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Construction Quality Assurance/ Quality Control Plan

OU1, Modified Zone 1, USS Lead Superfund Property | East Chicago, Indiana

May 2023

Prepared for:
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List of Acronyms

AMP	Air Monitoring Plan
ARARs	Applicable or Relevant and Appropriate Requirements
Bgs	below ground surface
BMP	Best Management Practices
CD	Consent Decree
CQA/QCP	Construction Quality Assurance/Quality Control Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminants of Concern
CY	Cubic Yard
DOT	Department of Transportation
ECHA	East Chicago Housing Authority
EPA	U.S. Environmental Protection Agency
ERP	Emergency Response Plan
ESD	Explanation of Significant Differences
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
GPS	Global Positioning System
HASP	Health and Safety Plan
HUD	Housing and Urban Development
ICS	Incremental Composite Sampling
IC	Institutional Controls
ICIAP	Institutional Controls Implementation and Assurance Plan
IDA	Industrial Development Advantage of East Chicago, LLC
IDEM	Indiana Department of Environmental Management
mg/kg	micro grams per kilograms
NPDES	National Pollutant Discharge Elimination System
OU	Operable Unit
O&M	Operations & Maintenance
O&M Plan	Operations 7 Maintenance Plan
ppm	parts per million
PC	Project Coordinator
PS	Performance Standards
PRSP	Periodic Review Support Plan
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAO	Remedial Action Objectives
RAL	Remedial Action Level
RD	Remedial Design
ROD	Record of Decision
RODA	Record of Decision Amendment
RI	Remedial Investigation
RPM	EPA Remedial Project Manager
Property	USS Lead OU1 Modified Zone 1
SMP	Soil Management Plan
SOW	Statement of Work
SPC	State Project Coordinator
T&D	Transportation and Disposal
TODP	Transportation and Off-Property Disposal Plan
TCLP	Toxicity Characteristic Leaching Procedure
USS Lead	U.S. Smelter and Lead Refinery, Inc.
WCHC	West Calumet Housing Complex

1.0 Introduction

Verdantas LLC (Verdantas) has prepared this Construction Quality Assurance/Quality Control Plan (CQA/QCP) as the Supervising Contractor on behalf of Industrial Development Advantage of East Chicago, LLC (IDA) "Purchaser" of a portion of Operable Unit 1 (OU1), Modified Zone 1 of the U.S. Smelter and Lead Refinery, Inc. (USS Lead) Superfund Site located in East Chicago, Indiana purchased by the Purchaser (Property). The purpose of the CQA/QCP is to develop and implement a program to ensure, with a reasonable degree of certainty, that the completed Remedial Action (RA) for meets or exceeds design criteria, plans, specifications, and performance standards. The CQA/QCP introduces personnel, defines responsibilities, and details activities in the quality assurance and quality control (QA/QC) program, such as inspections, testing, monitoring, and potential corrective actions, if necessary. The Remedial Design (RD) activities are based on the remedy selected by the United States Environmental Protection Agency (USEPA) in the March 2020 Record of Decision Amendment (RODA). OU1 Modified Zone 1 is defined in Section III of the Administrative Settlement Agreement for Remedial Action by Prospective Purchaser ("Settlement"). For definition purposes throughout this document and the companion OU1 planning documents, the term "Property" is used consistent with the definition in the Settlement to solely refer to "Modified Zone 1" in OU1, as shown on Figure 1 and Figure 2. IDA is a real estate developer and the Purchaser as defined in the Settlement Agreement and is responsible for the remedial action at the Property. The U.S. Environmental Protection Agency (EPA) Region 5 is the lead agency that will be overseeing the implementation of this RD/RA and the supporting agency is the Indiana Department of Environmental Management (IDEM).

The remedy being implemented includes the actions described in Section VI of the RODA for the Site (Alternate 4A). The remedy generally includes but is not limited to; Property preparation (i.e., clearing of existing wooded vegetation, removal of ancillary abandoned above grade structures and features), in situ soils stabilization, repurposing of existing on-Property gravel cover areas, excavation and off-Property disposal of contaminated soils that exceed the industrial/commercial performance standards of 800 ppm for lead and 26 ppm for arsenic, down to a maximum depth of 12" below ground surface (bgs), see Figure 3. The remedy also includes implementation of backfilling operations back to contiguous grades, compliance monitoring and reporting, and implementation and monitoring of Institutional Controls (ICs).

This CQA/QCP includes the requirements established by section of 5.7(e) of the Statement of Work (SOW) signed by U.S. Department of Justice on April 7, 2022. The requirements are as follows:

(1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/QCP;
(2) Describe the PS required to be met to achieve completion of the RA;
(3) Describe the activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;
(4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/QCP;
(5) Describe industry standards and technical specifications used in implementing the CQA/QCP;
(6) Describe procedures for tracking construction deficiencies from identification through corrective action;
(7) Describe procedures for documenting all CQA/QCP activities; and
(8) Describe procedures for retention of documents and for final storage of documents.

2.0 Quality Management and Organization

2.1 Qualifications and Responsibilities of Quality Management Personnel

An organization chart showing the reporting relationships of persons involved in the overall project management is shown on Figure 4. The preliminary relationships of potential persons involved with the QA/QC for the RA are discussed in this section and will be further developed at a later date, when an RA contractor is selected.

