UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

MINGO JUNCTION STEEL WORKS LLC
CORRECTIVE ACTION AREAS VIM AND VIIM
100 PENNSYLVANIA AVE
WEIRTON, WEST VIRGINIA

EPA ID NO. WVD000068908

Prepared by
Land, Chemicals, and Redevelopment Division

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Table of Contents

List of Acronyms

AR	Administrative Record
BDC	Business Development Corporation of the Northern Panhandle
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAA	Corrective Action Area
COC	Contaminant of Concern
EPA	Environmental Protection Agency
ELCR	Excess Lifetime Cancer Risk
FDRTC	Final Decision Response to Comments
HI	Hazard Index
MCL	Maximum Contaminant Level
MJSW	Mingo Junction Steel Works, LLC
MNA	Monitored Natural Attenuation
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated biphenyls
RSL	Regional Screening Level
RCRA	Resource Conservation and Recovery Act
S&GMP	Soil and Groundwater Management Plan
SB	Statement of Basis
SVOC	Semi Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCL	Target Compound List
VOC	Volatile Organic Compound
VRA	Voluntary Remediation Agreement
VRP	Voluntary Remediation Program
WSC	Weirton Steel Corporation
WVDEP	West Virginia Department of Environmental Protection

Section 1: Introduction

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for Mingo Junction Steel Works (MJSW) Corrective Action Areas VI and VII (CAAs VIM and VIIM, with the M suffix designating a portion of the property acquired by MJSW), in the central portion of the former Cleveland-Cliffs Weirton LLC facility located in Weirton, West Virginia (Facility). EPA's proposed remedy for the CAAs VIM and VIIM consists of compliance with groundwater and land use restrictions implemented through institutional controls, and groundwater monitored natural attenuation. This SB highlights key information relied upon by EPA in proposing its remedy for CAAs VIM and VIIM.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended, commonly referred to as the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 et seq. The Corrective Action program requires that owners or operators of facilities subject to certain provisions of RCRA investigate and address releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or emanated from their properties.

EPA will propose remedies, subject to the requisite public participation requirements, in a series of separate SBs to fully address the Facility's RCRA corrective action obligations for soil and groundwater. In this SB, EPA is proposing groundwater and land use restrictions at CAAs VIM and VIIM.

EPA is providing a thirty (30)-day public comment period on this SB. EPA may modify this proposed remedy based on comments received during this period. After the public comment period and review of any comments received, EPA will announce its selection of a final remedy for the Parcel in a Final Decision and Response to Comments (FDRTC).

Information on the Corrective Action Program as well as a fact sheet for the Facility can be found at: https://www.epa.gov/hwcorrectiveactionsites. The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. See Section 8, Public Participation, below, for information on how you can participate in the public comment process and how you may review the AR.

Section 2: Facility Background

2.1 Introduction

From approximately 1908 through 1984, the Facility was operated as a totally integrated steel mill that produced hot rolled steel, cold rolled steel, tin mill products; galvanized products and other coated flat rolled products.

Due to releases of hazardous wastes at the Facility, EPA issued Weirton Steel Corporation (WSC) a RCRA § 3008(h) Unilateral Administrative Order in September 1996 (1996 UAO) to perform investigation and remediation activities at the Facility and surrounding property. WSC filed for Chapter 11 bankruptcy in 2004. In subsequent years the Facility's ownership changed several times, with ArcelorMittal Weirton LLC (ArcelorMittal) taking ownership in December 2012 and assuming WSC's liability under the 1996 UAO.

Under the approved facility-wide RCRA Facility Investigation (RFI) Work Plan submitted to the EPA pursuant to the 1996 UAO, twelve Corrective Action Areas were delineated. The areas that are the subject of this Statement of Basis, CAAs VIM and VIIM, occupy approximately 282 acres within the central portion of the Facility, in an area no longer used for steel manufacturing.

CAAs VIM and VIIM were conveyed from ArcelorMittal to Mingo Junction Steel Works LLC and Business Development Corporation of the Northern Panhandle (BDC) in early 2017 as part of two real estate transactions that conveyed a combined total of 1,300 acres of abandoned manufacturing property from ArcelorMittal to these two entities, the vast majority going to Mingo Junction Steel Works LLC. A map depicting current ownership of the Facility is included as Attachment 1 below. In the map below, active steel manufacturing still occurs under operation by ArcelorMittal in the red areas. The green areas of the Facility are no longer being used for steel manufacturing and are currently either abandoned or being used for other industrial purposes.

On September 26, 2018, EPA entered into an Administrative Order on Consent (AOC) with ArcelorMittal to address corrective action obligations at the active steel making operations at the Facility and a second AOC with MJSW to address corrective action obligations at the abandoned areas of the Facility where steel making is no longer occuring. After entering into these AOCs, the 1996 UAO was terminated. Corrective action obligations for CAAs VIM and VIIM have been assumed by Mingo Junction Steel Works LLC, pursuant to their 2018 AOC.

MJSW and BDC applied to enter CAAs VIM and VIIM into the West Virginia Department of Environmental Protection's (WVDEP) Voluntary Remediation Program (VRP) in February 2020. MJSW and WVDEP executed a Voluntary Remediation Agreement (VRA) on May 1, 2020. MJSW elected to address its corrective action obligations simultaneous with its participation in the VRP. EPA agreed to allow MJSW to address its corrective action obligations for CAAs VIM and VIIM in its 2018 AOC through participation in the VRP with EPA's review and comment. Subsequently, EPA reviewed a West Virginia Site Assessment Report (4/16/21), Risk Assessment Report (7/26/21), and Remedial Action Plan (10/19/21) in place of a Corrective Action Final RFI Report, Risk Assessment Report, and Corrective Measures Study for CAAs VIM and VIIM. WVDEP issued MJSW and BDC a VRP certification of completion. BDC and MJSW filed a land use covenant for the Facility in March 2022.

2.2 CAA VIM – Former Iron-Making Area

The primary activities in CAA VIM have included iron-making and related support

operations, power and steam generation, the central machine shop, and trucking (fueling and maintenance) operations (see Figure 2).

Blast Furnaces

Historically, four blast furnaces were located on CAA VIM and were used to produce molten iron for steelmaking. All four have been permanently shut down. The blast furnaces combined a mixture of iron ore, iron pellets, sinter, scrap, and fluxing agents with coke, fuel oil, pitch, and oxygen-enriched heated air to produce iron. Iron ore was shipped to the Facility by rail and stored in two designated areas near the blast furnaces.

Process gases from the blast furnaces were washed in a gas cleaning system and then used in plant for process heat and steam generation purposes. Furnace cooling waters were discharged to the Ohio River via outfall treatment facilities.

Sinter Plant

The Sinter Plant was demolished in 2006 and 2007. Historically, the Sinter Plant was located on CAA VIM and used a process to agglomerate iron ore fines and steel mill iron oxide byproducts into a suitable raw material for the production of iron in a blast furnace. The first step in the production of sinter involves the mixing of ore fines, thickener sludge, iron scale, and other iron-bearing materials with coke breeze and limestone to form a mass which can be ignited to produce sinter. Coke breeze is added to provide the required fuel for downdraft combustion in the sintering process, while limestone provides the necessary flux for the sinter when it is subsequently processed in the blast furnace. These materials are blended into a mixture which will result in rapid and uniform sintering. The final sintered material is subsequently charged into the blast furnace.

Steam and Power Generation

There was a large steam and power generation complex within CAA VIM. The complex included five boilers which were fueled with natural gas. There were also two water treatment systems dedicated to producing high quality boiler feed water for these units. Steam from these units was used in the plant for process applications. The boiler house is shut down and the Facility currently uses package boilers for steam production.

Company Machine Shop

The primary machine shop that was historically used at the Facility is located on CAA VIM along Main Street next to the Foster Wheeler facility (Central Machine Shop). Operations included the manufacturing of components used in the steel-making process at the Facility.

Trucking Department

Fueling and maintenance of Facility trucks was historically performed at the Trucking

Department Maintenance Building located next to the Central Machine Shop on CAA VIM.

2.3 CAA VIIM – Former Steel-Making Area

The primary activities in CAA VIIM included steel making and related support operations. This area includes the former Detinning Plant, Hot Mill Wastewater Treatment Plant, the Veolia Acid/Oil Treatment Plant, and the Hydrochloric Acid Regeneration Plant. (See Figure 3).

Basic Oxygen Furnaces

Historically, two Basic Oxygen Furnaces (BOF) were located on CAA VIIM and were used to produce molten steel from molten iron, scrap metal, and other additives. Both furnaces have been permanently shut down. After being transferred to a 275-ton charging ladle, a 400-ton charging crane transported the molten iron to the steel-making vessel. Scrap metal was also added to the vessel by a 400-ton crane at the rate of two boxes per charge. Upon completion of the steel-making cycle, steel was tapped into a ladle for further processing at the Continuous Caster.

Continuous Caster

The Continuous Caster, which has also been shut down, was located at the north end of the BOF building on CAA VIIM. The casting machine received molten steel which had been vacuum degassed. As the molten steel passed through the water-cooled, copper lined molds in the caster, it solidified and emerged as a continuous steel slab which was then cut to the desired length.

