program) to the extent practicable. Egg mass counts of the obligate amphibian species and a survey for fairy shrimp will be conducted, and observations of mated pairs will also be recorded. These data will be collected as early as possible during the vernal pool breeding season, considering seasonal trends documented to be occurring in the year of the survey. Specifically, the egg mass and fairy shrimp counts are anticipated to occur between early April and late May, but may need to be adjusted based upon weather and other factors. Three rounds of egg mass counts (and fairy shrimp counts) will be conducted in each pool to encompass the entire egg-deposition period for both wood frogs and spotted salamanders. These surveys will be spaced out over approximately three weeks during the early portion of the breeding season, but may be adjusted by GE in consultation with EPA based on weather and local obligate vernal pool species migration patterns.

Dip net surveys will be conducted to monitor amphibian larval development and assess recruitment into the local population and to assess aquatic macroinvertebrate community structure within each pool. Up to three rounds of dip net surveys for amphibian larvae and macroinvertebrates will be conducted, spaced out through the larval development period. This is expected to result in surveys every two to three weeks from mid-May to early July in each pool, but may be adjusted based upon weather and larval development rates.

The obligate species and dip net surveys will be conducted by a team of two biologists from within the pool wearing chest-waders. Egg mass counts will be called out by the first observer, with confirmation and recording each count by the second observer. Egg mass locations will be photo-documented, marked in the field and recorded on maps (or via GPS) as necessary to avoid double-

[1] In Massachusetts, obligate vernal pool species listed by the Massachusetts Natural Heritage and Endangered Species Program are wood frogs, spotted salamanders, blue-spotted salamanders, Jefferson salamanders, marbled salamanders, and fairy shrimp.

counting. Egg mass counts late in the development process are recognized to be difficult as the egg masses deteriorate, so best professional judgement with a second observer's concurrence will be needed. Sweeps will target all microhabitats within the pool using a D-frame shaped dip net. During larval development, contents of each sweep (e.g., leaves and detritus) will be emptied into a shallow pan containing one to two inches of water and inspected. Total counts of each larval amphibian species and each macroinvertebrate down to the family level (at a minimum) will be recorded. Approximate developmental stage of tadpoles and salamander larvae will also be recorded following Gosner (1960) and Hurney et al. (2015), respectively. These sampling methods are consistent with those described in Calhoun and Klemens (2002), Egan and Paton (2004, 2008), and Heyer et al. (1994).

Additional Data Collection

Soil profile descriptions will be developed, including an assessment of the underlying substrate to between three and four feet in depth (including the surface leaf-layer and organic duff layer) to understand the soil or substrate stratigraphy and the relative influence of groundwater versus surface water on pool hydrology. Vernal pool soil composition will be categorized in the field using a hand auger and/or tile spade shovel and will generally be inspected to a depth of 18 to 24 inches. One profile description per pool will be documented between the outer edge and deepest part of the pool. The information collected for each soil profile will include soil horizons, depth, texture, color, and the presence or absence of redoximorphic features (mottles and other features). Colors of the soil matrix and mottles will be identified using Munsell Soil Color Charts. All hydric soil determinations will be based on criteria established in Field Indicators for Identifying Hydric Soils in New England (NEIWPCC 2018) and guidance in the 2012 U.S. Army Corps of Engineers Regional Wetland Manual.

In-pool physical structure other than woody shrubs (which will be measured during the line-intercept sampling) will be quantified within each pool. Observations of coarse woody debris, large boulders, or exposed root wads will be located via GPS during the pool inspection with the approximate length, width, and/or diameter recorded in inches. Fine woody debris will be estimated as a total percent cover of the entire pool area.

The habitat and land use conditions surrounding each vernal pool will be characterized as shown on Form VP-2 (**Exhibit B**). This will include characterizing the approximate percentage of different habitat cover types within both the 100-foot buffer around the vernal pool (the vernal pool envelope) and 100- to 750-foot zone (the critical terrestrial habitat) (using designations from Calhoun and Klemens 2002). The landscape setting of the pool will also be characterized, noting whether it is a discrete depression in the floodplain or part of a larger wetland and also the juxtaposition with other vernal pools to assess the potential for vernal pool network factors.

In addition, data will be collected on the general water and soil chemistry of each vernal pool (excluding polychlorinated biphenyl [PCB] concentrations, which will be determined separately). The collection of the general water quality data will involve the measurement of pH, temperature, alkalinity, hardness, specific conductivity, and dissolved oxygen in the water using a YSI field meter (or similar). The collection of general soil chemistry data will involve the collection and analysis of soil samples for pH, organic carbon content, moisture content, and grain size distribution.[2] A composite sample of the top eight inches of soil from three locations within the pool will be mixed in a stainless-steel bowl and placed into jars for laboratory analysis of these parameters.