Members of the project team will have the required qualifications, a good professional and ethical reputation, previous experience in the related QA/QC activities to be implemented, and a demonstrated capability to perform the required activities. The title qualifications, general responsibilities and authorities of each personnel assigned a quality management function are provided in the following paragraphs. The responsibility and/or authority of a given party may be modified or expanded as dictated by specific project needs and shall be updated accordingly.

2.1.1 Regulatory Agency

The regulatory agencies for the RD/RA are EPA and Indiana Department of Environmental Management (IDEM).

Mr. Tom Alcamo is the EPA Remediation Project Manager (RPM) for the RD/RA. Mr. Alcamo is overseeing the implementation of the Settlement and is the primary communication link between EPA and IDA. Mr. Alcamo is responsible for the review and approval of all documents submitted under the Settlement. As the RPM and/or an on-scene coordinator, Mr. Alcamo has the authority to halt, conduct, or direct any work required by this Settlement, or to direct any other response action undertaken at the Property. EPA has designated Karen Kirchner as the alternate RPM for the Property.

Mr. Doug Petroff is the IDEM State Project Coordinator (SPC) and will be responsible for the review and approval of all documents under the Settlement on behalf of the State of Indiana. The alternate IDEM SPC is Jessica Fliss.

2.1.2 Respondent

The owners of the property where the RA work will be performed include the following:

- IDA
- East Chicago Housing Authority

IDA, as the Purchaser has designated Dave Mustafaga from Verdantas as the Project Coordinator (PC) who will be responsible for planning, coordinating, monitoring, and evaluating project activities and ensuring that each phase of the RD/RA meets the appropriate objectives and quality standards. The PC will provide project oversight and will guide project personnel throughout the project. The PC is responsible for disseminating project communications to the IDA and EPA Project Coordinators. The PC will also work with project personnel to resolve technical problems during the course of the project and review technical evaluations, reports, and other work products prior to their issuance.

Mr. Steve Radel is representing IDA as the Alternate Project Coordinator (APC) and will serve as the primary communication link with EPA and between EPA and the Verdantas Project Team. Mr. Radel's responsibilities include planning and/or approving project strategies, oversight all

project activities, reviewing and approving all project deliverables prior to their submittal to EPA, and communicating with stakeholders.

2.1.3 Supervising Contractor

The Supervising Contractor is Verdantas and will be responsible for preparing project deliverables. The Supervising Contractor is responsible for quality assurance oversight, engineering design, technical evaluations, and records management and will assist Global Consulting Solutions in public meetings. IDA will review project deliverables prior to submittal to EPA. EPA will review the RD deliverables and provide additional oversight as necessary.

All lines of communication between the project team members will follow the organizational structure on Figure 1. The EPA Project Coordinator will communicate any comments and instructions directly to IDA's Project Coordinator. In turn, the IDA Project Coordinator will convey these comments and instructions to the Supervising Contractor.

2.1.4 Remedial Design/Remedial Action (RD/RA) Manager

Mark Bonifas is a Professional Engineer licensed in the State of Indiana who will review and stamp all design drawings. Laura Page of Verdantas will serve as the RD Manager and will guide project team personnel in completing project tasks assigned to meet the overall project tasks identified in the *RD/RA Work Plan* and supporting documents and preparing the RD. Hien Pham will serve as the RA Manager will be responsible for the supervising and providing support to project engineers and scientists, and/or technicians. The RA Manager will also be responsible for preparing the bid documents, managing the bid process and Contractor selection process, and managing the Contractor executing RD tasks. The RA Manager will assist the RD Manager with preparation and review of technical reports and project deliverables under the direction of the Professional Engineer.

2.1.5 Quality Assurance Officer (QAO)

The RA Manager is responsible for assisting the QAO with day-to-day administration of the quality assurance requirements of the project, including the periodic review of documented quality assurance and control procedures associated with long-term monitoring and making revisions to the plans, if needed, to maintain proper QA throughout the investigation. The QAO is Luke Slezak with Verdantas. Specific functions and duties of the QAO are to:

- assist in establishing QA/QC procedures for the project;
- evaluate data quality and maintain QC records;
- provide a communication link between project personnel and the Laboratory ;
- provide periodic QA reports;
- assure corrective actions are taken for deficiencies noted during project activities; and
- conduct periodic review of the documented QA/QC procedures for the long-term monitoring and prepare revisions as necessary.

The QAO will also be responsible for conducting the quality assurance program during the construction phase of the project. The QAO may delegate some of his or her quality management responsibilities to another qualified person with prior approval from the RA Manager. The QAO or delegated persons will be responsible for review of submittals, performance of field and office audits, review of construction specifications, and review of analytical data submittals. The QAO is responsible for ensuring compliance with the requirements identified in the CQA/QCP. He or she is responsible for the overall quality management related to the remedial action. The Verdantas Field Representative will act as the on-Property quality assurance inspector under the supervision of the FOC, RA Manager and the

QAO.

The QAO, with the assistance of the QA personnel, has the authority for ensuring the implementation of the CQA/QCP as it applies to sampling, testing, monitoring, and analysis performed for the duration of the project. He or she has the authority and responsibility to stop work on activities related to, or affected by, noncompliant conditions until actions can be taken to correct the noncompliant condition or prevent it from affecting related or subsequent work.

