

**EPA Superfund
Explanation of Significant Differences**

**New Hampshire Plating Company Superfund Site
Merrimack, NH**

September 2020

**U.S. EPA Region 1
Explanation of Significant Differences
New Hampshire Plating Company Superfund Site
September 2020**

Contents

I.	INTRODUCTION	1
A.	Site Name and Location.....	1
B.	Lead and Support Agencies	1
C.	Legal Authority	1
D.	Summary of Circumstances Necessitating this Explanation of Significant Differences.	2
E.	Ongoing Site Studies	4
F.	Availability of Documents.....	4
II.	SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS AND SELECTED REMEDY.....	6
A.	Site History	6
B.	Contamination Problems.....	6
C.	Summary of the Selected Remedy.....	8
D.	Remedial Response History Since the ROD.....	9
III.	DESCRIPTION OF SIGNIFICANT DIFFERENCES.....	12
A.	Addition of Remedial Action Objective (RAO) for Vapor Intrusion.....	12
B.	Addition of Vapor Intrusion Mitigation and IC Requirements.....	13
C.	Update to ARARs and TBCs.....	16
IV.	SUPPORT AGENCY COMMENTS.....	17
V.	STATUTORY DETERMINATION.....	17
VI.	PUBLIC INFORMATION	17

FIGURES:

Figure 1 – Site Plan – Shallow Overburden Trichloroethene Data

Figure 2 – Site Plan – Deep Overburden Trichloroethene Data

TABLES:

Table 1- EPA Default VISLs

ATTACHMENTS:

Attachment 1 – NHDES Concurrence Letter
Attachment 2 – Responsiveness Summary

**EXPLANATION OF SIGNIFICANT DIFFERENCES
NEW HAMPSHIRE PLATING COMPANY SUPERFUND SITE
NHD001091453
MERRIMACK, NEW HAMPSHIRE**

[DRAFT FOR PUBLIC COMMENT]

I. INTRODUCTION

A. Site Name and Location

Site Name: New Hampshire Plating Company Superfund Site (the Site)

Site Location: Merrimack, Hillsborough County, New Hampshire

EPA ID No: NHD 001091453

Site ID No: 198406030

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency (EPA)

Support Agency: New Hampshire Department of Environmental Services
(NHDES)

C. Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617(c), 40 C.F.R. § 300.435(c) of the National Contingency Plan (NCP), and Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-02, if EPA determines that differences in the remedial action significantly change, but do not fundamentally alter, a remedy selected in a Record of Decision (ROD) with respect to scope, performance, or cost, EPA shall publish an Explanation of Significant Differences (ESD). Through this ESD, EPA explains certain modifications to the remedial action set forth in the ROD, dated September 28, 1998, for the Site (1998 ROD), as modified by a previous ESD, dated September 28, 2007 (2007 ESD), to be undertaken at the Site.

In accordance with Section 300.825(b) of the NCP, EPA has voluntarily chosen to hold a public comment period on this draft document from September 1, 2020 to September 16, 2020 to ensure that all interested parties have an opportunity to provide input to EPA before its final decision on this modification to the remedy.

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

In January 2014, EPA issued the Second Five-Year Review (FYR) of the Site. In the Second FYR, EPA concluded that natural attenuation had occurred and may be ongoing; however, the rates of biological dechlorination of chlorinated volatile organic compounds (cVOCs) were likely to be low to very low as a result of several limiting factors, including uncertainty with respect to the continuing source of dissolved cVOCs. The overall contaminant concentration trends and natural attenuation indicator parameters within the monitoring well network suggested that: (1) concentrations of cVOCs in groundwater appeared to be relatively stable suggesting the potential for a continuing source to be present; and (2) the clean-up goals established in the 1998 ROD may not be attained within the anticipated time frame established in the 1998 ROD nor is contaminant migration off-Site being minimized.

Based on the conclusions and recommendations of the Second FYR, EPA conducted a Supplemental Remedial Investigation (SRI) between 2015 and 2018. During the SRI, higher than previously observed concentrations of the cVOC, trichloroethene (TCE), were detected in groundwater samples collected from the overburden deposits and were attributed to back-diffusion from a less permeable geologic layer (lacustrine unit) to which the TCE is sorbed. The SRI report concluded that natural attenuation alone has not sufficiently decreased contaminant migration or vapor intrusion potential at nearby properties. The SRI further identified the need for management of potential future risks associated with intrusion of cVOC-contaminated vapors into occupied buildings.

On February 13, 2020, EPA issued the Third FYR in which it identified the following issues, among others, that could impact the future protectiveness of the remedy:

1. VOC concentrations in shallow groundwater could present a future potential vapor intrusion concern and should continue to be evaluated for future re-use; and
2. Institutional controls (ICs), required under the 1998 ROD to prevent future potable use of the contaminated groundwater, have not been implemented on all properties over the contaminated groundwater plume (noted exception – deed notices recorded for the New Hampshire Plating Company (NHPC) properties). Also, an IC is necessary to include groundwater use restrictions at a property located at 12 Wright Avenue, adjacent to the Site (hereafter referred to as the Acme Property), where EPA installed a vapor mitigation system in 2019 to ensure continued vapor mitigation.

To address these issues, EPA recommended the following actions in the Third FYR:

1. Continue to screen groundwater data against EPA Vapor Intrusion Screening Levels (VISLs), continue to assess potential future vapor intrusion concerns against re-use options, and require ICs to assess, minimize or mitigate potential vapor intrusion at properties over the shallow aquifer groundwater plume; and

2. EPA and NHDES shall continue engaging with one another, the Town, and/or owners of individual properties on an effective process for selecting and then implementing adequate ICs for groundwater, including a GMZ, ordinance, deed restrictions, and/or deed notices, as well as provisions for vapor mitigation, as needed.

In order for the remedy to be protective in the long-term, EPA also concluded in the Third FYR that the following actions, among others, were needed:

1. Continued evaluation of future potential vapor intrusion pathways associated with future re-use;
2. Implementation of ICs in the form of a GMZ, ordinance, deed notice and/or deed restriction; and
3. Implementation of ICs on the current Acme Property to address future use of groundwater and require the continued operation of the installed vapor mitigation system.