Detinning Plant

The Detinning Plant, which was located on CAA VIIM, shut down in 1996, reclaimed tin from tin-bearing sludges generated at the Tin Mill. Utilizing a chemical and physical process to separate tin from iron compounds, the tin was recovered as tin hydroxide, heated to tin oxide, and eventually tin metal. Iron was removed as “Prussian Blue” and landfilled as a hazardous waste. Wastewaters from the separation process were discharged to the C&E Outfall Wastewater Treatment Plant. The RCRA Regulated units (EPA ID Number WVD 000068908) were removed from the Facility and a closure report was submitted to the WVDEP in September 2000.

Hot Strip Mill Wastewater Treatment Plant

The Hot Strip Mill Wastewater Treatment Plant located on CAA VIIM and was permanently shut down in 2007. This plant received and treated water from the Hot Strip Mill. Water was pumped from the Hot Strip Mill to four concrete settling basins, where primary settling and oil skimming operations occurred. Each basin has a capacity of 225,000 gallons and was equipped with oil skimmers. The skimmed oil from each basin flowed to a 6,000-gallon storage tank, where a vacuum truck periodically picked up and transported the oil to the Veolia plant for reclamation. The settled solids from the basins were periodically removed with a clam bucket and

loaded into sealed bed dump trucks or sealed roll-off containers for disposal in a permitted nonhazardous waste landfill.

Water from the settling basins flowed by gravity to the gravity filters which were composed of a media of sand and gravel. Filtered water flowed to a clear well from where a portion of it was recycled to the plant and the remainder discharged to Harmon Creek.

Veolia Water North America Chemical Treatment Plant

The Veolia Chemical Treatment Plant was located on CAA VIIM and was permanently shut down in December 2011. It was used to neutralize acidic pickle rinse and scrubber water. Alkaline wastes generated on-site at the Facility as well as off-site were used, together with hydrated lime, to neutralize the acidic wastewaters. The hydroxide containing waste was then agglomerated with polymer and settled in a clarifier. The solids underflow were filtered in a plate and frame filter press to yield solid iron hydroxide cake that was disposed off-site in a permitted solid waste landfill. The clear water from the clarifiers was discharged via the clear well to the C&E-Outfall sewer system.

Veolia Water North America Oil Treatment Plant

The Veolia Oil Treatment Plant was also located on CAA VIIM and was permanently shut down in December 2011. It functioned as a used oil processing plant which reclaimed used oils from Facility operations. The reclaimed oil which was produced was used in other Facility operations as a fuel. Used oils that were recovered at Veolia came mainly from the cold Rolling Mills which used an oil-water emulsion in the process. Other sources of used oils were the wastewater treatment systems from which floating oils were removed daily and with a minor amount of used oils coming from miscellaneous in-plant sources.

Oils were removed from the rolling oil emulsion by breaking the emulsion in cookers and floating off the oil in a dissolved air flotation unit. Miscellaneous used oils also received an acid treatment to remove iron materials. After the oil was removed from the other wastes, it was filtered.

Hydrochloric Acid Regeneration Plant (HCL Plant)

The Hydrochloric Acid Regeneration Plant was located on CAA VIIM and was permanently shut down in August 2009. It processed spent acid, primarily from the pickling lines in the Strip Mill. The feed entered the reactor and was heated to approximately 1600°F in a fluidizing bed reactor by natural gas burners, so that the water and free acid evaporated. The ferrous chloride reacted with oxygen to produce iron oxide and hydrochloric acid gas. The steam, hydrochloric acid gas, and the burner exhaust gases left the reactor at about 1600°F and the iron inside was left behind.

The hot gases leaving the reactor were cooled so that the hydrochloric acid gas could be

dissolved in water. Cooling was achieved by passing the gas back through a venturi scrubber and the evaporator. Most of the heat was used up evaporating the feed solution. The cooled gas then went through the absorber where the hydrochloric acid was dissolved in water. This recovered acid was then recycled for re-use. Since August 2009, spent pickle liquor has been sold and shipped offsite for beneficial reuse as a water treatment chemical.

2.4 Hydrogeology

The CAAs VIM and VIIM are underlain by approximately 10 feet of fill material consisting of slag and soil that have been placed historically to facilitate redevelopment of the Facility. The fill materials rest directly on alluvial deposits ranging up to 50 feet in thickness. The alluvial deposits coarsen downward, from silt and silty clay beneath the fill materials to sand and gravel that rest directly on underlying bedrock. Bedrock consists primarily of shale, claystone, and sandstone.

Localized areas of perched groundwater exist at the base of the fill materials. The regional groundwater table lies within the alluvial deposits approximately 30 to 40 feet below ground surface. A groundwater divide exists within the alluvial aquifer near the boundary of CAAs VIM and VIIM. Groundwater flow north of the divide is to the north/northwest towards the Ohio River and groundwater flow south of the divide is to the south towards Harmon Creek. Groundwater flow rates within the alluvial aquifer are estimated to range from 0.04 feet/day to 0.6 feet/day.

Section 3: Summary of Environmental Investigations and Interim Measures

3.1 Environmental Investigations

Fifteen Solid Waste Management Units (SWMUs) were initially identified in CAA VIM during the 1988 RCRA Facility Assessment (RFA) prepared by Civil & Environmental Consultants, Inc., and one was noted as having potential for a release and recommended that assessment be performed. One additional SWMU was identified in CAA VIM during the preparation of the 1999 Facility-wide RCRA Facility Investigation (RFI) Work Plan. One hundred sixteen SWMUs were identified in CAA VIIM during the RFA and six were identified as having potential for a release. Eleven additional SWMUs were identified in CAA VIIM during the preparation of the 1999 RFI Work Plan. EPA approved the RFI Work Plan on July 20, 1999. Since EPA approval of the 1999 RFI Work Plan, ArcelorMittal has identified several other areas of concern in CAAs VIM and VIIM that were addressed as part of the RFI which was conducted between 2013-2018. These areas include:

• The Former Blast Furnace Oil House (CAA VIM) where drums of used oil and other waste materials were stored prior to being transferred to the former Veolia Oil Recycling Plant or shipped off-site for disposal;

• Two former 10,000-gallon diesel ASTs (and diesel fueling station) and one 10,000-gallon gasoline AST (and gasoline fueling station) located at the former Trucking Department (CAA VIM);

• An in-ground concrete tank located at the north end the former Central Machine Shop (CAA VIM) that was used to collect spills and floor cleaning rinse waters inside the building;

• A 10,000-gallon diesel AST tank and fueling station east of the former BOP building (CAA VIIM);

• A drum storage pad and building on the south side of the former BOP building (CAA VIIM) where used oil and other waste materials were stored prior to being transferred to the former Veolia Oil Recycling Plant or shipped off-site for disposal; and

• Stained soil in drum/material storage areas around the south end of the former Hydrochloric Acid Regeneration Plant (CAA VIIM).

For all groundwater investigations conducted at CAAs VIM and VIIM, groundwater concentrations were screened against federal Maximum Contaminant Levels (MCLs) and West Virginia De Minimus Standards. "De Minimus Standards" are contaminant screening levels that WVDEP has determined pose no substantial risk to human health based on the current or reasonably anticipated future land use. For groundwater COCs, West Virginia De Minimus Standards are as stringent, or more stringent, than federal MCLs and also provide values for COCs where no federal MCL exists.

For all soil investigations conducted at CAAs VIM and VIIM, surface soil concentrations were screened against West Virginia De Minimis Standards and EPA Regional Screening Levels (RSLs) for residential soil. Subsurface soil concentrations were screened against West Virginia De Minimis Standards and EPA RSLs for industrial soil. Surface and subsurface soils were also screened against EPA RSLs and West Virginia De Minimus Standards for protection of groundwater. RSLs and De Minimus Standards for groundwater protection represent concentration levels of a contaminant in groundwater that, if exceeded, indicates a potential health concern that warrants further investigation.

COCs for surface soil, subsurface soil and groundwater are listed in the tables below. Where sample results exceed a screening level or MCL, the screening level or MCL that has been exceeded is shaded in grey. The surface and subsurface soil tables below compare sample results with the more stringent of the EPA RSL and the West Virginia De Minimus Standards. The groundwater table below compares groundwater sample results with the more stringent of the EPA RSL and the West Virginia De Minimus Standard as well as the MCL, if one is available.

3.1.1 Surface Soil Sampling

Contaminant concentrations above the RSLs and De Minimis Standards for direct contact with residential soil were detected at CAA VIM and VIIM. A total of 83 surface soil samples (including six duplicate samples) were collected during the implementation of the CAA VIM and VIIM RFI Work Plan and a supplemental investigation conducted from October 2013 through October 2018. COCs in surface soils include Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and Target Analyte List (TAL) metals including mercury and cyanide. Samples were analyzed for different combinations of COCs based on historical activities at the sample location. Another 5 surface soil samples (including one duplicate sample) were collected from the wooded hillside comprising the western portion of CAA VIIM were analyzed for metals.