2.1.6 Field Operations Coordinator (FOC)

The Field Operations Coordinator (FOC) will be responsible for overseeing the day-to-day conduct of project activities during the RA. Duties and responsibilities of the FOC are to:

- ensure the sampling activities are conducted in a manner that follows the procedures outlined in this RD/RA Work Plan and supporting documents;
- coordinate sampling activities with the technical leads, QAO, and Verdantas Field Representative;
- oversee the use, maintenance, and operation of sampling equipment; and
- report daily activities to the PC and RA Manager.

The FOC will be identified prior to commencement of the RA. Additional project staff, including subcontractors will be identified once selected and added to the organization chart. The Verdantas Field Representative will act as the on-Property quality assurance inspector under the supervision of the FOC, RA Manager and the QAO. The persons performing the inspections or tests will be qualified to do so through training and/or experience. The Verdantas Field Representative is responsible for generating applicable documentation for their work using daily field reports and project specific forms. The duties include periodic inspections of the work being produced and/or materials and equipment delivered to the Property, and verification of the adherence to this CQA/QCP by subcontractors, completing daily field reports, and relevant construction progress forms.

2.1.7 Subcontractors

The Subcontractor will be pre-qualified and approved by IDA and the Supervising Contractor. The Subcontractor will be capable of assigning the personnel and equipment required to perform the work within the project schedule. The Subcontractor will be trained and qualified to perform the remedial action work. Prior to execution of contractual agreements with the Supervising Contractor, the Contractor will provide the PC with a statement of qualifications and documented procedures to ensure safety and the environment are protected.

The Contractor will designate one representative as a Superintendent who will represent the contractor on-Property. The Superintendent will be qualified by experience and must also exhibit good management skills. The Contractor is responsible for all activities assigned by the Supervising Contractor. These activities may include stabilization of lead-impacted soils, excavation, moving earth to and from borrow areas, and backfilling excavations, or other related work items. The Subcontractor may also be responsible for construction of sedimentation and erosion controls, access road installation, and other support activities outside the immediate project area.

It is the responsibility of the Contractor to supply equipment and perform work that results in completed project components that are in conformance with the CQA/QCP.

2.2 Attainment of ARARs and Substantive Permit Requirements

CERCLA provides that no Federal, State, or local permit is required for the portion of any response action conducted on-Property but requires that the substantive requirements that would be contained in a permit must be satisfied. This section outlines the specific statutes or regulations for which a permit would be required but for the CERCLA permit exemption and describes how the substantive requirements that would otherwise be established in such permits will be satisfied as the remedy is designed and implemented.

Without the CERCLA permit exemption, a project involving the activities required to implement the OU1 Modified Zone 1 RA would typically be required to obtain permits for erosion and sediment control, and stormwater discharge/management and any required local or state construction permitting. Substantive requirements that would be contained in a permit will be addressed and adhered to during RA activities as detailed in the Preliminary Design.

3.0 Construction Materials and Methods

The RD documents establish the limits, type, and details of the RA, and all other components of the Property. Detailed specifications, including relevant construction materials and methods, are presented on Sheets 2 and 5 through 8 of the Prefinal/Final Remedial Design Plan Set. Components of the RD include Property preparation (i.e., clearing), excavation, stabilization, and fill placement.

Table 1 presents the Remedy Completion Criteria for Property Clearing, Soil Stabilization, Borrow Source Characterization, and Backfill Material Placement laboratory and field inspections and test methods that will be used to characterize and evaluate the material quality of the RD components. The tests will be conducted in accordance with the current versions of the corresponding standard methods referenced. Table 1 also provides minimum test frequencies, acceptance/rejection criteria and corrective measures.

During construction, the RA Manager may prepare applications to the USEPA for approval of substantive changes to the design drawings or specifications of the RA, if needed. Substantive changes include any changes that modify or impact the technical basis for any engineered component of the RD. Such changes will require the approval of the USEPA.

4.0 Construction QA/QC Testing, Inspection, and Reporting

4.1 Construction QA/QC Testing and Inspection

QA/QC tests and checks will be performed during the RA activities to check the validity of the collected data and to confirm Property conditions. The RA Manager (or his designee), Contractor or Manufacturer/Vendor will perform QA/QC tests as appropriate. Examples of typical QA/QC tests and checks that may be used during project are listed below.

1. Pre and Post Survey of remedial excavation areas
2. Confirmation Testing following Stabilization
3. Clean fill testing
4. Visual inspection of soil placement activities
5. As-Built Survey

4.1.1 Inspection Types and Frequencies

4.1.1.1 Initial Inspection and Pre-Construction Survey

A professional surveyor licensed in the State of Indiana shall perform pre-construction surveys to record existing topography and establish survey controls. The surveyor will stake out the excavation areas delineating both the non-hazardous and the high lead areas as shown on Figure 2. An initial inspection will be conducted following Property preparation and Contractor mobilization, prior to commencement of work by the RA Manager, QAO, Contractor or another qualified designee. The initial inspection will include:

1. Review of contract requirements;
2. Check to ensure that all materials and/or equipment have been tested or vendor has been reviewed and approved;
3. Check to ensure that provisions have been made to conduct required work, including substantive requirements of any relevant permits;
4. Examination of work area to ascertain that Property preparation work has been completed; and
5. Review of safety and quality control requirements most relevant to the work.