This ESD modifies the remedy selected in the 1998 ROD, as modified by the 2007 ESD, to address these concerns and the current and potential future risks posed to human health via vapor intrusion as follows:

1. The Remedial Action Objectives (RAOs) for the remedy are modified from those identified in the 1998 ROD to further define the remedy's requirements to protect human health due to vapor intrusion.
2. Vapor intrusion mitigation and IC requirements are incorporated, specifically including:
 - a. the installation of a vapor mitigation system in the Acme building (already complete under a 2019 removal action), the continued operation and maintenance (O&M) of the vapor mitigation system in the Acme building, and an IC for the Acme Property (anticipated to be in the form of a deed restriction) to require the continued operation of the vapor mitigation system, and access to the property for EPA and NHDES for inspection, maintenance, repair (and oversight of this work);
 - b. the modification of existing IC requirements under the ROD for the NHPC Properties and other properties within the groundwater cVOC plume (see Figures 1 and 2) with contamination levels that exceed the EPA default VISLs to require assessment of risk from vapor intrusion potential, and incorporation of any necessary measures based on the risk assessment to minimize and/or mitigate risk to human health into any new construction, or existing building renovation, expansion or change in use, as determined necessary by EPA and NHDES.

- c. the modification of existing IC requirements under the ROD for the NHPC Properties and other properties over the groundwater cVOC plume (see Figures 1 and 2) to include a prohibition on the installation of new wells and/or the withdrawal of groundwater without EPA and NHDES permission.
3. Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered guidance (TBCs) identified in the 1998 ROD, as modified by the 2007 ESD, are updated to incorporate additional promulgated state and federal standards and guidance related to vapor intrusion.

This ESD will serve as the CERCLA decision document to record these changes to the remedy as detailed herein. EPA has determined that these changes do not fundamentally deviate in terms of scope, performance or cost, from the remedy described in the 1998 ROD, as modified by the 2007 ESD.

E. Ongoing Site Studies

In the Third FYR, EPA also identified as an issue that the current groundwater remedy, natural attenuation, may not meet clean-up goals in the timeframe established in the ROD and may not be effective for newly identified contaminants, including 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS). In order for the remedy to be protective in the long-term, EPA concluded that the following actions were needed:

Further evaluation of the effectiveness of the current natural attenuation groundwater remedy to attain cleanup levels in the timeframe estimated in the 1998 ROD and to minimize migration beyond the NHPC properties, and, if needed, evaluation of alternative remedial options ... to minimize migration beyond the NHPC properties and attain cleanup standards.

At present, EPA and NHDES continue to monitor groundwater and surface water to assess remedial progress with respect to the achievement of RAOs and attainment of groundwater cleanup levels. In addition, EPA is conducting further studies to evaluate the efficacy of the current natural attenuation remedy, including with respect to 1,4-dioxane and PFAS. Specifically, EPA is performing a Focused Feasibility Study (FFS) to assess a limited number of remedial alternatives to compare the current natural attenuation remedy to those alternatives to determine whether any further changes to the remedy are warranted. Any further modifications to the remedy will be the subject of a future decision document, such as an ESD.

F. Availability of Documents

This ESD and supporting documentation shall become part of the Administrative Record for the Site. The ESD, and the Administrative Record are available to the public for review on-line at <http://www.epa.gov/superfund/nhplating>.

The ESD and its Administrative Record are also available for review via computer at the locations listed below:

www.epa.gov/superfund/nhplating

U.S. Environmental Protection Agency Records Center

5 Post Office Square, Suite 100 (OSRR02-3)

Boston, MA 02109-3912

Telephone: (617) 918-1440

Fax: (617) 918-1223

E-mail (r1.records-osrr@epa.gov)

Merrimack Public Library

470 Daniel Webster Highway

Merrimack, NH

Telephone: (603) 424-5021

(Please Note: Call in advance; repository locations may be closed to public at this time)

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS AND SELECTED REMEDY

A. Site History

The Site is located in the Town of Merrimack, in Hillsborough County in south central New Hampshire and is situated in an area with mixed land use, including light industries, commercial businesses, and a few private residential dwellings. Three major surface water bodies exist in the vicinity of the Site: the Merrimack River, Horseshoe Pond, and Souhegan River. The immediate area is served by a public water supply.

From 1962 to 1985, the New Hampshire Plating Company (NHPC) operated an electroplating facility primarily on two parcels, totaling about 13 acres, comprising the Site, as defined in the 1998 ROD. During operation, the facility discharged electroplating wastes to a series of four lagoons, contaminating the soils and groundwater with a variety of metals, cyanide, and chlorinated organic solvents, including TCE and tetrachloroethylene (PCE). In 1980, NHPC notified EPA that it was a hazardous waste disposal facility in accordance with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations and continued to operate under an interim permit. As the result of inspections conducted by EPA and NHDES between 1982 and 1985, NHPC received several Notices of Violation/Orders of Abatement for failure to comply with RCRA transportation, storage, and disposal requirements, and for inadequate treatment of its cyanide wastewater prior to discharge. Operations at NHPC ceased in November 1985, and NHPC was dissolved in 1991.

NHDES and EPA implemented initial response actions at the Site from 1987 through 1994. NHDES' cleanup activities that took place in 1987 included: treatment of the lagoon system with lime and a sodium hypochlorite solution; removal of debris, drums, and plating tank liquids; and a superficial cleaning of the NHPC building. From 1990 to 1991, EPA removed, solidified, and consolidated sludges and soils from the four lagoons. To further secure and restrict access to the Site, a perimeter fence was built. In 1994, the NHPC building was decontaminated, demolished, and removed from the Site. An underground storage tank was also removed. Sampling under the former building was performed and a temporary cap was installed to prevent the possible spread of contaminated soils.

EPA placed the Site on the National Priorities List (NPL) in October 1992. From 1992 through 1996, EPA performed a Remedial Investigation and Feasibility Study (RI/FS) for the Site. In September 1998, EPA finalized its cleanup plan in a ROD. Remedial construction activities began in December 2004 and were substantially completed in September 2006.

B. Contamination Problems

The primary source areas of contaminants identified within the NHPC Properties were the former lagoons and the Southern Wetland, as well as areas near or within the former building area where known contaminant releases to the subsurface occurred. Releases from the lagoons, in particular Lagoon 1, have historically contributed the majority of subsurface

contamination, both in soils and in groundwater. Subsurface support facilities associated with the former building (i.e., the underground storage tank and leaching fields) may have also been historical sources of contamination.