A total of 69 constituents were detected in the 8 surface soil samples included in this analysis. The 69 constituents included VOCs, SVOCs, PCBs (Aroclor 1254 and Aroclor 1260), metals, and cyanide. Of the 69 detected constituents, 27 were detected at a maximum concentration exceeding the residential soil RSLs and 28 were detected at a maximum concentration exceeding the protection of groundwater RSLs. The following table summarizes the COCs above the soil and protection of groundwater RSL:

Surface Soil Sample Locations

Sample	Location	Map
VII-SS-05	SWMU W-701	Figure 3
VII-SS-06	SWMU W-701	Figure 3
VII-SS-09	SWMU W-800	Figure 4
VII-SS-17	Next to SWMU S-A2	Figure 5
VII-SS-22	SWMU W-1001)	Figure 6
VII-SS-24	SWMU W-1001	Figure 6
VII-SS-27	Next to SWMU S-N13	Figure 6
VII-SS-30	SWMU E-29	Figure 7
VII-SS-37	SWMU-1008	Figure 8
VII-SS-41	SWMU-1008	Figure 8
VII-SS-49	SWMU W-1004	Figure 8
VII-SS-50	SWMU S-K1	Figure 8
VI-SS-01	Blast Furnace Oil House	Figure 2
VI-SS-07	SWMU W-601	Figure 2

Constituent	Units	Maximum Detected Concentration	Sample with Max Detect (feet below ground surface)	Residential Soil RSL*	Protection of Groundwater RSL **
SVOCs					
Acenaphthene	mg/kg	20	VI-SS-07 (0-0.5')	**360**	**11**
Benzo[a]anthracene	mg/kg	48	VI-SS-07 (0-0.5')	**0.21**	**0.22**
Benzo[a]pyrene	mg/kg	28	VI-SS-07 (0-0.5')	**0.016**	**4.8**
Benzo[b]fluoranthene	mg/kg	31	VII-SS-41 (0-1')	**0.16**	**6**
Benzo[k]fluoranthene	mg/kg	14	VII-SS-41 (0-1')	**1.6**	58
Dibenz(a,h)anthracene	mg/kg	5.9	VI-SS-07 (0-0.5')	**0.016**	**1.92**
Fluorene	mg/kg	22	VI-SS-07 (0-0.5')	240	**10.8**
Indeno[1,2,3-cd]pyrene	mg/kg	18	VII-SS-41 (0-1')	**0.16**	19.6
Naphthalene	mg/kg	32	VI-SS-07 (0-0.5')	**2**	**0.0076**
Pyrene	mg/kg	100	VI-SS-07 (0-0.5')	180	**26**
1,1'-Biphenyl	mg/kg	6.3	VI-SS-07 (0-0.5')	**4.7**	**0.0174**
2-Methylnaphthalene	mg/kg	76	VI-SS-07 (0-0.5')	**24**	**0.38**
Benzaldehyde	mg/kg	0.43	VII-SS-37 (0-1')	170	**0.082**
Dibenzofuran	mg/kg	13	VI-SS-07 (0-0.5')	**7.8**	**0.3**
Diethyl phthalate	mg/kg	14	VII-SS-06 (0-0.4')	5100	**12.2**
PCBs					
PCB-1254	mg/kg	0.58	VII-SS-07 (0-0.7')	**0.12**	**0.04**
PCB-1260	mg/kg	4.3	DUP-1-11-30-17	**0.24**	**0.11**
Inorganics					
Aluminum	mg/kg	72000	VII-SS-05 (0-0.3')	**7700**	**60000**
Antimony	mg/kg	6.9	VII-SS-24 (0-1')	**3.1**	**0.7**
Arsenic	mg/kg	17	VI-SS-06 (0-0.5')	**0.43**	**0.03**
Cadmium	mg/kg	8	VI-SS-06 (0-0.5') DUP***	**0.71**	**0.28**
Cobalt	mg/kg	100	VII-SS-27 (1.5-2')	**2.3**	**0.54**
Copper	mg/kg	490	VII-SS-30 (0-0.5')	**310**	56
Iron	mg/kg	430000	VII-SS-22 (0-2')	**5500**	**700**
Lead	mg/kg	830	VI-SS-06 (0-0.5')	**200**	**180**

Manganese	mg/kg	36000	VII-SS-35 (1-2')	**180**	**56**
Mercury	mg/kg	2.8	VII-SS-09 (0-0.5')	**0.71**	**0.0066**
Nickel	mg/kg	4600	VII-SS-30 (0-0.5')	**140**	**52**
Silver	mg/kg	2	VII-SS-17 (0-2')	39	**1.6**
Thallium	mg/kg	0.81	VII-SS-50 (0-2')	**0.078**	0.028
Vanadium	mg/kg	620	VII-SS-49 (0-0.6')	**5.5**	**172**
Zinc	mg/kg	5100	VII-SS-17 (0-2')	**2300**	**740**
Other Parameters					
Cyanide, Total	mg/kg	26	VI-SS-01 (0-1')	**2.3**	0.03

*Direct contact criteria shown are the lower of the USEPA residential soil RSLs or the WVDEP residential soil De Minimis values. RSLs for non-carcinogenic chemicals are divided by 10 to account for cumulative effects.

** Protection of Groundwater criteria "soil to groundwater RSL" refers to an RSL established by the EPA that indicates a contaminant concentration in soil above which there is a potential for significant migration of that contaminant into groundwater. The numbers are based on a dilution attention factor (DAF) of 20., As infiltrating precipitation containing leached contaminant recharges an aquifer at the water table, it mixes with ground water, reducing the leachate contaminant concentration. The amount of dilution and the resulting ground water contaminant concentration can be calculated with a DAF.

*** Duplicate of VI-SS-03 S3

Wooded Hillside West of Main Street (Figure 9: Wooded Hillside)

Constituent	Units	Maximum Detected Concentration	Sample with Max Detect (feet below ground surface)	Direct Contact*	Protection of Groundwater**
Inorganics					
Aluminum	mg/kg	12000	VII-SS-57(0-1)	**7700**	60000
Arsenic	mg/kg	32	VII-SS-57(0-1)	**0.43**	**5.8**
Cobalt	mg/kg	15	VII-SS-57(0-1)	**2.3**	**0.54**
Iron	mg/kg	64000	VII-SS-57(0-1)	**5500**	**700**
Manganese	mg/kg	2100	DEP01***	**180**	**56**
Thallium	mg/kg	0.51	VII-SS-57(0-1)	**0.078**	2.8
Vanadium	mg/kg	47	VII-SS-57(0-1)	**5.5**	172

*Direct contact criteria shown are the lower of the USEPA residential soil RSLs or the WVDEP residential soil De Minimis values. RSLs for non-carcinogenic chemicals are divided by 10 to account for cumulative effects.

**Protection of Groundwater criteria are based on a DAF of 20.

***Duplicate of VII-SS-56 collected by WVDEP.

3.1.2 Subsurface Soil Sampling

Contaminant concentrations above RSLs and De Minimis standards for direct contact industrial soils and RSLs for the protection of groundwater were detected at the Facility. A total of 43 subsurface soil samples (including three duplicate samples), were collected from the soil borings installed in CAAs VIM and VIIM in October 2013 through December 2017. Subsurface soils were analyzed for different combinations of surface soil COCs listed in section 3.1.1, dependent on the historical activities at the sample location.

Another 48 subsurface soil samples (including two duplicate samples) from bottom and sidewalls of the excavation to remove contaminated soil at the former Yard Office Locomotive Fueling Station (SWMU W-700) were analyzed for benzene, toluene, ethylene and xylene (BTEX), PAHs, and PCBs.

A total of 62 constituents were detected in the 91 subsurface soil samples including 13 VOCs, 22 SVOCs (including 16 PAHs), three PCBs (Aroclor 1248, Aroclor 1254, and Aroclor 1260), 23 metals, and cyanide. Of the 62 detected constituents, four were detected at a maximum concentration exceeding the industrial direct contact RSLs and 15 were detected at a maximum concentration exceeding the protection of groundwater RSLs. The following table shows the VOC and SVOC sampling results.

Subsurface Soil Sample Locations

Sample	**Location**	**Map**
VII-SB-104	Veolia Oil Recycling Plant	Figure 8
VII-MW-03P	SWMU S-K1	Figure 8
IM-W700-S-20	Yard Office Interim Measure (SWMU W-700)	Figure 2-3
IM-W700-S-41	Yard Office Interim Measure (SWMU W-700)	Figure 2-3
VII-MW-01P	Near HCL Plant	Figure 2-3
VII-MW-03P	Near HCL Plant	Figure 2-3
IM-W700-S-13	Yard Office Interim Measure (SWMU W-700)	Figure 2-3
VI-SB-103	Blast Furnace Oil House	Figure 2
VII-SB-105	SWMU S-F27	Figure 8
VI-MW-02A	Near waste oil sump at Central Machine Shop	Figure 8
VII-SB-107	Near waste oil collection sump	Figure 8
VII-MW-03A	Downgradient of the HCL plant.	Figure 8

Constituent	**Units**	**Maximum Detected Concentration**	**Sample with Max Detect (feet below ground surface)**	**Direct Contact***	**Protection of Groundwater ****
VOCs					
Methylene Chloride	mg/kg	0.089	VII-SB-104 (38-40')	320	**0.054**
Tetrachloroethene	mg/kg	0.051	VII-MW-03P (8-10')	39	**0.036**
SVOCs					

Acenaphthylene	mg/kg	35	IM-W700-S-20	4500	**11**
Benzo[a]anthracene	mg/kg	8.7	IM-W700-S-41	21	**0.22**
Benzo[a]pyrene	mg/kg	4.6	IM-W700-S-41	**2.1**	0.58
Benzo[b]fluoranthene	mg/kg	8.7	IM-W700-S-41	21	**6**
Naphthalene	mg/kg	11	IM-W700-S-20	**8.6**	**0.0076**
1,1'-Biphenyl	mg/kg	0.065	VII-MW-01P (11-12')	20	**0.0174**
2-Methylnaphthalene	mg/kg	11	VII-MW-03P (10-12')	300	**0.38**
PCBs					
PCB-1248	mg/kg	0.039	IM-W700-S-13	0.94	**0.024**
PCB-1260	mg/kg	0.13	VI-SB-103 (4-5')	0.99	**0.11**
Inorganics					
Arsenic	mg/kg	13	VII-SB-105 (6-8')	**3**	**0.03**
Cobalt	mg/kg	19	VI-MW-02A (42.1-43')	35	**0.54**
Iron	mg/kg	86000	VII-SB-107 (4-6')	**82000**	**700**
Manganese	mg/kg	9000	VII-MW-03A (11-12')	**2600**	**56**
Nickel	mg/kg	55	VII-SB-105 (6-8')	1700	**52**

*Direct contact criteria shown are the lower of the USEPA industrial soil RSLs or the WVDEP industrial soil De Minimis values. RSLs for non-carcinogenic chemicals are divided by 10 to account for cumulative effects.