4.1.1.2 Confirmation Testing Following Stabilization

For decision units shown on Figure 2 that were previously identified to exhibit hazardous characteristics via TCLP analysis, soils will be stabilized using in-situ techniques in accordance with the Treatability Study. Soil samples will be collected once in-situ treatment has been completed to determine if the soils meet criteria for disposal at a licensed, non-hazardous disposal facility. The composite sample in each required decision unit will have "five on a die" sub-sample locations (i.e., a five-point composite sample). Proposed sub-sample sampling locations will be located in the field using a global positioning system (GPS), marked with lathe or flagging, and each marker will be labeled with the sampling location designation as shown on Figure 2 (e.g., A8-1 through A8-5). Samples will be collected in accordance with FSAP and QAPP.

4.1.1.3 Follow-up and Post-Excavation Inspections

Follow-up inspections will be conducted during implementation of each phase of work, until

completion of the RA work. A survey of the excavation area after the material has been excavated will be performed by a professional surveyor licensed in the State of Indiana to confirm the required depth of material has been removed to the required limits and the demarcation barrier has been placed.

4.1.1.4 Suitability of Fill and Compaction Testing

Excavated areas will be backfilled with approved clean imported material. Imported backfill must be sampled and analyzed in accordance with the Fill Import Plan, FSAP and QAPP, respectively, and meet IDEM residential standards for all chemicals of concern except lead and arsenic prior to being transported on-Property. The fill import standards for lead and arsenic have been negotiated with US EPA to be 400 mg/kg and 19 mg/kg, respectively.

The Fill Import plan states that due diligence will be performed on the source material in general accordance with IDEM guidance document WASTE-0064-NPD. To assist with due diligence, an *Environmental Questionnaire for the Proposed Borrow Source*, provided in Appendix C of the FSAP, will be utilized. A new form will be completed for each potential borrow source material to determine if environmental samples are needed to demonstrate the borrow materials do not pose an unacceptable health and safety risk.

Locations of samples, if required based on the results of due diligence, will be determined in the field and collected from the source material at biased locations at a rate of two composite samples per 4,000 cubic yards. The sampling frequency may be adjusted by the EPA depending on the backfill source.

Approved imported material may be stockpiled in decision units that do not require stabilization or excavation prior to implementation of the remedy.

Backfilled areas will be restored with topsoil cover and seeding, where required. Areas that are currently greenspace in the utility corridor and outside of the area of re-development, specifically DUs F1, F2, F3, F4, F8, and F9 shall be seeded, and topsoil will only be added as necessary. Seeding will be conducted in areas outside of the current greenspace areas (DUs F1, F2, F3, F4, F8, and F9) only if the placement of proposed development related backfill is delayed more than 90 days from remedy completion.

The Verdantas field representative shall monitor placement and compaction during placement of soil fill. Soil shall be placed in maximum 15-inch lifts to allow for compaction to approximately 12-inches. Monitoring activities are summarized in in Table 1. Soils will be visually inspected to assure they are placed in a firm non-yielding manner, as well as visual inspection of lift thickness and compaction. A construction documentation report for the compacted soil fill will be prepared based on a review of the CQA information and CQA monitoring performed during installation of the compacted soil fill.

4.1.1.5 Final Inspection

A survey will be performed after backfill has been placed by a professional surveyor licensed in the State of Indiana to confirm the required cover soil has been installed and to develop as-built drawings to be included with the RA Completion Report.

After the RA has been fully performed and performance standards have been achieved, IDA will conduct a pre-certification inspection. After completion of the pre-certification inspection and receipt and review of the written certification report, the USEPA will determine if the RA or any portion thereof has been completed or not. If the USEPA approves the completion report, USEPA will certify completion.

4.1.2 Testing Locations and Frequencies

Table 1 contains a description of the testing locations and frequencies for each element of the remedy.

4.1.3 Acceptance and Rejection Criteria

Table 1 contains a description of the acceptance and rejection criteria for each element of the remedy.

4.1.4 Corrective Measures

To identify services or activities that do not comply with the RA requirements, the following mechanisms may be performed:

- CQA/QCP inspections; and
- Field tests and samples.

CQA/QCP inspections shall be conducted daily, and applicable field testing and sampling shall be conducted in real time to minimize rework after a work task is completed. The RA Manager and/or QAO or his designee will identify and document any noncompliance issue and will notify all relevant parties of the noncompliance. The RA Manager and/or QAO has the authority and responsibility to stop work related to, or affected by, the noncompliance condition until action can be taken to correct it or prevent it from affecting related or subsequent work. The RA Manager and/or QAO may require that the work be re-tested and/or re-inspected to confirm or disprove the noncompliance condition. The RA Manager and/or QAO will prepare a written report providing the cause and effect of the noncompliance condition.

4.2 Construction QA/QC Documentation

An effective CQA/QCP depends largely on recognition of all construction activities that should be monitored and on assigning responsibilities for the monitoring of each construction activity. This is most effectively accomplished by the documenting of QA activities. The QAO or his designee will document that QA requirements have been addressed and satisfied.

The QAO or his designee will provide the RA Manager with daily field reports, data sheets, and logs to document that all monitoring activities have been accomplished. The QAO or his designee will also maintain at the job site a complete file of design drawings, design specifications, the CQA/QCP, checklists, test procedures, daily logs, and other pertinent documents. Table 2A, 2B, 2C will be used to track construction progress in each Decision Unit: Table 2A Decision Units requiring stabilization and excavation, Table 2B Decision Units requiring excavation only, and Table 2C Decision Units requiring stabilization without excavation.