The NHPC used a variety of metals in its electroplating processes during its operating period from 1962 to 1985, including cadmium, zinc, chromium, copper, lead, nickel, tin, gold, silver, aluminum, iron, and manganese. Cyanide was also used in part of the electroplating process. The NHPC also used chlorinated organic solvents for degreasing, although chlorinated solvent use was reportedly discontinued during the latter part of the 1970s.

Releases to the lagoons, contaminant leaching from the lagoon soils to groundwater, and migration of contaminated groundwater have been the most significant migration pathways historically at the Site. Both organic and inorganic contaminants have migrated from the lagoons into the three hydrogeologic units beneath the Site. The 1998 ROD-specified contaminants of concern (COCs) for soil included arsenic, beryllium, cadmium, chromium, cyanide, lead, manganese and nickel.

Groundwater data collected from 2014 to 2019 indicates that metals (primarily cadmium, and nickel) and VOC concentrations (primarily TCE) remain elevated within, and are migrating downgradient from, the former NHPC operations and lagoon disposal areas. Natural gradients have allowed discharges (primarily TCE) to diffuse and adsorb into the discontinuous, lower permeability, less transmissive lacustrine deposits underlying the Site and nearby properties. Back-diffusion from this unit is sustaining elevated contaminant concentrations in groundwater. The predominant groundwater flow direction in the shallow overburden is southeast and east toward the Merrimack River, consistent with regional groundwater flow. Recent investigations, however, have also identified a component of shallow groundwater flow beneath the western portion of the Site toward Wright Avenue and Horseshoe Pond to the south and southwest toward the Acme Property. The predominant groundwater flow direction in the deep overburden unit is toward the south/southeast, towards the Merrimack River; bedrock flow is south/southwest as well as east/southeast.

In addition, 1,4-dioxane has been detected in low concentrations in groundwater in monitoring wells at the Site and monitoring network, including in wells located on the adjacent Jones Chemical, Inc. property.

From 2015 to the present, EPA has been conducting an SRI. SRI data collected between 2015 through 2018 indicated that vapor intrusion (migration of contaminants in air into an indoor space) presented a potential risk to human health at the Acme Property located adjacent to the former NHPC Properties. The vapor intrusion risk was identified following groundwater profiling investigations in 2015, which indicated TCE concentrations in shallow groundwater in excess of 1 part per million (ppm). In 2017 and 2018, EPA conducted an investigation to evaluate the potential vapor intrusion exposure pathway at the Acme building. The investigation determined that the soil gas under the current Acme building contained high levels of PCE and chloroform, COCs at the Site likely released to

the subsurface prior to construction of the building. Additionally, the COCs were detected in indoor air, indicating that these contaminants were migrating into the building at concentrations which presented an unacceptable current risk at that time. EPA completed a removal action from April to September 2019, as described further below, to address and mitigate the vapor intrusion exposure present at the Acme Property from the Site-related contaminants.

C. Summary of the Selected Remedy

The ROD for the Site was signed on September 28, 1998. As defined in the ROD, the Site is comprised of two parcels formerly owned and operated by NHPC (Merrimack Tax Map/Lots 4D2/2 and 4D2/3) (the NHPC Properties). A groundwater contamination plume is also being monitored under the 1998 ROD for natural attenuation through a network of monitoring wells, which originates from the NHPC Properties, and extends under and includes several adjoining properties, as follows:

- Wright Avenue;
- the property formerly owned by the Young Men's Christian Association (YMCA) and currently privately owned, to the south (Merrimack Tax Map/Lot 4D3/92);
- the Acme Property (formerly Aggregate Industries, F&S Transit Mix Company, and N.H. Pre-Mix Concrete, Inc.) to the southwest (Merrimack Tax Map/Lot 4D2/1);
- the Jones Chemical, Inc. property and the Boston and Maine railroad right-of-way to the east (Merrimack Tax Map/Lot 5D1/6);
- the Gas Producer Realty, Inc. (Transupport, Inc.) property to the east (Merrimack Tax Map/Lot 5D1/5);
- the Combat Corporation property to the east (Merrimack Tax Map/Lot 4D2/22)
- the Equivise Ltd. property to the east (Merrimack Tax Map/Lot 4D2/22-1); and
- the NE Pole, Inc. (New England Pole and Wood Treating Company) property to the southeast (Merrimack Tax Map/Lot 4D2/4).

See also Figures 1 and 2 attached for maps of the contaminated groundwater monitoring area.

The RAOs listed in the 1998 ROD were:

- minimize contaminants leaching from soils that would result in groundwater contamination exceeding Maximum Contaminant Levels (MCLs), State AGQS, or acceptable human-health based levels;
- prevent contact by ecological receptors with soils having contaminant concentrations exceeding the ecological risk-based performance remedial goals;
- prevent ingestion of groundwater containing contaminants at concentrations exceeding drinking water criteria;
- minimize off-site migration of contaminants in the groundwater; and
- minimize discharge of contaminated groundwater to the Merrimack River.

In the September 1998 ROD, EPA selected a remedial action to address contaminated soils to prevent or minimize the continued release of hazardous substances to the groundwater and provide for the management of migration of groundwater. The selected remedy consisted of the following major components:

Source Control

- Treating approximately 41,300 cubic yards of metal-contaminated soils by in-place chemical fixation;
- Consolidating and backfilling all treated soils in the former Lagoons 1 and 2 areas;
- Crushing, testing and treating the storage-cell material, as necessary, on-site using the chemical fixation process and placing the treated material in the former lagoons 1 and 2 areas;
- Placing two feet of clean soils over the treated materials in the lagoons 1 and 2 areas;
- Re-grading and vegetating the Site using appropriate wetlands-type plants and grasses, and assuring adequate flood-storage capacity; and
- Mitigating unavoidable impacts to on-site wetlands through the preservation of the Grassy Pond area in Litchfield and an additional wetland area to be determined.

Management of Migration (MOM)

- Using natural attenuation processes to restore contaminated groundwater in the shallow and deep overburden aquifers;
- Establishing a groundwater monitoring network within a Groundwater Management Zone (GMZ) and performing annual groundwater monitoring;
- Installing two well clusters in the Town of Litchfield for long-term monitoring; and
- Annually sampling surface water from the Merrimack River and Horseshoe Pond.