** Protection of Groundwater criteria are based on a DAF of 20.

3.1.3 Groundwater Investigation

Contaminant concentrations above MCLs, or for constituents for which no MCL is available, RSLs and De Minimis standards for groundwater, were detected at the Facility. Three rounds of groundwater samples (November 2013, February 2014, and March/April 2019) from 11 onsite monitoring wells were analyzed for TCL VOCs, TCL SVOCs, TAL metals, and cyanide. Two rounds of groundwater samples (January and March/April 2019) from an additional six onsite monitoring wells for analysis of PAHs or TCL VOCs plus naphthalene.

Of the 83 detected constituents, 37 were detected at a maximum concentration exceeding the tapwater RSLs and four were detected at a maximum concentration exceeding the MCLs (aluminum, iron, and manganese Secondary MCLs were also exceeded) as follows:

Groundwater Monitoring Summary (Samples located on Figures 1 and 3-5)

Constituent	Units	Maximum Detected Concentration	Sample with Max Detect / Year Sampled	Screening Criteria*	MCLs **
VOCs					
1,1-Dichloroethane	ug/L	7	VII-MW-01A –2013	**2.8**	-
1,2-Dichlorobenzene	ug/L	37	VII-MW-03P- 2013	**30**	600
cis-1,2-Dichloroethene	ug/L	10	VII-MW-01A- 2013	**2.5**	70
1,4-Dichlorobenzene	ug/L	0.59	VII-MW-03P- 2013	**0.48**	75
Benzene	ug/L	0.54	VII-MW-03P- 2013	**0.46**	5
Chloroform	ug/L	4.3	VII-MW-02A- 2013	**0.22**	80
Dichlorobromomethane	ug/L	1.4	VI-MW-01A- 2013	**0.13**	-
Ethylbenzene	ug/L	16	VII-MW-03P- 2013	**1.5**	700
Naphthalene	ug/L	24	VII-MW-01P - 2013	**0.12**	-
Tetrachloroethene	ug/L	10	VII-MW-03P- 2013	**4.1**	**5**
Trichloroethene	ug/L	1.8	VII-MW-03P- 2013	**0.28**	5
Vinyl chloride	ug/L	0.49	VII-MW-03P- 2013	**0.019**	2
Xylenes, Total	ug/L	61	VII-MW-03P- 2013	**19**	10000
SVOCs					
1,1'-Biphenyl	ug/L	2.6	VII-MW-03P- 2013	**0.083**	-
2-Methylnaphthalene	ug/L	30	VII-MW-03P- 2013	**3.6**	-
Benzo[a]anthracene	ug/L	0.24	VII-MW-02A- 2013	**0.012**	-
Benzo[a]pyrene	ug/L	0.21	VII-MW-02A- 2013	**0.025**	**0.2**
Benzo[b]fluoranthene	ug/L	0.34	VII-MW-02A- 2013	**0.25**	-
Bis(2-ethylhexyl) phthalate	ug/L	13	VII-MW-03A- 2013	**5.6**	**6**
Dibenz(a,h)anthracene	ug/L	0.41	VII-MW-02A- 2013	**0.0034**	-
Dibenzofuran	ug/L	1.5	VII-MW-03P- 2013	**0.79**	-
Indeno[1,2,3-cd]pyrene	ug/L	0.37	VII-MW-02A- 2013	**0.034**	-
Naphthalene	ug/L	23	VII-MW-03P- 2013	**0.12**	-
Inorganics					

Aluminum	ug/L	7000	VII-MW-03A - 2013	**2000**	**200**
Antimony	ug/L	0.94	VII-MW-02P – 2013	**0.78**	6
Arsenic	ug/L	2.4	VII-MW-02P - 2019	**0.052**	10
Cadmium	ug/L	1.4	VII-MW-03A - 2013	**0.18**	5
Cobalt	ug/L	98	VII-MW-01P - 2013	**0.6**	-
Iron	ug/L	74000	VII-MW-03A - 2019	**1400**	**300**
Constituent	**Units**	**Maximum Detected Concentration**	**Sample with Max Detect**	**Screening Criteria***	**MCLs ****
Lead	ug/L	31	VII-MW-03A - 2013	**10**	**10**
Manganese	ug/L	30000	VII-MW-01P - 2013	**43**	**50**
Mercury	ug/L	0.067	VI-MW-02AR - 2013	**0.063**	2
Nickel	ug/L	110	VII-MW-01P - 2013	**39**	-
Selenium	ug/L	15	VII-MW-01P - 2014	**10**	50
Thallium	ug/L	0.15	VII-MW-03A - 2013	**0.02**	2
Vanadium	ug/L	10	VII-MW-02P - 2013	**1.2**	-
Other Parameters					
Cyanide, Total	ug/L	60	MA-MW-07A - 2013	**0.15**	200

* Screening criteria shown are the lower of the USEPA Tapwater RSLs or the WVDEP groundwater De Minimis values.

** Secondary MCLs are presented for aluminum, iron, and manganese

3.2 Interim Measures

3.2.1 Former Yard Office Locomotive Fueling Station Interim Measure (SWMU W-700)

Soil impacted by the release of diesel fuel around the former Yard Office Locomotive Fueling Station (SWMU W-700 located in CAA VIIM) was excavated and disposed off-site between May and July 2007. The excavation ranged in depth from approximately 2 to 4.5 feet and covered approximately 15,000 square feet. Forty-six soil samples (plus two duplicate samples) were collected from the base and sidewalls of the excavation in July 2007 and were analyzed for BTEX, PAHs, and PCBs. Civil & Environmental Consultants Inc. submitted a report documenting this Interim Measure to EPA on October 3, 2007. EPA approved the report in 2007. The report concluded that additional sampling should be performed to delineate the extent of soil contamination (exceedances of screening criteria occurred in several sidewall samples but further excavation was not feasible due to the presence of rail lines and other site features) and to determine whether impacts to groundwater have occurred.

3.2.2 Detinning Plant Interim Measure (SWMUs W-1000, W-1002, and W-1007)

Three Interim Measures were performed as part of the RCRA closure of the Detinning Plant between 1998 and 2000 (SWMUS W-1000, W-1002, and W-1007 located in CAA VIIM). The regulated units located inside the Detinning Plant building (tanks, filter press, etc.) were decommissioned and removed from the Facility (SWMU W-1002). Contaminated soil from two impacted areas was also excavated and disposed offsite: an area of Prussian Blue-stained soil associated with the sludge transfer station (SWMU W-1000) and an area of oil-stained soil associated with an air compressor condensate drip (SWMU W-1007).

The excavation at SWMU W-1000 ranged in depth from approximately 4 to 7 feet and covered approximately 2,500 square feet (i.e., the entire SWMU). Two soil samples were collected from the base of the excavation and one from the east sidewall. The samples were analyzed for total cyanide and TAL metals.

The excavation at SWMU W-1007 was approximately 2 feet deep and covered approximately 225 square feet (i.e., the entire SWMU). Two soil samples were collected from the base of the excavation and analyzed for TCL VOCs and SVOCs and TAL metals. The excavation and sampling activities were documented in the RCRA Closure report that was submitted to WVDEP on September 18, 2000. Based on those sampling results and documentation for decommissioning the regulated units, the closure was approved by WVDEP.

3.2.3 Hot Mill Wastewater Treatment Plant Soil Excavation

As outlined in the EPA-approved Facility-wide RFI Work Plan, soil impacted by the handling/storage of sludge removed from the Hot Mill Wastewater Treatment Plant settling basins (SWMUs S-E1 through S-E6 located in CAA VIIM) was excavated and disposed off-site. However, the limits of excavation were not documented, and no confirmatory soil samples were taken.

3.2.4 BOP Baghouse Soil Excavation

Soil impacted by releases from the BOP baghouse (located along the east side of the BOP building located in CAA VIIM) was excavated in 2005 and disposed off-site. The excavation was approximately 6 to 12 inches deep and covered approximately 6,000 square feet. Confirmatory samples were not collected following soil removal.