Throughout the construction project, various forms of recordkeeping will be used, including daily field reports, test data sheets, and photographs. These data will be used to compile the final construction certification report for submittal to the USEPA. The RA Manager or his designee will conduct daily QA/QC duties on-Property. The on-Property personnel (including subcontractors and visitors), their time spent at the Property, major equipment on-Property, and materials delivered or removed from the Property will be recorded in a daily construction QA/QC report. The report will also include a summary of work performed and the results of any inspections of QA/QC tests performed that day. Summaries will be sent to the USEPA RPM with the monthly reports, as required.

4.2.1 Inspection Reports

Completed inspections and construction progress will be recorded on construction progress forms Tables 2A, 2B and 2C and supplemented with daily field reports. Daily field reports will be prepared each day field work is conducted and will provide details regarding any deviations/corrective actions in a decision unit. Documentation will be used to track any deficiencies and corrective actions. Completed forms will be reviewed by the RA Manager and the QAO prior to becoming part of the Property records. Items not meeting the criteria will require additional testing, measurement, re-sampling, and reanalysis to comply with corrective action procedures outlined in Table 1.

4.2.2 Test Results

Field test results will be submitted in the daily field reports. Pre-construction testing results related to the quality of materials provided by the Contractor or Manufacturer/Vendor will be submitted with the final documentation, as described in Section 4.2.3. Analytical samples will be requested under a standard turnaround time (5-days)[1] unless otherwise approved by the Supervising Contractor. Daily field reports, analytical reports for import fill, soil treatment confirmation analytical, and waste disposal tickets will be shared with EPA via FTP site.

4.2.3 Final Documentation

At the completion of the work, the CQA Consultant will submit to the USEPA the signed final construction certification report. At a minimum, the report will include the following:

1. Summaries of all construction activities and involved parties via daily field reports included in an appendix;
2. Waste disposal documentation including waste profiles, acceptance letter, manifests and landfill disposal tickets.
3. Observation logs and test data sheets including sample location drawings, supporting field and laboratory test results, and effects of weather and equipment limitations on construction;
4. Changes from design and material specifications (if any);
5. Record drawings (results of surveying);
6. Notarized statement; and
7. Professional Engineer's Certification.

The record drawings will include scaled drawings depicting the location of the construction and details pertaining to the extent of construction (e.g., depths, drawing dimensions, elevations, and cover thickness). Surveying required for development of the record drawings will be prepared by a professional land surveyor licensed in the State of Indiana.

4.2.4 Record Storage and Retention

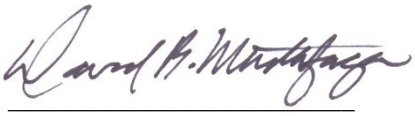
Retention of records will be performed by the Purchaser in accordance with Section X Paragraph 56 of the Administrative Settlement Agreement

Electronic files will be maintained on Verdantas' network. As required by Section X paragraph 56 of the Administrative Settlement, the Purchaser will provide the United States with notification at least 90 days prior to the destruction of hardcopy or electronic records required to be retained for the 10-year period after receipt of USEPA's Certification of Completion of the Work.

[1] The confirmation sampling requires TCLP analyses for lead and arsenic and TCLP analyses takes a minimum of three days; therefore, options for expedited turnaround time are limited.

5.0 Certification by Project Coordinator

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 gather and evaluate 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.



David B. Mustafaga, PG, CPG
Project Coordinator

Tables

TABLE 1
Remedy Completion Criteria for Property Clearing, Soil Stabilization, Borrow Source Characterization, and Backfill Material Placement

Item	Test	Frequency	Sample Size	Acceptance Criteria	Corrective Measure
Pre-Excavation Utility Clearance	Obtain documentation from Contractor	One time	NA	Contractor provides documentation that utility clearance was conducted	Obtain missing documentation as necessary
Sediment and Erosion Control Installation	Conduct inspection to assure sediment and erosion control features are in place	weekly	Entire site	Control features are in place and not damaged or disturbed	Repair or replace damaged or missing components
Pre-Construction Property Clearing	Visual Inspection Survey	As Required	Entire site	Property is free of debris, foreign and deleterious material. Trees and shrubs cut to a stump and cut material removed in accordance with design plans.	Remove debris as warranted
Soil Stabilization Confirmation Testing	Soil Sampling in accordance with FSAP and QAPP for TCLP lead and, arsenic, and for pH	Per decision unit	Composite of 5 sub-samples	Soils meet criteria to be characteristically non-hazardous, acceptance criteria for landfill include TCLP arsenic results < 5.0 mg/L, TCLP lead < 5.0 mg/L and pH >2.0 and <12.5.	Additional stabilization through in-situ treatment in 1% of triple superphosphate increments by dry weight
Borrow Source Characterization of soil/structural fill	Chemical Analysis based on Borrow Source Questionnaire, Analyses described in Fill Import Plan, FSAP and QAPP	2 composite samples per 4,000 cubic yards of material	Composite based volume as described in Fill import plan	Chemical analysis as described in Fill Import Plan, FSAP, and QAPP, and meets Screening Criteria in Table A-6 of Indiana Department of Environmental Management (IDEM), Agency Non-Rule Policy Document, Uncontaminated Soil Policy, Waste-0064-NPD, April 10, 2015.	Retest material and if material fails a second time, resample again or evaluate an alternate borrow source
Demarcation Barrier Installation, Post-Excavation Grade and Prepared Subgrade	Visual Inspection Survey	As Required	Decision Unit	Free of debris, foreign and deleterious material. Demarcation barrier placed in required areas.	Remove debris as warranted. Verify demarcation barrier is properly installed per specification
Excavation Depth Verification	Perform a differential leveling survey to verify that one foot of material has been removed	As Required	Per decision unit	Survey must verify that one foot of soil has been removed within the decision unit	Excavate more soil until the differential level survey indicates one foot of soil has been removed
Compacted Soil Fill (Structural Fill) Placement	Visual Inspection of Material	during or following placement of each lift	Per decision unit	Visual Inspection of material as placed, assure it meets the grain size criteria and is free of deleterious material. After each finished lift, confirm consistency with borrow area/stockpile.	Remove deleterious material and oversized material. Inspect borrow stockpile to evaluate corrective measures
	Field Density	Visual during or following placement.	Per decision unit	Material shall be placed in15 -inch lifts maximum to achieve approximately 12-inches with compaction. Compaction efforts to achieve firm and unyielding subgrade.	Recompact or modify borrow material if material is too loose