Institutional Controls

- Establishing a GMZ pursuant to the New Hampshire Code of Administrative Rules;
- Attaching restrictions, or notices, as appropriate, to deeds of the NHPC parcels and the properties within the designated GMZ or enacting local ordinances to prohibit the potable use of untreated contaminated groundwater underlying the Site and within the GMZ;
- Attaching restrictions to the deed of parcel 1 (the former building area) to assure that future property use remains industrial/commercial; and
- Attaching restrictions to the deed of parcel 2 to assure the remaining wetlands are undisturbed, and to limit any future uses of the treated-backfilled portion of parcel 2 to activities which do not result in excavation below the two-foot clean-fill layer.

D. Remedial Response History Since the ROD

All the above components of the remedial action are either complete or underway. Additional work to modify and support the remedial action was also completed or is underway.

2004-2006 Source Control Implementation

From 2004 to 2006, EPA completed the Source Control portion of the remedial action, consisting among other things of the excavation and chemical fixation of contaminated soils, on-site backfilling and placement of treated soils under two 2-foot soil covers, re-grading of much of the Site, construction of a flood storage system to manage storm water run-off, and purchase/protection of off-site wetlands to mitigate for on-site wetlands loss.

2007-2017 Management of Migration Implementation

The MOM portion of the remedial action was initiated in 2007 and included a ten-year Long-Term Response Action (LTRA) comprised of groundwater monitoring for the assessment of natural attenuation and attainment of groundwater cleanup levels. On September 28, 2017, the LTRA conducted and funded by the EPA at the Site was concluded and O&M responsibilities for the Site, including continued monitoring of groundwater, were assumed by NHDES.

2007 Explanation of Significant Differences

On September 28, 2007, after the completion of the Source Control remedial action for soils, EPA issued an ESD which documented a change to the soil excavation and treatment component of the remedial action from in-place treatment to ex-situ treatment of contaminated soils and a change to the performance standard met for cadmium in soils in the Northern Wetland area of the Site reflecting best efforts to reduce cadmium to the extent practicable within this wetland area without causing structural damage to nearby paved areas, utility lines and other areas of nearby properties. No significant impact on the costs were associated with these changes for cleanup at the Site.

2015-2018 Supplemental Remedial Investigation

From 2015 to 2018, EPA collected data under an SRI focused on the MOM portion of the ROD to, among other things, support a better understanding of the distribution and concentrations of chlorinated VOCs (particularly TCE) present at the Site, further evaluate the mechanism(s) responsible for persistent ongoing contamination, and allow for the development of contingent or alternative remedial options, if needed. EPA is currently working on a Focused Feasibility Study with respect to the natural attenuation remedial action for groundwater to assess a limited number of remedial alternatives to determine whether any further changes to the remedy are warranted.

2017 Institutional Controls Implementation

Institutional Controls (ICs) were required as a component of the 1998 ROD, as modified by the 2007 ESD, to manage or minimize exposure to both the treated soils which remain on-site and Site-related groundwater contamination. EPA determined that implementation of deed restrictions for the NHPC Properties was infeasible because the owners of the former NHPC Properties are either deceased or dissolved. On March 16, 2017, EPA

recorded Notices of Environmental Contamination (deed notices) in the chain of title in the land evidence records for the former NHPC Properties. In the deed notices, EPA provides notice that the parcels are included within a Superfund Site, that EPA conducted a remedial action at the parcels, and that subsurface contamination and certain remedial features remain on-site. In the deed notices, EPA identifies its conclusions about risk from the contamination, and specifies that engaging in any of the following activities may harm the remedy for the Site and/or create a threat of harm to public health, welfare or the environment:

- Any excavation or other activity that could harm the integrity of the two 2-foot soil covers or disturb or expose the contaminated soil and sediment that remains below the soil covers;
- Installation of groundwater wells or any removal, use or exposure to groundwater;
- Any of the following uses: (1) residential uses, including but not limited to single and multi-family dwelling and rental units; (2) pre-schools, day care centers, and community centers for children under 18; (3) eldercare facilities; (4) schools and religious institutions; (5) hospitals, healthcare facilities and other extended care medical facilities; and (6) transient or other residential facilities; and
- Any excavation or other activity that could disturb the “Flood Storage Area” system and the on-site wetland.

The deed notices are merely informational and do not create any enforceable property right, title or interest in favor of EPA and do not create a lien against the properties.

As specified in the 1998 ROD, ICs are still required for the properties within the area of the groundwater plume in the form of a GMZ, municipal ordinance, or deed notice/restrictions or otherwise to restrict the use of groundwater as potable water and to allow monitoring and management of groundwater until cleanup levels are met. To date, a GMZ has been infeasible because the owners of the former NHPC Properties are either deceased or dissolved; under NHDES regulations, a participating owner or responsible party is needed to apply for a Groundwater Management Permit, a prerequisite for NHDES’s establishment of a GMZ. Should ownership of the Site parcels change, EPA and NHDES will re-examine the option of pursuing ICs on those parcels in the form of a Groundwater Management Permit and GMZ. EPA and NHDES will also continue to engage with officials from the State of New Hampshire, the Town, and/or with owners of individual properties, on an effective means of implementing ICs for the properties within the area of groundwater monitoring.

2019 Vapor Intrusion Mitigation Removal Action

Data collected under EPA’s SRI from 2015 through 2018 indicated that Site-related hazardous substances, including but not limited to TCE in groundwater that had migrated from the former NHPC Properties, were found at high levels at the Acme Property. In April 2019, EPA issued an Action Memorandum authorizing a removal action to address risk posed by vapor intrusion into the Acme building. The Acme Property was formerly owned by NHPC from about 1961 until February 1965, at which time the property was sold to an

unrelated party for concrete mix operations. In September 2019, EPA completed a removal action to address vapor intrusion risk through the installation of a sub-slab depressurization system in the Acme building and storm water management improvements at the Acme Property to protect the long-term operation of the mitigation system.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

A. Addition of Remedial Action Objective (RAO) for Vapor Intrusion

The 1998 ROD established the following separate RAOs for Source Control (soil) and MOM (groundwater):

1998 Source Control RAOs

- Minimize contaminant leaching from soil that would result in groundwater contamination exceeding MCLs, state AGQS, or acceptable human-based levels; and
- Prevent contact by ecological receptors with soils having contaminant concentrations exceeding the ecological risk-based Performance Remedial Goals (PRGs).