3.3 Human Health Risk Assessment

The parcels that comprise CAAs VIM and VIIM have been used for industrial purposes for approximately 100 years and are currently the site of the Form Energy facility, which produces batteries. CAA VIM is zoned for commercial/industrial and restricted residential use and by the

City of Weirton. The central portion of CAA VIIM is zoned "Heavy Industrial" while the eastern (along Weir Avenue) and western (wooded hillside) portions are zoned "Residential." While certain parcels are zoned for residential, or restricted residential, the parcels in this area are unoccupied and the State of West Virginia has prohibited all residential use on all parcels comprising CAAs VIM and VIIM with an environmental covenant. Therefore, while a comparison to both the residential and industrial screening levels was conducted, applicable screening levels for defining COCs in soil are EPA RSLs for industrial soil.

The screening process used to identify soil COCs for the risk assessment consisted of comparing detected constituent concentrations to the lower of the RSLs or the WVDEP soil De Minimis values, most recently updated in June 2020. Screening results for inorganic constituents were then compared to the default background values presented in Section 3.8.2 of the West Virginia Voluntary Remediation and Redevelopment Act (VRRA) Guidance Manual. Inorganic screening results include arsenic, iron and manganese with soil concentrations above West Virginia background levels.

No COCs were identified for vapor intrusion to indoor air for an industrial/commercial use scenario. Also, no COCs were identified for the potential migration of groundwater to surface water, specifically the Ohio River and Harmon Creek. For every potential complete exposure pathway identified, risk screening levels were estimated according to a reasonable maximum exposure scenario.

EPA has established an acceptable excess lifetime cancer risk (ELCR) range of 1 in 10^{-4} to 1 in 10^{-6} and a non-cancer hazard index (HI) of 1, for evaluating the results of human health risk assessments in relation to the need for remediation or corrective action should results exceed the acceptable risks or hazards. WVDEP has established a more conservative ELCR threshold of 1 in 10^{-5} for industrial receptors, 1 in 10^{-6} for trespassing receptors and the same non-cancer HI of 1. Risk calculations for exposure scenarios with a complete pathway are as follows:

- For future outdoor worker's exposure to surface soil across the developed area of the CAAs VIM and VIIM, the non-cancer HI is 8×10^{-1} and the potential ELCR is 4×10^{-6};

- For a current/future youth trespasser's (age 11 to 16) exposure to surface soil across the developed area of CAAs VIM and VIIM, the non-cancer HI is 1×10^{-1} and the potential ELCR is 4×10^{-7};

- For a future construction worker's exposure to shallow soil from 0 to 10 feet below ground surface across the developed portions of CAAs VIM and VIIM, the non-cancer HI is $1x10^{1}$ and the potential ELCR is 3×10^{-6}; and

- For a current/future youth trespasser's (age 11 up to 16 years) exposure to surface soil on the undeveloped wooded hillside of CAA VIIM, the non-cancer HI is 4×10^{-2} and the potential ELCR is 4×10^{-7}.

Each of the exposure pathways listed above are within EPA's ELCR risk range of 1×10^{-4} to 1×10^{-6}. Future construction worker exposure to shallow soil across the developed portions of the Facility has a non-cancer HI of $1x10^{1}$ which exceeds EPA's target noncancer HI of 1. The non-cancer HI is driven by inhalation of manganese particulates in ambient air during construction and inhalation of naphthalene volatiles (in the former HCL Plant area) from groundwater while working in a trench. Controls are required to eliminate the unacceptable risks identified above. The proposed remedy as described in this SB includes these controls (See Section 5).

3.4 Groundwater Monitoring for Natural Attenuation

Groundwater samples were evaluated by EPA and the State in a manner consistent with EPA guidance to determine whether groundwater could improve over time through natural attenuation. Natural attenuation is the reduction of mass, toxicity, mobility, volume or concentration of constituents of concern through natural physical, chemical and/or biological processes. These processes are classified as degradation (biological or chemical), sorption (chemical) and dispersion, diffusion, dilution, and volatilization (physical).

MJSW personnel collected four rounds of groundwater samples in 2022 and collected an additional round from wells MW-04P and VII-MW-07P in 2023. As shown in the table above, 37 COCs had at least one detection above their MCL or screening level. However, of these 37 COCs, 34 subsequently tested below De Minimus Standards and MCLs for four consecutive quarterly sampling events. The remaining three COCs which were found in concentrations above De Minimus Standards and/or MCLs have also not exhibited a decreasing groundwater concentration over time, they are: (1) 1,1-Biphenyl in wells VII-MW-01P and VII-MW-03P, which exceeded De Minimus Standards (no MCL available); (2) Naphthalene in wells VII-MW-01P, VII-MW-02P and VII-MW-03P, which exceeded De Minimus Standards (no MCL available); and (3) PCE in well VII-MW-03P, which exceeded its MCL.

The three monitoring wells listed above are located near the former HCL plant. Groundwater monitoring suggests that continued contamination migration from the former HCL plant to downgradient locations is not occurring and that no remaining source material exists at the location of the former HCL plant.

Given the absence of source material, EPA expects groundwater concentrations of 1,1-Biphenyl, Napthalene, and PCE to decrease naturally through biodegredation, to levels below MCL (PCE) or below West Virginia's De Minimus Standards (1,1-Biphenyl and Naphthalene). Monitoring will continue in these wells for the specified constituents until COCs are at or below MCLs (or RSLs, where no MCL exists).

3.5 Current Conditions

In a February 27, 2024 letter, Civil & Environmental Consultants provided a summary of actions taken to address subsurface contamination encountered during construction of the

Form Energy facility on the Facility property. Contractors discovered oil and grease in the subsurface while drilling and performing excavation work at the Site. After discussing options for addressing the contamination, it was agreed that MJSW would not attempt to excavate/remove the contaminated material due to complex subsurface conditions created by the basement floors, walls, and foundations. Additional rationale for leaving the material in place included: 1) oil and grease are not very mobile in the environment, nor are they very soluble; 2) existing groundwater quality data from nearby and downgradient monitoring wells has not indicated groundwater impacts; 3) laboratory analytical results of samples collected from the contaminated material indicate only three (3) constituents (chloroform, arsenic, and lead) marginally exceeded the West Virginia Voluntary Remediation Program (VRP) Industrial Soil De Minimis Standards, and three (3) constituents (carbon tetrachloride, Aroclor 1254, and antimony) exceeded only the Residential Soil De Minimis Standards; and 4) concentrations of volatile organic compounds (VOCs) detected in the contaminated material were low and would not likely cause a vapor intrusion risk (although this would need to be verified with soil gas sampling).

Section 4: Corrective Action Objectives

For the CAAs evaluated, the results of the site-specific risk assessment show that COCs in groundwater and soil do not pose an unacceptable risk to human health or the environment under current and presumed future industrial/commercial land-use scenarios. EPA's Corrective Action Objectives for the proposed remedy at CAAs VIM and VIIM are the following:

1. Surface and Subsurface Soils

EPA's Corrective Action Objective (CAO) for soil is to prevent human exposure to contaminant concentrations above the EPA allowable risk range of $1x10^{-4}$ to $1x10^{-6}$ and non-cancer HI of 1 for an industrial exposure scenario.

EPA has determined that hazardous constituents in CAAs VIM and VIIM soils are below industrial soil RSLs, but remain above acceptable risk levels protective of human health and the environment for residential land use (i.e., RSLs for residential soils). For a future construction worker performing excavation or soil disturbance at the developed portions of CAAs VIM and VIIM, unacceptable risks were identified for potential exposure via inhalation of manganese particulates in ambient from soil air during construction and inhalation of naphthalene volatiles from groundwater while working in a trench in the vicinity of the former HCL Plant.

Therefore, EPA's proposed Corrective Action Objective (CAO) for CAAs VIM and VIIM soils is to control exposure to the hazardous constituents remaining in soils by requiring compliance with land use restrictions within the CAAs VIM and VIIM boundaries to allow for industrial/commercial use of that property.

2. Groundwater

EPA expects final remedies to return groundwater to its maximum beneficial use within a timeframe that is reasonable given the particular circumstances. EPA's Corrective Action Objectives for groundwater at CAAs VIM and VIIM are to restore the groundwater to drinking water standards, otherwise known as MCLs, or to the relevant RSL for tap water for each contaminant that does not have an MCL and, 2) until such time as drinking water standards are restored, to control exposure to the hazardous constituents remaining in the groundwater.

Section 5: Proposed Remedy

1. Groundwater

EPA's proposed remedy for groundwater consists of monitored natural attenuation until drinking water standards are met. Because COCs remain in the groundwater at CAAs VIM and VIIM above applicable drinking water standards, EPA also proposes compliance with and maintenance of groundwater use restrictions at CAAs VIM and VIIM to prevent exposure to those contaminants while levels remain above drinking water standards. See Paragraph 3 of this Section, for a list of the groundwater use restrictions EPA proposes for CAAs VIM and VIIM.

Quarterly groundwater monitoring will continue until all COCs show stable or decreasing trends. After MNA is shown to be effective for all COCs, the number sampling events will be reduced in accordance with an WVDEP and EPA approved groundwater monitoring plan. Monitoring will continue until drinking water standards are met. After there are a sufficient number of monitoring events to accurately predict trends, if the data indicates that Site COCs will not reach MCLs in a reasonable timeframe through MNA, EPA may modify its Final Remedy, provided that necessary public participation requirements are met, to include selecting an active remediation technique, such as in-situ enhanced bioremediation of VOC-contaminated groundwater, to accelerate the natural attenuation of groundwater COCs.