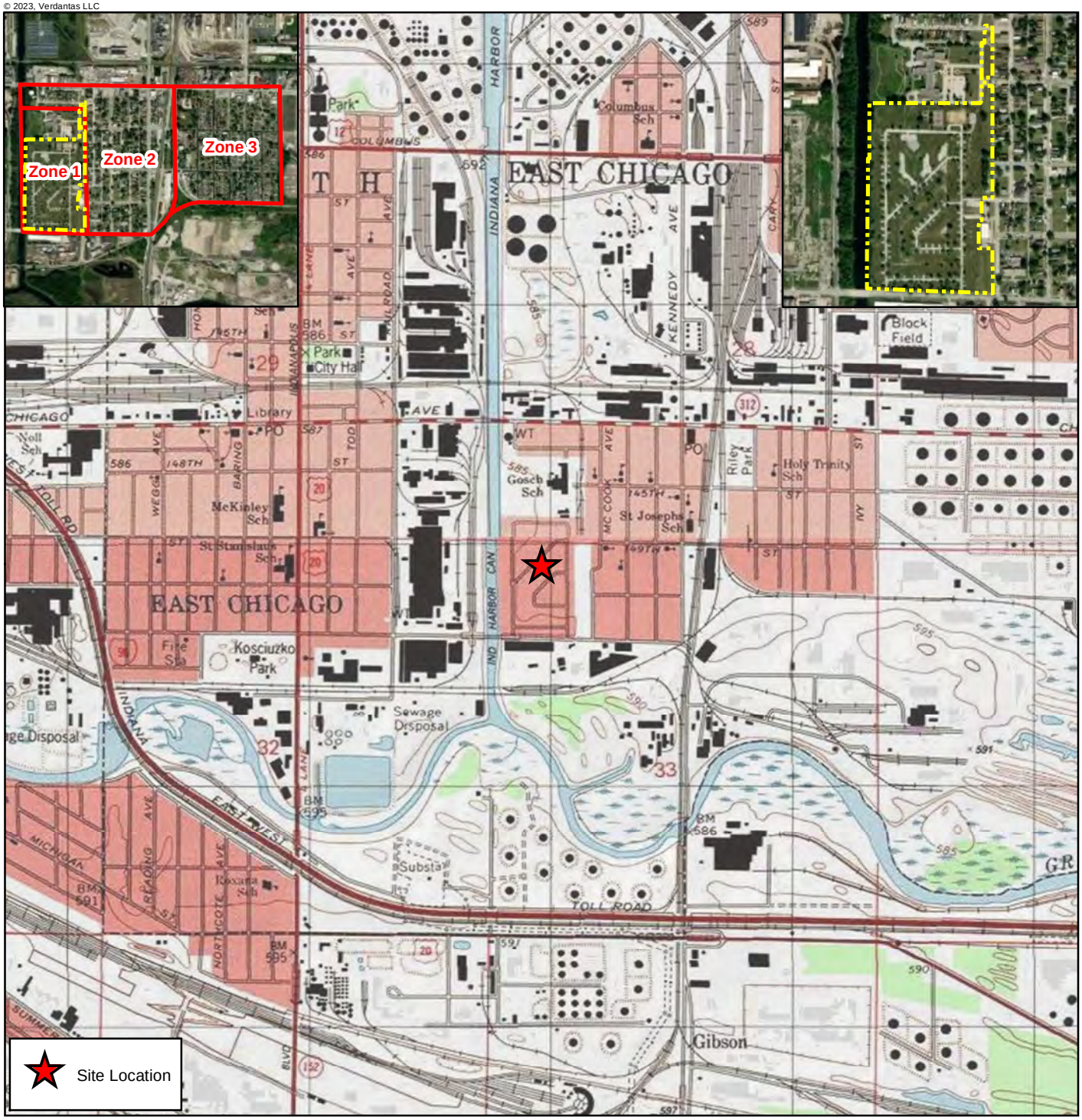
Backfill Final Grade Survey	Perform a differential leveling survey to verify that one foot of material has been added	As Required	Per decision unit	Survey must verify that one foot of soil has been added within the decision unit	Add more soil until the differential level survey indicates one foot of soil has been added
Seeding and Mulching	Visual inspection to verify seeding and mulching is complete as required per specifications	One time inspection post completion of seeding and mulching	Per decision unit	Visual inspection to assure that seeding and mulching was completed in designated areas per specifications	Request Contractor to amend areas requiring additional seeding and mulching
Site Restoration	Visual Inspection to verify contractor demobilization in complete including the removal of all equipment debris, supplies, sediment and erosion control features (if requested by owner), Site is secured per Owner	At project completion	Entire Site	Visual inspection verifies that all site restoration criteria are complete.	Notify Contractor to correct deficiencies as warranted.