References

Anchor QEA and AECOM, 2023. *Revised Vernal Pool Pilot Study Work Plan*. Prepared for General Electric Company. November 2023.

Arcadis, 2023. *Field Sampling Plan/Quality Assurance Project Plan*. Prepared for General Electric Company. Revised July 2023.

Barbour, M.G., J.H. Burk, W.D. Pitts, F.S. Gilliam and M.W. Schwartz. 1999. *Terrestrial Plant Ecology, Third Edition*. Benjamin Cummings Publishing Company.

Calhoun, A. J. K., and M. W. Klemens, 2002. Best Development Practices: *Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States*. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Egan, R.S., and P.W.C. Paton, 2004. "*Within-Pond Parameters Affecting Oviposition by Wood Frogs and Spotted Salamanders*." Wetlands 24(1):1–13.

Egan, R.S., and P.W.C. Paton, 2008. "*Multiple Scale Habitat Characteristics of Pond-Breeding Amphibians Across a Rural-Urban Gradient*." Herpetological Conservation 3:53–65.

Gosner, K.L. 1960. "*A Simplified Table for Staging Anuran Embryos and Larvae with Notes on Identification*." Herpetologica 16:183–190.

Heyer, W.R., M.A. Donnelly, R.W. McDiarmid, L.C. Hayek and M.S. Foster, 1994. *Measuring and Monitoring Biological Diversity: Standard Methods for Amphibians*. Smithsonian Institution Press, USA.

[2] For this purpose, soil samples will be collected using the procedures in GE's most recent *Field Sampling Plan/Quality Assurance Project Plan* (Arcadis 2023).

Hurney, C.A., S.K. Babcock, D.R. Shook, T.M. Pelletier, S.D. Turner, J. Maturo, S. Cogbill, M.C. Snow, and K. Kinch. 2015. "*Normal Table of Embryonic Development in the Four-Toed Salamander, Hemidactylium scutatum*." Mechanisms of Development 136:99-110.

NEIWPCC (New England Interstate Water Pollution Control Commission), 2018. *Field Indicators for Identifying Hydric Soils in New England, Version 4*. Prepared by the New England Hydric Soils Technical Committee.

USACE (U.S. Army Corps of Engineers), Engineer Research and Development Center, 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*. ERDC/EL TR-12-1.

USDA NRCS (U.S. Department of Agriculture Natural Resources Conservation Service), 2022. *The PLANTS Database* (http://plants.usda.gov, 07/11/2022). National Plant Data Team, Greensboro, North Carolina.

Exhibit A: Form VP-1:

Vernal Pool Field Survey Data Collection Example Form
To be used in addition to GE Form VP-2 Vernal Pool Characterization Form

Time of survey: _____
Ambient Air Temperature: ◦C _____ Water Temperature ◦C _____
Snow/ice present in or around the pool: yes [ ] no [ ]
Precipitation: During survey [ ] within the past 24 hours [ ] within the past week [ ]

A. Amphibian Community

1. Fairy Shrimp: # observed yes [ ] no [ ]
   # of dip net sweeps _____
   Average # of fairy shrimp per sweep _____
   Pool Density: Low density: 10–50 shrimp/m^2 [ ]
   Moderate: 50–200 shrimp/m^2 [ ]
   High: 500+ shrimp/m^2 [ ]

   Photograph # _____

2. Wood Frogs:

   Egg Mass Counts: # new _____ # cumulative total_____

   Notes: (e.g. age, condition[developing, hatching, dead])

   _____

   Photograph # _____

   Adults: Total: # _____ # amplexus _____

   Sex (random subset of 10) Females: # _____ Males: #_____

   # observed entering the pool _____

   # adults leaving the pool _____

   Photograph # _____

   Juveniles: Total # _____ counted [ ] estimated [ ]

   Hatchling[1] % _____ Tadpole % _____ Metamorph % _____
   # juveniles leaving the pool_____
   Photograph # _____
   Record total length, mass, snout–vent length (SVL), tail length, and tail fin depth (following Relyea 2000) for 20 animals from representative microhabitats.

---

[1] Hatchling - Transition from relatively immobile embryo to an active, feeding tadpole (Gosner stage 21-~24); Tadpole - growth and development of limbs (Gosner stage 25-41); Metamorph- Loss of larval characters and development of adult structures (Gosner stage 42-46).