2. Soils

EPA’s proposed remedy for CAAs VIM and VIIM soils consists of compliance with and maintenance of land use restrictions and to conduct soil vapor sampling to ensure that there are no issues with vapor intrusion with the three VOCs that were encountered on the Facility. See Paragraph 3 of this Section, for a list of the use restrictions EPA proposes for the CAAs VIM and VIIM.

3. Institutional Controls

EPA’s proposed remedy includes the following land and groundwater use restrictions and

notifications to protect human health and the integrity of the Final Remedy:

1. Groundwater at CAA VIM and VIIM shall not be used for any purpose other than the operation, maintenance, and monitoring activities currently being conducted at the Facility and activities required by EPA and WVDEP, unless it is demonstrated to EPA and WVDEP that such use will not pose a threat to human health or the environment or adversely affect or interfere with the final remedy, and the current property owner obtains prior written approval from EPA and WVDEP for such use.

2. Compliance with the EPA-approved groundwater monitoring program dated xxxx while contaminants remain above drinking water standards.

3. No new wells shall be installed on CAA VIM and VIIM unless it is demonstrated to EPA in consultation with WVDEP, that such wells are necessary to the final remedy and EPA provides written approval to install such wells.

4. Residential land use, as defined by the Voluntary Remediation and Redevelopment Rule (60CSR3), Section 2.40, including, but not limited to, schools, day care centers, nursing homes, or other residential-style facilities or recreational areas is prohibited.

5. Excavation, drilling, or penetration of the ground surface is prohibited, unless the following requirements are met:

    a. The activity is conducted by persons qualified and knowledgeable about releases and exposures to contaminants known to exist at the Facility.

    b. The work is performed in accordance with applicable health and safety laws and regulations, and a Soil and Groundwater Management Plan developed by a West Virginia Licensed Remediation Specialist or similarly qualified individual.

    c. The disturbed area is restored in a manner which assures that an equivalent amount of exposure control is achieved at the conclusion of the work.

    d. The owner of the real property provides written notice to EPA and WVDEP of the intent to conduct such work no less than five (5) days prior to beginning unless a waiver is granted by EPA or WVDEP.

    e. At the request of the EPA or WVDEP, the owner of the real property provides written evidence (including laboratory analytical data) to both agencies showing the affected area continues to meet the remediation standard following completion of the work.

6. CAA VIM and VIIM shall not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the Final Remedy.

4. Additional Requirements

EPA's proposed remedy requires the development and implementation of a Soil and Groundwater Management Plan (S&GMP) to be submitted for review and approval by EPA and WVDEP. The S&GMP will include a requirement for the contractor performing the work to develop and fully implement a site-specific Health and Safety Plan (HASP) that is in accordance with OSHA requirements.

The S&GMP will also detail how soil and groundwater will be managed during any future subsurface activities conducted at CAA VIM and VIIM. The S&GMP will detail how all excavated soils will be handled and disposed. The S&GMP will include soil stabilization requirements to minimize contact between storm water runoff and the parcel soils during construction. Soil stabilization measures may include the construction of berms to prevent storm water from flowing onto certain areas as well as the construction of sumps with pumps to remove ponded water from low lying areas.

5. Implementation

An environmental covenant executed pursuant to West Virginia's Uniform Environmental Covenants Act (UECA), W. Va. Code §§ 22-22b-1 et seq., was signed by the BDC, MJSW, and WVDEP, and recorded by the Hancock County Clerk on March 24, 2022. The UECA environmental covenant prohibits residential land use and excavation, drilling, or penetration of the ground surface at CAA VIM and CAA VIIM. A copy of the recorded covenant is provided in **Appendix A**. Additionally, Ordinance 2144, Part IX Chapter 3 § 949.03 in the City of Weirton's Code of Ordinance, prohibits the use of groundwater from any property located in the Restricted Use District, which includes all of CAAs VIM and VIIM, located in the city and prohibits the drilling and/or the excavation intended to gain access to groundwater at or beneath such property for potable use or other purposes, with the following exemptions:

- The extraction of groundwater from the installation, modification, operation, repair or removal of monitoring and/or remediation wells operated pursuant to the authorization of or at the direction, request or in cooperation with federal or state environmental officials;

- Construction activity where access to or contact with groundwater is unintended and/or incidental to and not otherwise for the purpose of using the groundwater;

- Drilling or construction activity by property owners, where groundwater is unintentionally encountered and where any groundwater that may be impacted will not be used for any purpose; and

- The use of groundwater in the designated area if the groundwater has been treated to meet state standards appropriate for its intended use prior to use.

The Land Use Covenant for CAAs VIM and VIIM, which was developed as part of the final remedy under the VRP, was amended on 2/15/24 to include chloroform, arsenic, and lead as Constituents of Concern for subsurface soil.

Section 6: Evaluation of Proposed Remedy

This section describes the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The evaluation criteria are applied in two phases. In the first phase, EPA evaluates the proposed remedy against three threshold criteria as general goals. In the second phase, if the proposed remedy meets the threshold criteria, EPA then evaluates seven balancing criteria.

Threshold Criteria	Evaluation
1) Protect human health and the environment	EPA's proposed remedy for CAA VIM and VIIM protects human health and the environment by eliminating, reducing, or controlling potential unacceptable risk through maintenance of existing use restrictions for contaminated soil and groundwater above acceptable industrial use levels. All earthmoving activities, including excavation, drilling and construction activities in CAA VIM and VIIM shall be conducted in accordance with an EPA and WVDEP-approved S&GMP. Any earthmoving activities will be conducted in accordance with an EPA and WVDEP approved Health and Safety Plan. In addition, groundwater is not used in the surrounding area and a local ordinance prohibits potable use and the installation of wells in the City of Weirton where the Facility is located. Therefore, EPA has determined that the proposed remedy satisfies this criterion.
2) Achieve media cleanup objectives	EPA's proposed remedy achieves soil cleanup objectives based on assumptions regarding current and reasonably anticipated land and water resource use(s). The remedy proposed in this SB is based on the current and future anticipated land use at CAA VIM and VIIM as commercial or industrial. As such, industrial

	media cleanup objectives were selected and the CAA VIM and VIIM. The human health risk assessment for the CAA VIM and VIIM concluded that there would be no risk associated with the soil as long as protective controls are in place for workers during long-term construction projects and the Facility remains industrial. The VRP requires MJSW to conduct groundwater monitoring at CAA VIM and VIIM intended to demonstrate that the concentrations of the COCs that remain in groundwater at concentrations over MCLs or De Miniums Standards are declining over time through natural attenuation so that MCLs (or RSLs where no MCL exists) are achieved and there is no impact on the Ohio River or Harmon Creek. Therefore, EPA has determined that the proposed remedy satisfies this criterion.
3) Remediating the Source of Releases	In all proposed remedies, EPA seeks to eliminate or further reduce releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment, and this proposed remedy meets this objective. The various source releases, including but not limited to diesel fuel, oil, PCBs, PAHs, cyanide and metals, have been removed from the soil at the CAA VIM and VIIM, thereby eliminating, to the extent practicable, further releases of hazardous constituents from on-site soils as well as groundwater. Therefore, EPA has determined that the proposed remedy satisfies this criterion.
4) Long-term effectiveness	The proposed remedy is long-term effective because groundwater and land use restrictions are implemented, groundwater MCLs will be achieved, and a S&GMP will be developed to prevent exposure to contaminated soils and groundwater remaining at CAA VIM and VIIM that may present unacceptable risk.
5) Reduction of toxicity, mobility, or volume of the Hazardous	Reduction of toxicity, mobility, and volume of contaminated soils was achieved by excavation, removal, and disposal of contaminated soils during the Interim Measures described above.

Constituents	
6) Short-term effectiveness	The land and groundwater use restrictions in the proposed remedy are already fully implemented by the March 2022 Environmental Covenant and City of Weirton Ordinance. EPA's proposed remedy takes into consideration future activities, such as construction or excavation that would pose short-term risks to workers, nearby residents, and the environment, by requiring the EPA and WVDEP-approved Soil and Groundwater Management Plan.

Section 6: Evaluation of Proposed Remedy (continued)

Balancing Criteria	Evaluation
7) Implementability	EPA's proposed remedy is readily implementable. The groundwater monitoring is already in place and operational. The land and groundwater use restrictions in the proposed remedy are already fully implemented by the March 2022 Environmental Covenant and City of Weirton Ordinance and will be amended to include chloroform, arsenic, and lead as Constituents of Concern for subsurface soil.
8) Cost	EPA's proposed remedy is cost effective. The costs of this proposed remedy are minimal as the institutional controls have already been implemented via environmental covenant and city ordinance. The costs associated with development of a Soil and Groundwater Management Plan and groundwater monitoring are minimal.
9) Community Acceptance	EPA will evaluate community acceptance of the proposed remedy during the public comment period, which will be described in the FDRTC.
10) State/Support Agency Acceptance	WVDEP has reviewed and concurred with the proposed remedy for the CAA VIM and VIIM.

Overall, based on the evaluation criteria, EPA has determined the proposed remedy meets the threshold criteria and provides the best balance of tradeoffs with respect to the evaluation criteria.