1998 MOM RAOs

- Prevent ingestion of groundwater containing contaminants at concentrations exceeding drinking water criteria;
- Minimize off-site migration of contaminants in the groundwater; and
- Minimize discharge of contaminated groundwater to the Merrimack River.

This ESD supplements the MOM RAOs to address the potential threat to human health due to vapor intrusion. The SRI and April 3, 2019 removal action memorandum concluded that vapor intrusion (migration of contaminants to air) presented a then-current and potential future risk to human health at the Site and surrounding properties. As explained above, EPA completed a removal action from April to September 2019 to address and mitigate the current vapor intrusion exposures present at the Acme Property at that time. As a result, a new RAO has been developed to address human health risks related to current and future potential vapor intrusion exposures on the NHPC Properties, Acme Property and other properties impacted by Site contaminants.

This ESD modifies the MOM RAOs in the 1998 ROD through the addition of the following RAO for vapor intrusion:

- Prevent inhalation by current or future building occupants of contaminants from indoor air vapors emanating from groundwater containing Site contaminants at concentrations that would result in an excess cancer risk between 1×10^{-4} and 1×10^{-6} or a non-carcinogenic risk greater than a Hazard Index of 1.

B. Addition of Vapor Intrusion Mitigation and IC Requirements

As noted above, the SRI and April 3, 2019 removal action memorandum concluded that vapor intrusion (migration of contaminants to air) presented a current risk at the Acme Property at that time and potential future risk to human health at other properties affected by Site contamination. As such, EPA includes the following rationale for and changes to the 1998 ROD, as modified by the 2007 ESD:

Required Installation and Continued Operation and Maintenance of Vapor Intrusion Mitigation System at Acme Property

Data collected under EPA's SRI from 2015 through 2018 indicated that Site-related hazardous substances, including but not limited to TCE in groundwater that had migrated from the former NHPC Properties, was found at high levels at the Acme Property. In February 2017, EPA initiated indoor air and sub-slab vapor intrusion sampling at the Acme Property (formerly owned by NHPC) located adjacent to the NHPC Site, to ascertain whether there was a complete vapor intrusion exposure pathway for TCE and other Site-related constituents in groundwater which presented an unacceptable risk to human health.

Concentrations of Site constituents identified in the indoor air samples were notably high for PCE, but not TCE; while sub-slab samples indicated high concentrations of PCE as well as chloroform. PCE would have been the solvent likely used at the Site prior to the use of TCE and was also found at elevated concentrations in the former lagoon 1 soils during the Source Control action.

As a result of those investigations, EPA determined that there was a current, unacceptable, non-cancer vapor intrusion (inhalation) risk at the Acme Property related to exposure from PCE. EPA determined that a Hazard Quotient of 3.4 (which is greater than EPA's acceptable risk of an Hazard Index [sum of Hazard Quotients] less than 1) was related to exposure to the PCE and that an action was necessary to address and mitigate or otherwise remediate these vapor related risks until groundwater contamination cleanup levels are met. An Action Memorandum to address these risks was signed on April 8, 2019. In September 2019, EPA completed a removal action to address the vapor intrusion risk in the Acme building through the installation of a sub-slab depressurization system in the Acme building and storm water management improvements at the property and the Site to protect the long-term operation of the mitigation system.

Through this ESD, EPA is adding the required installation of the vapor mitigation system to the Acme building to make it a component of the remedy, noting, however, that the installation of the mitigation system is already complete through the 2019 removal action. In addition, through this ESD, EPA is adding the required O&M of the already-installed vapor mitigation system as a requirement of the ROD to ensure that the system continues to run as designed in order to prevent exposure and mitigate risk.

Required Implementation of ICs on Acme Property to Require Continued Operation of Vapor Intrusion Mitigation System

To ensure long-term protectiveness at the Acme Property, through this ESD EPA is requiring the implementation of an IC requiring the continued operation of the installed vapor mitigation system. The IC is additionally needed to provide access to EPA and NHDES to allow for their inspection, maintenance, repair (and oversight of this work) of the installed system during O&M activities. EPA anticipates the use of a deed restriction for this IC.

The additional requirements discussed in the next section for all properties within the groundwater plume with contamination levels above EPA default VISLs also apply to the Acme Property, and will be included in the IC for the Acme Property.

The Acme Property IC will be implemented in accordance with the substantive provisions of the NH Code of Administrative Rules, Contaminated Site Management, Env-Or 600: Part 607 (Groundwater Management Permits) and Part 608 (Activity and Use Restrictions), which is an ARAR for the modified remedy.

Required Inclusion of Vapor Intrusion Assessment and Minimization and/or Mitigation Requirements within ICs for NHPC Properties and All Other Parcels within Groundwater Plume with Concentrations above EPA default VISLs;

EPA’s target groundwater VISLs used for residential and commercial receptors for both cancer risks of 1E-06 and/or a noncancer Hazard Quotient of 0.1 are shown in Table 1 below:

Table 1: EPA Default VISLs

Chemical	Residential VISL		Commercial VISL	
	µg/L	Basis	µg/L	Basis
Chloroform	0.814	C	3.55	C
1, 1-Dichloroethane	7.64	C	33.4	C
Tetrachloroethylene	5.76	NC	24.2	NC
1, 1, 1 – Trichloroethane	742	NC	3110	NC
Trichloroethene	0.518	NC	2.18	NC
Vinyl chloride	0.147	C	2.45	C

C = Cancer

NC = Non-cancer

µg/L = micrograms per liter

Based on a comparison to the EPA default groundwater VISLs, detected concentrations of TCE in groundwater samples collected from wells located on the NHPC Properties (NHP_MW-108S, NHP_MW-302S, NHP_MW-303D, NHP_MW-304D, and NHP_MW-308S) are found to exceed the screening EPA VISLs, indicating the potential for a future completed vapor intrusion exposure pathway should these properties be developed for re-use. Similarly, detected concentrations of VOCs in groundwater samples collected from

wells located on all of the above-listed properties within the groundwater plume also exceeded the EPA default groundwater VISLs. See Figures 1 and 2.