TABLE 2A																						
Construction Progress Tracking																						
Decision Units Requiring Stabilization and Excavation																						
	Decision Unit																					
Remedy Activity	**A8**	**A9**	**B3**	**B4**	**B5**	**B6**	**B7**	**B9**	**C2**	**C4**	**C5**	**C6**	**C7**	**C8**	**D1**	**D4**	**D8**	**E2**	**E3**	**E4**	**E5**	**E9**
Demolition Completed - Cleared and Grubbed																						
DU Stabilized with TSP																						
Confirmatory Samples Collected (Date)																						
Confirmatory Analytical Data Received																						
Survey Base, Confirm 1' removed = Pass																						
Survey Failed (if survey fails excavate more material and re-survey, repeat if necessary)																						
Install Demarcation Barrier																						
Backfill Placement Material Meets Spec - Firm Unyielding Subgrade																						
Survey Top of Backfill to assure 1' Material Placed																						
Survey Fails (if survey fails add more material and re-survey, repeat if necessary)																						
Area Seeded and Mulched pre spec																						

TABLE 2B																			
Construction Progress Tracking																			
Decision Units Requiring Excavation Only																			
	Decision Unit																		
Remedy Activity	**A4**	**A5**	**A6**	**A7**	**B8**	**C9**	**D2**	**D3**	**D5**	**D6**	**D9**	**E1**	**E8**	**F1**	**F2**	**F3**	**F4**	**F8**	**F9**
Demolition Completed - Cleared and Grubbed																			
Excavated 1' across DU																			
Survey Base of Excavation - Assure 1' Removed																			
Survey Base, Confirm 1' removed = Pass																			
Survey Failed (if survey fails excavate more material and re-survey, repeat if necessary)																			
Install Demarcation Barrier																			
Backfill Placement Material Meets Spec - Firm Unyielding Subgrade																			
Survey Top of Backfill to assure 1' Material Placed																			
Survey Fails (if survey fails add more material and re-survey, repeat if necessary)																			
Area Seeded and Mulched pre spec																			

TABLE 2C		
Construction Progress Tracking		
Decision Units Requiring Stabilization without Excavation		
	Decision Unit	
Remedy Activity	**C3**	**E7**
Demolition Completed - Cleared and Grubbed		
Stabilized with TSP		
Confirmatory Samples Collected (Date)		
Confirmatory Analytical Data Received		
Testing - Pass or Fail		
If Failed, Conduct additional Stabilization		
Collect Additional Confirmation Samples		
Testing - Pass or Fail		
Area Seeded and Mulched per spec		

Figures



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0 1,000 2,000 4,000 Feet

1:24,000

Quadrangles: Whiting and Highland, IN

Source: The topographic map was acquired through the USGS Topographic Map web service.

The aerial photo was acquired through the Esri Imagery Web Service. Aerial photography dated 2020.

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Construction Quality Assurance/Quality Control Plan
OU1, Modified Zone 1, USS Lead Superfund Site

Property Location Map

East Chicago, Lake County, Indiana

Date:
April 2023

File Name:
15773_05_Fig01_PLM.mxd

Edited: 3/31/2023 By: kyusuf

Figure
1

Produced Using Esri's ArcGIS Software

DRAFT

0 100 200 400 Feet

1:2,400

PRIVATE ST
VERNON AV
MUNICIPAL DR
148TH ST
MCCOOK AV
149TH ST
149TH PL
150TH ST
151ST PL
151ST ST
MAGNOLIA ST
LARKSPUR ST
JONQUIL LN
ASTER ST
GLADIOLA ST
Indiana Harbor Canal

Former Goodman Park
Former WCHC Area

OU1MW6
OU1MW13
OU1MW14
OU1MW15
ECHA-MW-35
ECHA-MW-09
ECHA-MW-01
TW-34
TW-30
TW-15
TW-10
MW-12
TW-07
TW-16
TW-04
TW-23
TW-22
TW-21

Property Boundary
Parcel
2019 Remediated Soil Area
Existing Monitoring Wells
Temporary Monitoring Wells

Notes:
1) The aerial photo was acquired through the Esri Imagery Web Service. Aerial photography dated 2020.
2) Road names in gray have been vacated and removed.
3) The location of TW-04 is estimated from Amereco Phase II PDF Figures, this well is missing from digital files provided by others.

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April 2023

Construction Quality Assurance Quality Control Plan
OU1, Modified Zone 1, USS Lead Superfund Site

Property Plan

East Chicago, Lake County, Indiana

Figure 2

Produced Using Esri's ArcGIS Software

File Name: 15773_03_Fig02_PropertyPlan.mxd

Edited: 3/31/2023 By: kyusuf

Note:
The aerial photo was acquired through the Esri Imagery Web Service. Aerial photography dated 2020.