Section 7: Financial Assurance

EPA has evaluated whether financial assurance is necessary for EPA's proposed remedy at the Facility. Given that institutional controls at the Facility have been implemented and groundwater monitoring costs will be minimal, EPA is not proposing a financial assurance requirement for this proposed remedy. If EPA determines that active remediation is necessary to reduce groundwater COCs to levels below MCLs, financial assurance may be required and this Section 7 will be modified as appropriate.

Section 8: Public Participation

Interested persons are invited to comment on EPA's proposed remedy. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, or electronic mail to Ms. Caitlin Elverson at the contact information listed below.

A public meeting will be held upon request. Requests for a public meeting should be submitted to Ms. Caitlin Elverson in writing at the contact information listed below. A meeting will not be scheduled unless one is requested.

The AR contains all the information considered by EPA for the proposed remedy at this Parcel. The AR is available at the following location:

U.S. EPA Region III
4 Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, PA 19103
Contact: Caitlin Elverson (3LD10)
Phone: (215) 814-5455
Email: elverson.caitlin@epa.gov

Attachments:

Figure 1: Map of Facility
Figure 2: Corrective Action Areas VIM and VIIM Sample Locations
Figure 3: VIIM Sample Locations – Former Oil Tank
Figure 4: VIIM Sample Locations – Former BOP Baghouse and Caster Basins
Figure 5: Former BOP Scrubber
Figure 6: VIIM Sample Locations Former Detinning Plant
Figure 7: VIIM Sample locations Former Hot Mill
Figure 8: Sample Locations – Former Pori and Harp Plants

Statement of Basis

Figure 9 – Wooded Hillside
Figure 10 – CAA VIIM Site Layout

Appendix A: UECA Environmental Covenant

DAVID CAMPBELL
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Date: 2025.03.06 15:14:43 -05'00'

David Campbell, Director
Land, Chemicals, and Redevelopment Division
US EPA, Region III

Section 9: Index to Administrative Record

Civil & Environmental Consultants, Inc. Preliminary Investigation Report. ArcelorMittal Weirton – Corrective Action Areas VI and VII, Weirton, Hancock County, West Virginia, RCRA Corrective Action. May 15, 2015.

Civil & Environmental Consultants, Inc. Site Assessment Report. Mingo Junction Steel Works – Corrective Action Areas VIM and VIIM, Weirton, Hancock County, West Virginia, VRP Project # 20015. June 29, 2020, Revised January 28, 2021, Revised March 17, 2021.

Civil & Environmental Consultants, Inc. Human Health and Ecological Risk Assessment Report. Mingo Junction Steel Works – Corrective Action Areas VIM and VIIM, Weirton, Hancock County, West Virginia, VRP Project # 20015. June 4, 2021, Revised July 15, 2021.

Civil & Environmental Consultants, Inc. Remedial Action Work Plan. Mingo Junction Steel Works – Corrective Action Areas VIM and VIIM, Weirton, Hancock County, West Virginia, VRP Project # 20015. September 13, 2021, revised October 15, 2021.

Civil & Environmental Consultants, Inc. Final Report. Mingo Junction Steel Works – Corrective Action Areas VIM and VIIM, Weirton, Hancock County, West Virginia, VRP Project # 20015. March 28, 2022.

Civil & Environmental Consultants, Inc. Final Monitored Natural Attenuation Report. Mingo Junction Steel Works – Corrective Action Areas VIM and VIIM, Weirton, Hancock County, West Virginia, VRP Project # 20015. June 7, 2023.

Civil & Environmental Consultants, Inc. Summary of Actions Taken to Address Contamination Encountered During Construction of the Form Energy Manufacturing Building, Mingo, Junction Steel Works – Corrective Action Areas VIM and VIIM, Weirton, Hancock County, West Virginia, WV Voluntary Remediation Program Site Number 20015, CEC Project 311-982.3H0Z. February 27, 2024
.

Figure 1 – Arcelormittal – Weirton Plant

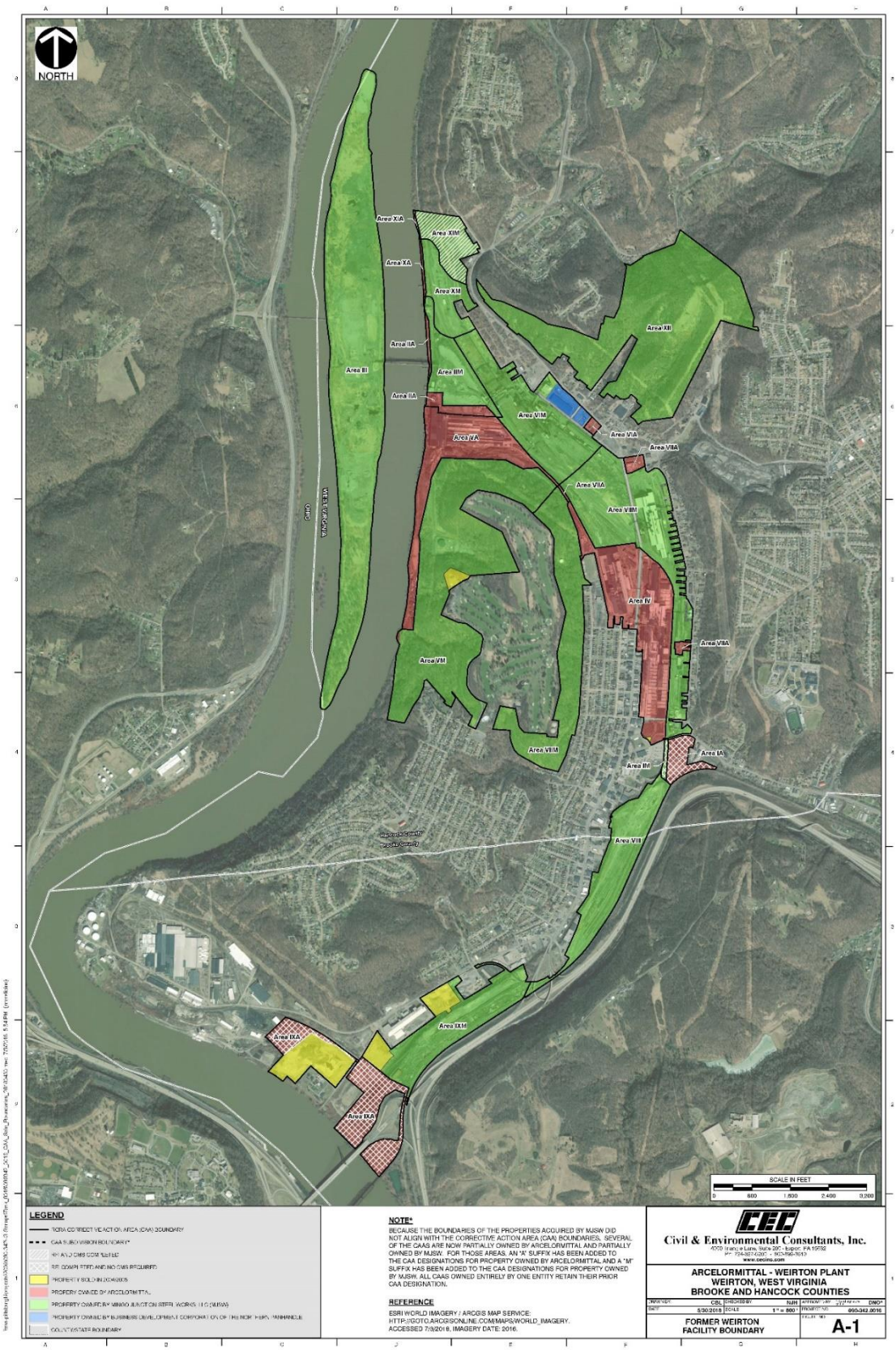

NORTH
Area XIA
Area XIM
Area XA
Area XM
Area IIA
Area III
Area IIIM
Area IIA
Area VIM
Area VIA
Area IVA
Area VIIA
Area VIIA
Area VIIM
Area IV
Area VIIA
Area VIM
Area VIIM
Area IA
Area IIM
Area VII
Area IXM
Area IXA
Area IXA
SCALE IN FEET
0 800 1,600 2,400 3,200
LEGEND
NOTE*
BECAUSE THE BOUNDARIES OF THE PROPERTIES ACQUIRED BY MASW DID NOT ALIGN WITH THE CORRECTIVE ACTION AREA (CAA) BOUNDARIES, SEVERAL OF THE CAAS ARE NOW PARTIALLY OWNED BY ARCELORMITTAL AND PARTIALLY OWNED BY MASW. FOR THOSE AREAS, AN "A" SUFFIX HAS BEEN ADDED TO THE CAA DESIGNATIONS FOR PROPERTY OWNED BY ARCELORMITTAL AND A "M" SUFFIX HAS BEEN ADDED TO THE CAA DESIGNATIONS FOR PROPERTY OWNED BY MASW. ALL CAAS OWNED ENTIRELY BY ONE ENTITY RETAIN THEIR PRIOR CAA DESIGNATION.
REFERENCE
ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY.
ACCESSED 7/8/2016. IMAGERY DATE: 2016.
Civil & Environmental Consultants, Inc.
ARCELORMITTAL - WEIRTON PLANT
WEIRTON, WEST VIRGINIA
BROOKE AND HANCOCK COUNTIES
FORMER WEIRTON FACILITY BOUNDARY
A-1