As such, potential risks associated with the vapor intrusion pathway are associated with the potential redevelopment and future use of the NHPC Properties and properties within the groundwater plume. Any associated measures, if needed, to minimize and/or mitigate those risks would need to be assessed based on specific future use and construction style, among other factors.

Because there are currently no buildings or re-use options being considered for the NHPC Properties, potential future vapor intrusion exposures can be controlled through the implementation of ICs requiring assessment of risk, and minimization and/or mitigation using engineering measures, if needed based on the assessment, in any new construction, or existing building renovation, expansion or change in use. Similarly, the implementation of ICs for vapor intrusion risk assessment, and minimization and/or mitigation using engineering measures, if needed based on the assessment, before any new construction, or existing building renovation, expansion or change in use is required on the other properties located within the groundwater plume.

Through this ESD, EPA is modifying existing IC requirements under the ROD for the NHPC Properties and other properties within the groundwater cVOC plume with contamination levels that exceed the EPA default VISLs to require assessment of risk from vapor intrusion potential, and incorporation of any necessary measures based on the risk assessment to minimize and/or mitigate risk to human health into any new construction, or existing building renovation, expansion or change in use, as determined necessary by EPA and NHDES.

EPA will not use the VISLs as the sole factor in determining whether vapor minimization/mitigation systems are necessary. Instead, EPA will use multiple lines of evidence (including without limitation, indoor air sampling, construction style, and proposed use) to determine whether an existing or potential vapor intrusion pathway may present an unacceptable risk, which is consistent with EPA's "OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air," OSWER 9200.2-154, June 2015.

See Figures 1 and 2 for maps of currently known off-Site properties within the groundwater plume with groundwater contaminant levels above the EPA default VISLs, subject immediately to this change. If the contaminant plume changes or additional information becomes known that reveals that additional properties within the groundwater plume have groundwater contaminants levels above the EPA default VISLs, those properties will also be subject to this IC requirement.

Enhancement of Current Groundwater Non-potable Use Prohibition ICs for NHPC and Monitoring Area Properties to Prohibit New Wells and Withdrawal/Use of Groundwater Without EPA and NHDES Approval

Through this ESD, EPA is also adjusting the currently described IC restrictions for the NHPC Properties and other properties within the groundwater monitoring area as described in the 1998 ROD. The 1998 ROD requires an IC for these parcels in the area of groundwater monitoring to prohibit the potable use of untreated contaminated groundwater. Given that pumping of groundwater could change the hydrogeological dynamics of the natural attenuation remedy at the Site, or pull contaminated groundwater outside of its current location, or cause harmful exposure to persons, through this ESD, EPA is also incorporating a prohibition of the installation of new groundwater wells and/or use or withdrawal of groundwater from the NHPC Properties and other properties within the groundwater monitoring area, including among others the Acme Property, without EPA and NHDES permission. As noted above, the Deed Notices for the NHPC lots recorded in 2017 already contain similar language to this new IC restriction, warning against installation of groundwater wells or any removal, use or exposure to groundwater.

The ICs will be implemented in accordance with the substantive provisions of the NH Code of Administrative Rules, Contaminated Site Management, Env-Or 600: Part 607 (Groundwater Management Permits) and Part 608 (Activity and Use Restrictions), which is an ARAR for the modified remedy.

See Figures 1 and 2 for maps of currently known off-Site properties within the groundwater plume. If the contaminant plume changes or additional information becomes known that reveals that additional properties are located within the groundwater plume, those properties will also be subject to this IC requirement.

C. Update to ARARs and TBCs

The ESD also updates the ARARs cited in the 1998 ROD both to include the revised State and Federal standards and to identify additional standards that were not specifically identified in the 1998 ROD. Through this ESD the following ARARs and TBCs are added to the 1998 ROD, as modified by the 2007 ESD:

- ARAR: NH Code of Administrative Rules, Contaminated Site Management, Env-Or 600: Part 607 (Groundwater Management Permits) and Part 608 (Activity and Use Restrictions);
- TBC: EPA Office of Solid Waste and Emergency Response, Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air, OSWER Publication 9200.2-154, June 2015;
- TBC: EPA Vapor Intrusion Screening Level (VISL) Calculator.

The costs associated with the changes described above in Sections III.A. through III.D. are expected to be minimal. As described above, EPA has already installed a vapor intrusion mitigation system at the Acme Parcel, and otherwise anticipated costs only include O&M of that installed mitigation system, and the inclusion of additional vapor intrusion-related land use limitations to the already required IC requirements for groundwater monitoring area properties, as described in the 1998 ROD.

IV. SUPPORT AGENCY COMMENTS

EPA has worked cooperatively with NHDES to develop this ESD. NHDES has reviewed the draft ESD and supports the proposed changes to the 1998 ROD, as modified by the 2007 ESD. NHDES will evaluate public comments on the draft ESD before making a final decision on concurrence with the ESD.