3. Salamanders:

   Egg Mass Counts: # new _____ # cumulative total_____
   Notes: (e.g. age, condition[developing, hatching, dead])
   _____
   Spermataphore(s) observed - yes [ ] no [ ]

   For each salamander species observed complete the following:

   Salamander species: _____
   Adults: Total: # _____ counted [ ] estimated [ ], congress [ ] individuals [ ]

   Sex (random subset of 10)

   Females: # _____ Males: #_____

   # observed entering the pool _____

   # adults observed leaving the pool _____

   Photograph # _____

   Juveniles:[2] Total # _____ [ ] counted [ ] estimated

   Larval % _____ Metamorph % _____

   # metamorphs observed leaving the pool _____

4. Other species:

   Identify any other amphibian species and # observed in or adjacent to the vernal pool:
   _____ _____ _____ _____
   _____ _____ _____ _____

B. Aquatic macroinvertebrates: Sample collected yes [ ] no [ ]
If yes, sweeps performed: # _____
Method of taxonomic identification: Field [ ] Laboratory [ ] If lab, Sample ID
_____

C. Observation of other state-listed species:

Species observed _____

[2] Larvae – gills and fins present; Metamorph- Loss of gills and fins, small size relative to adult.

D. Hydrologic Monitoring:

Piezometers present: yes [ ] # ____ no [ ] Working condition verified: yes[ ] no [ ]
Manual reading with an electronic water level probe: yes [ ] no [ ] Depth _____
Staff gauge present: yes [ ] no [ ] Stability verified: yes [ ] no [ ] Water depth _____

Notes: _____

Exhibit B: Form VP-2:

Vernal Pool Characterization Form[1]

Pool ID _____
Observers: _____
Location of vernal pool: _____
Survey date(s): _____
Coordinates (decimal degrees)

Latitude(X): _____ Longitude (Y): _____

A. General Vernal Pool Characteristics

1. Landscape setting (check all that apply)
   - [ ] Discrete depression in floodplain
   - [ ] Pool part of a larger wetland
   - [ ] Pool part of a pool network (____ pools within 1,000 feet)
2. Vernal pool condition (describe any recent modification to the pool, including natural changes such as beaver impoundments): _____
   _____ _____
3. Describe the aquatic resource type(s) in pool (e.g., forested, scrub-shrub, etc.)
   _____
4. Pool canopy cover (%): _____
5. Predominant substrate (e.g., mineral soil, organic matter): _____
6. Pool measurements:
   a. Approximate pool dimensions at maximum inundation condition (include units):
   Length _____ Width: _____ Area: _____
   b. Maximum water depth at deepest point (include units): _____
7. Hydrology
   a. Estimated month pool dries, or if never: _____
   b. Inlet/outlet (none, temporary, permanent): _____
8. Water quality (clear, high turbidity, high algal content, tannic): _____

B. Plant Community: Inventory tree and vine data obtained in a 30' radius plot; shrubs in a 15' radius plot; and herbaceous plant data in a 5' radius plot.

% Cover: _____ Trees (> 20') _____ Shrubs (< 20') _____ Woody vines _____ Mosses _____ Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each stratum or any amount of an invasive plant species; "*" designates a dominant plant species for the stratum):

Strata	Plant Species	Strata	Plant Species
_____	_____	_____	_____
_____	_____	_____	_____

[1] Adapted from USACE New England Division Vernal Pool Characterization Form.

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Strata: T=Tree, S=Shrub, L=Liana (vine), H=Herb (Includes grasses, herbs, pterophytes [ferns], lichens, woody seedlings, and mosses)

Identify any federal or state-listed threatened, endangered, or other rare species in or adjacent to the vernal pool: _____

C. Soil/Substrate Composition

_____ Soil Survey Unit

_____ Drainage Class

_____ Texture (upper part)

_____ Depth

Representative Soil Pit Log

Soil Horizon	Depth (inches)	Color	Soil Texture	Mottling

D. In-Pool Physical Habitat Structure

Describe physical structure in the vernal pool which may contribute to vernal pool habitat functions:

[ ] Coarse woody debris _____% cover: Describe _____
[ ] Fine woody debris _____% cover: Describe _____
[ ] Shrub and herbaceous stems _____%: Describe _____
[ ] Windthrown trees and/or root wads _____%: Describe _____
[ ] Hummocks _____%: Describe _____
[ ] Other _____%: Describe _____

E. Surrounding Land Use

1. Vernal Pool Envelope (0-100 feet from pool edge)[2]

[ ] Forested _____%
[ ] Shrub _____%
[ ] Open (e.g., meadow, agriculture, golf course) _____%

[2] As defined by Calhoun and Klemens (2002).

[ ] Developed (includes area beyond barriers) _____%

2. Critical Terrestrial Habitat (100-750 ft from pool edge)[3]

[ ] Forested _____%

[ ] Shrub _____%

[ ] Open (e.g., meadow, agriculture, golf course _____ %

[ ] Developed (includes area beyond barriers) ___% _

F. General Water and Soil Chemistry Water Quality

Water:

[ ] pH _____

[ ] Temperature _____

[ ] Conductivity _____

[ ] Dissolved Oxygen_____

Soil:

[ ] pH _____

[ ] Organic Carbon Content _____

[3] As defined by Calhoun and Klemens (2002).