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April 2023

Construction Quality Assurance/Quality Control Plan
OU1, Modified Zone 1, USS Lead Superfund Site

Remedial Areas Map

East Chicago, Lake County, Indiana

Figure 3

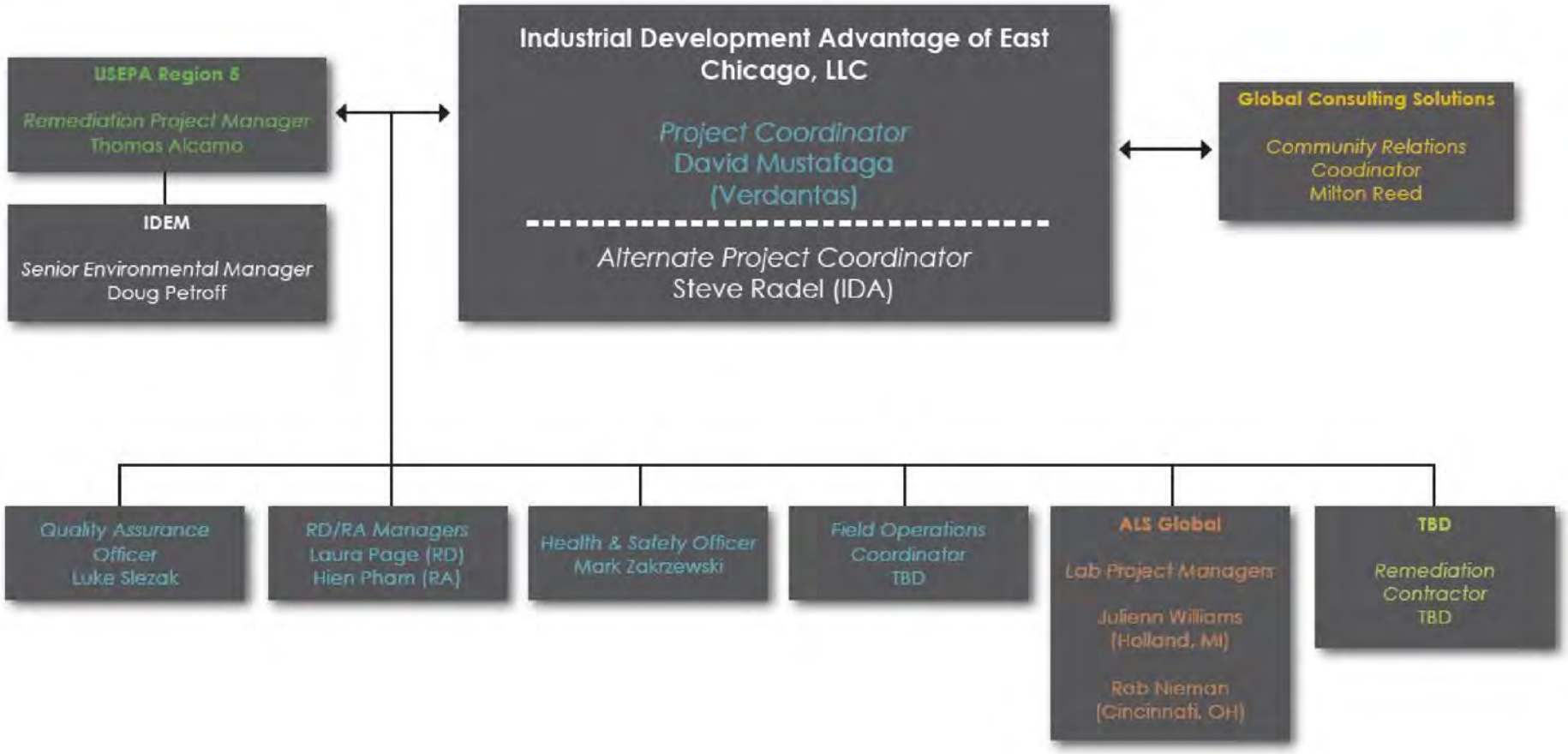
Produced Using Esri's ArcGIS Software

File Name: 15773_10_Fig03_PropSamps.mxd

Edited: 3/31/2023 By: kyusuf

Figure 4

Project Organization



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April 2023

Construction Quality Assurance/Quality Control Plan
OU1, Modified Zone 1, USS Lead Superfund Site

Project Organization

East Chicago, Lake County, Indiana

Figure 4

Produced Using Esri's ArcGIS Software

File Location: Z:\GIS\Projects\015\15773_EastChicago\15773_01_Fig04_OrgChart.mxd Edited: 3/31/2023 User: kyusuf

Appendix A

Daily Field Report Template

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Daily Field Report

Project #: _____ Daily Field Report No: _____

Project Name: _____ Date: _____

Location: _____ Weather: _____

_____ _____

City, State, Zip _____ Time on Site: _____

Contractor (Prime): _____ _____

Subcontractor: _____

Visitors on Site: _____

Description of Work:

Materials Delivered Today:

Contractor's Work Force		
Trade / Title	Company	#

Contractor's Equipment		
Type / Model	In Use	Not In Use
	☐	☐
	☐	☐
	☐	☐
	☐	☐

Problems Encountered Today:

Instruction To Contractor (relative to above problem):

Progress Photos:

List of Attachments:

Work Observed By: _____
Reported By: _____
Date Report Prepared: _____