V. STATUTORY DETERMINATION

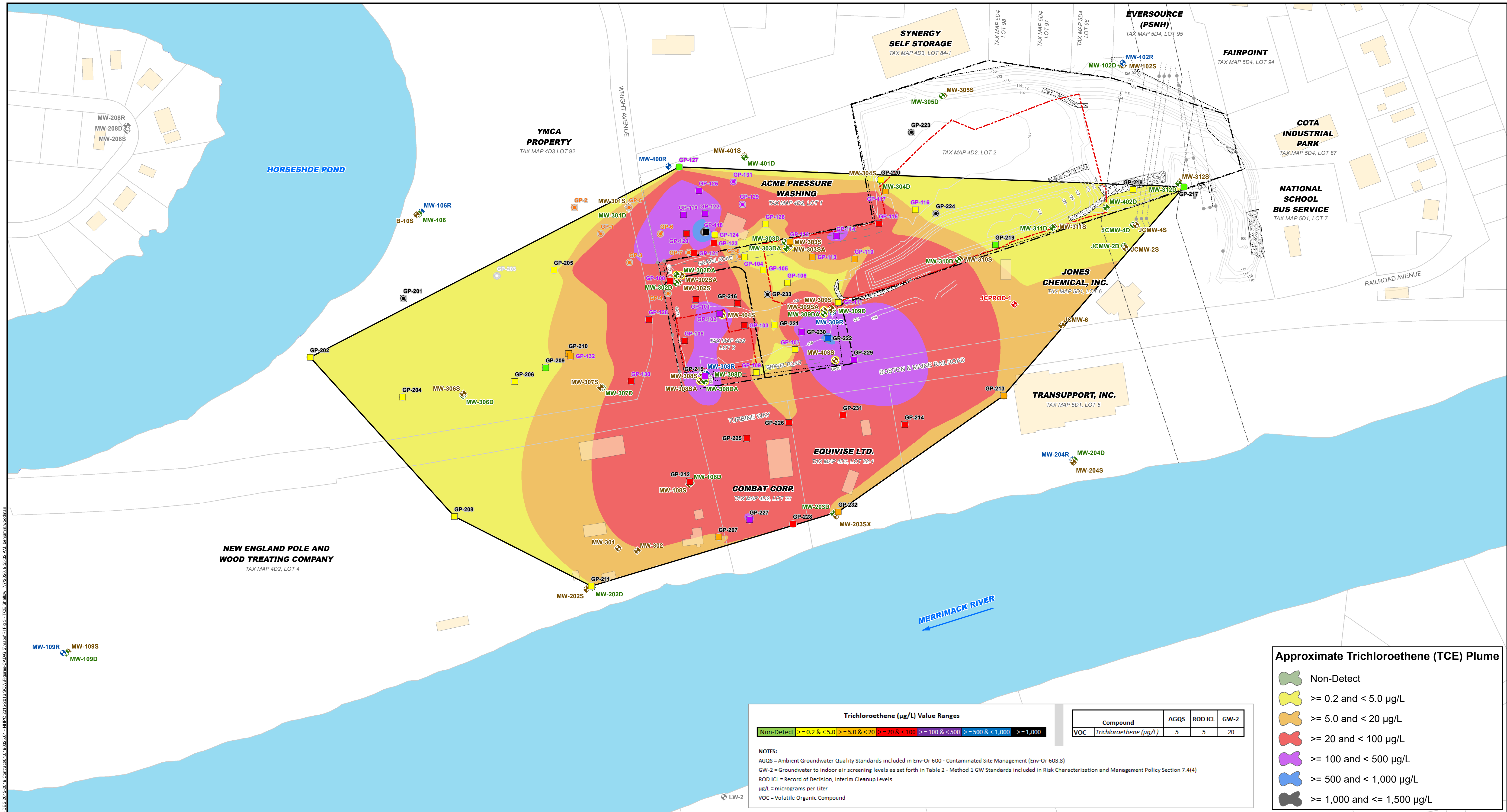
In accordance with Section 121 of CERCLA, EPA, in consultation with NHDES, has determined that the modified remedy remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, meets the remedial action objectives specified in the 1998 ROD, and is cost-effective.

VI. PUBLIC INFORMATION

In accordance with Section 117(d) of CERCLA and Section 300.825(a) of the NCP, this ESD and the Administrative Record were made available for public review on the internet at www.epa.gov/superfund/nhplating. Adobe Reader is required to review the documents. A public notice, which summarizes the modification to the remedy as set forth in this ESD shall be published in the Nashua Telegraph following the signing of this ESD.

EPA has voluntarily chosen to allow a 15-day public comment period prior to finalization and signing of this ESD. The comment period was initiated upon publication of the draft ESD and will run from September 1, 2020 until September 16, 2020. Public comments received will be addressed in a responsiveness summary that will be attached to the final ESD.

Figures



Trichloroethene (µg/L) Value Ranges

Non-Detect	>= 0.2 & < 5.0	>= 5.0 & < 20	>= 20 & < 100	>= 100 & < 500	>= 500 & < 1,000	>= 1,000
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Compound	AGQS	ROD ICL	GW-2
VOC Trichloroethene (µg/L)	5	5	20

NOTES:
 AGQS = Ambient Groundwater Quality Standards Included in Env-Or 600 - Contaminated Site Management (Env-Or 603.3)
 GW-2 = Groundwater to indoor air screening levels as set forth in Table 2 - Method 1 GW Standards included in Risk Characterization and Management Policy Section 7.4(4)
 ROD ICL = Record of Decision, Interim Cleanup Levels
 µg/L = micrograms per Liter
 VOC = Volatile Organic Compound

Approximate Trichloroethene (TCE) Plume

- Non-Detect
- >= 0.2 and < 5.0 µg/L
- >= 5.0 and < 20 µg/L
- >= 20 and < 100 µg/L
- >= 100 and < 500 µg/L
- >= 500 and < 1,000 µg/L
- >= 1,000 and <= 1,500 µg/L

LEGEND:

- | | | | | | |
|----------|--|---|--|---|---------------------------|
| MW-309S | Shallow Overburden Aquifer Monitoring Well | ○ | No Data Collected, Refer to Appendix E and Appendix F for More Information | ◇ | Limit of Interpolation |
| MW-309D | Deep Overburden Aquifer Monitoring Well | ● | Monitoring Well Installed in 2018 | ⬜ | Area of Capped Soil |
| MW-309R | Bedrock Aquifer Monitoring Well | ● | Utility Pole | ⬜ | Approximate Site Boundary |
| MW-208S | Decommissioned Monitoring Well | ○ | Chainlink Fence | ⬜ | Building |
| JCPROD-1 | Jones Chemical, Inc. Production Well | ⊕ | Fence Gate | ⬜ | Rip Rap |
| GP-1 | 2006 Waterloo Groundwater Profiling Location (Approximate) | ⊕ | Gravel Road | ⬜ | Parcel Boundary |
| GP-100 | September 2015 Waterloo Groundwater Profiling Location | ⊕ | Overhead Wire (OHW) | ⬜ | Water |
| GP-200 | June 2017 Waterloo Groundwater Profiling and/or Soil Sampling Location | ⊕ | Contour Line | ⬜ | |
| | | ⊕ | Easement Boundary | ⬜ | |

- NOTES:**
- BASE PLAN WAS DEVELOPED FROM A FIELD SURVEY BY DOUCET SURVEY, INC. PERFORMED DURING OCTOBER 2015 AS DEPICTED ON THE PLAN OF LAND FOR US EPA, REGION 1 DATED OCTOBER 2016. ADDITIONAL PARCEL BOUNDARIES WERE OBTAINED FROM THE CITY OF MERRIMACK, NH GIS DATA PORTAL IN AUGUST 2017.
 - LOCATIONS AND SITE FEATURES ARE APPROXIMATE.
 - MONITORING WELLS MW-301 AND MW-302 ARE ASSOCIATED WITH THE NEW ENGLAND (NE) POLE PROPERTY (NHDES SITE NO. 198711004).
 - CONCENTRATION ISOPLETHS WERE DEVELOPED USING NATURAL NEIGHBOR INTERPOLATION IN ARCGIS. CONCENTRATIONS WERE NOT EXTRAPOLATED OUTSIDE OF THE AREA OF KNOWN CONCENTRATIONS.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THIS DRAWING IS SOLELY FOR THE USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

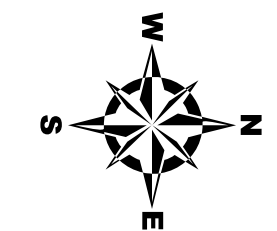
NEW HAMPSHIRE PLATING COMPANY
 SUPERFUND SITE
 WRIGHT AVENUE
 MERRIMACK, NEW HAMPSHIRE

SHALLOW OVERBURDEN TRICHLOROETHENE DATA

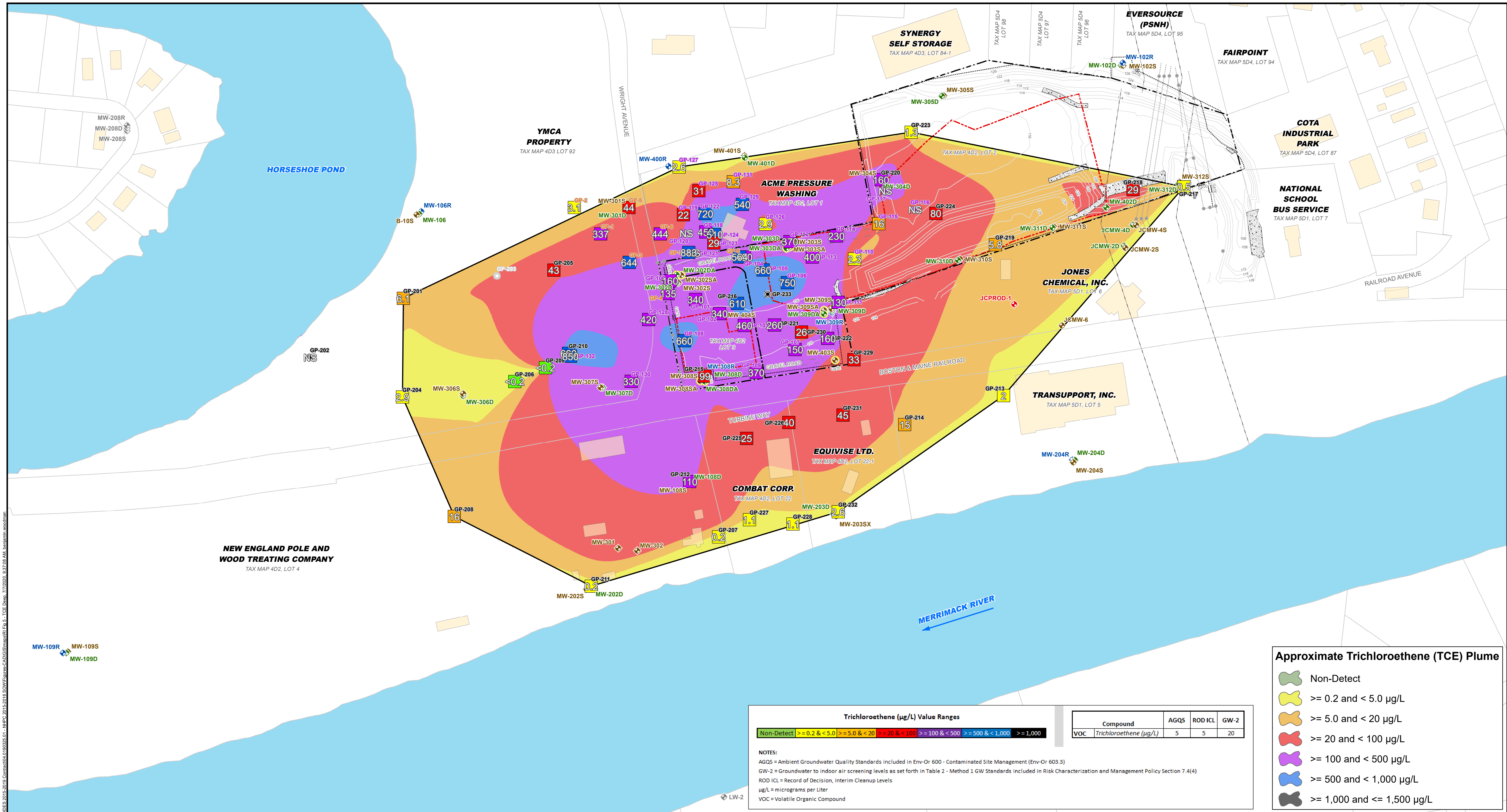
PREPARED BY: **GZA GeoEnvironmental, Inc.**
 Engineers and Scientists
 www.gza.com

PREPARED FOR: NHDES/EPA

PROJ MGR: TPJ	REVIEWED BY: SRL	CHECKED BY: JMW	FIGURE
DESIGNED BY: TPJ	DRAWN BY: ADM	SCALE: 1 in = 120 ft	1
DATE: JUL 2020	PROJECT NO. 04.0190987.04	REVISION NO.	



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**NEW HAMPSHIRE PLATING COMPANY
 SUPERFUND SITE
 WRIGHT AVENUE
 MERRIMACK, NEW HAMPSHIRE**

DEEP OVERBURDEN TRICHLOROETHENE DATA

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR: NHDES/EPA
PROJECT NO.: 04.0190987.04	REVISION NO.:
DATE: JUL 2020	FIGURE 2



Attachment 1
NHDES Concurrence Letter

Attachment 4
Responsiveness Summary