Figure 2 - Corrective Action Areas VIM and VIIM Sample Locations

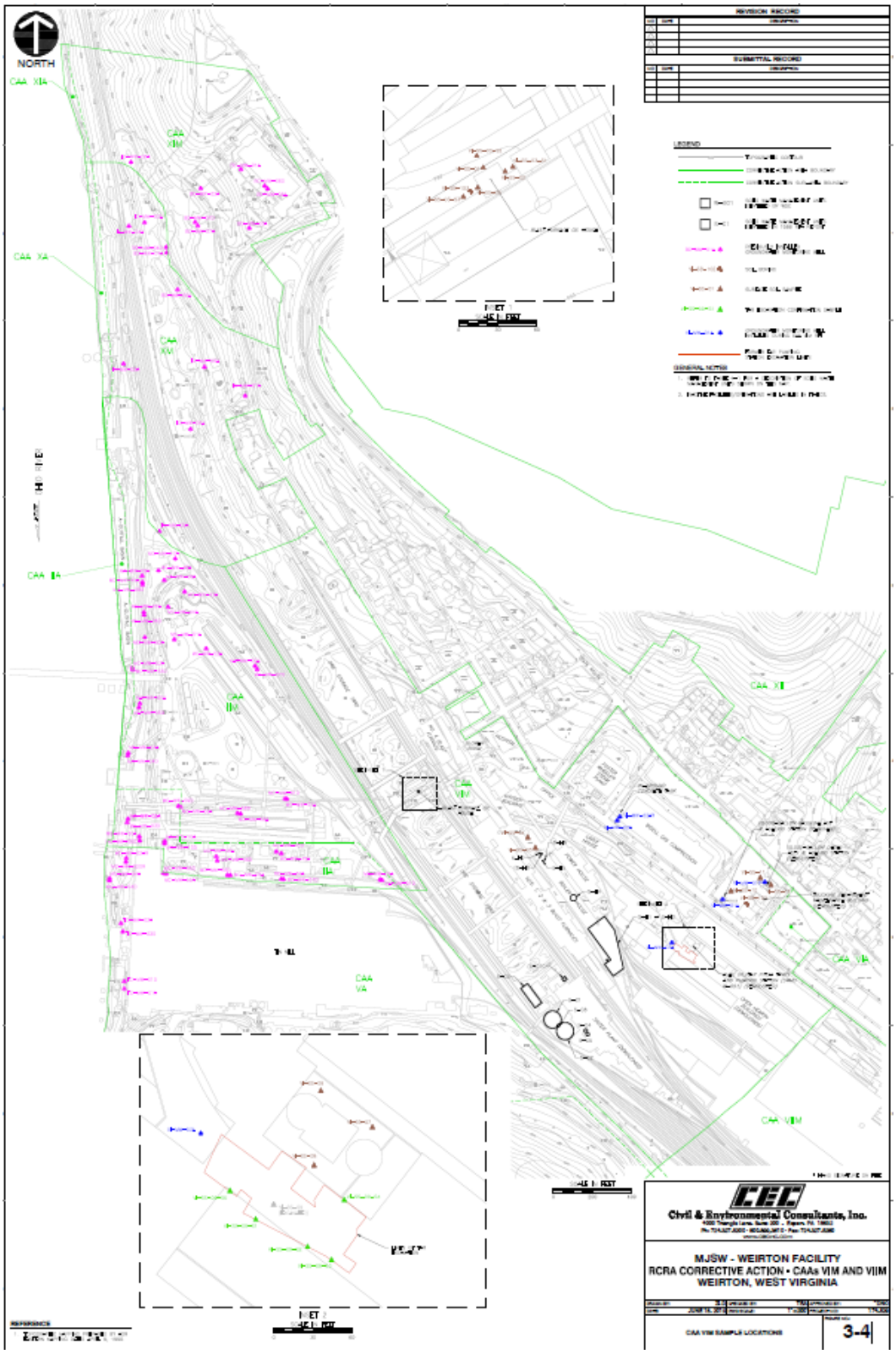
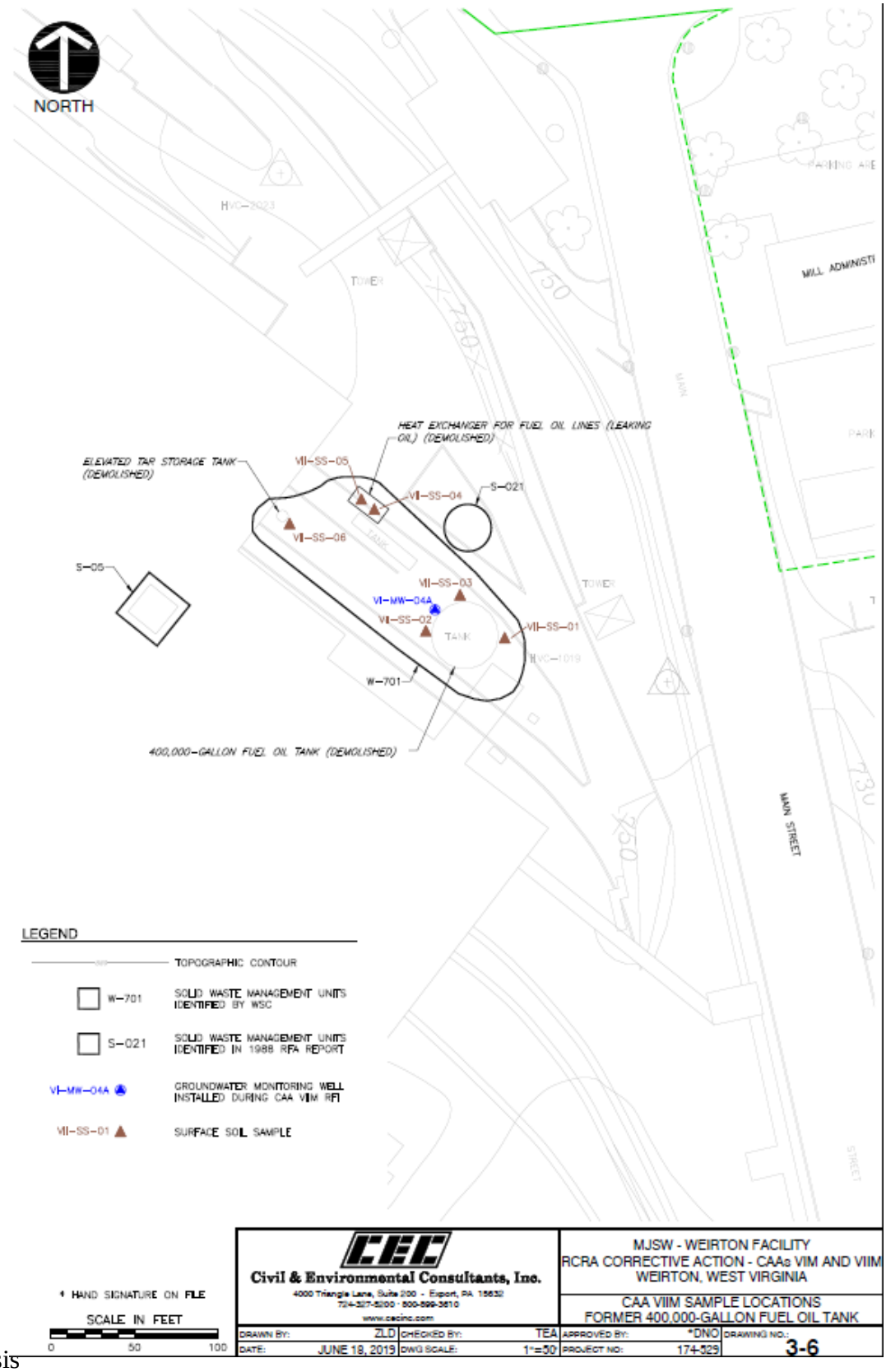

NORTH
CAA XIA
CAA XA
CAA IIA
CAA VA
CAA VIM
CAA VIIM
Civil & Environmental Consultants, Inc.
MJSW - WEIRTON FACILITY
RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
3-4

Figure 3 – VIIM Sample Locations – Former Oil Tank


NORTH
HEAT EXCHANGER FOR FUEL OIL LINES (LEAKING OIL) (DEMOLISHED)
ELEVATED TAR STORAGE TANK (DEMOLISHED)
VII-SS-05
VII-SS-04
S-021
VII-SS-06
S-05
VII-SS-03
VI-MW-04A
VII-SS-02
VII-SS-01
W-701
400,000-GALLON FUEL OIL TANK (DEMOLISHED)
MILL ADMINISTI
MAIN STREET
LEGEND
TOPOGRAPHIC CONTOUR
W-701 SOLID WASTE MANAGEMENT UNITS IDENTIFIED BY WSC
S-021 SOLID WASTE MANAGEMENT UNITS IDENTIFIED IN 1988 RFA REPORT
VI-MW-04A GROUNDWATER MONITORING WELL INSTALLED DURING CAA VIM RFI
VII-SS-01 SURFACE SOIL SAMPLE
HAND SIGNATURE ON FILE
SCALE IN FEET
0 50 100
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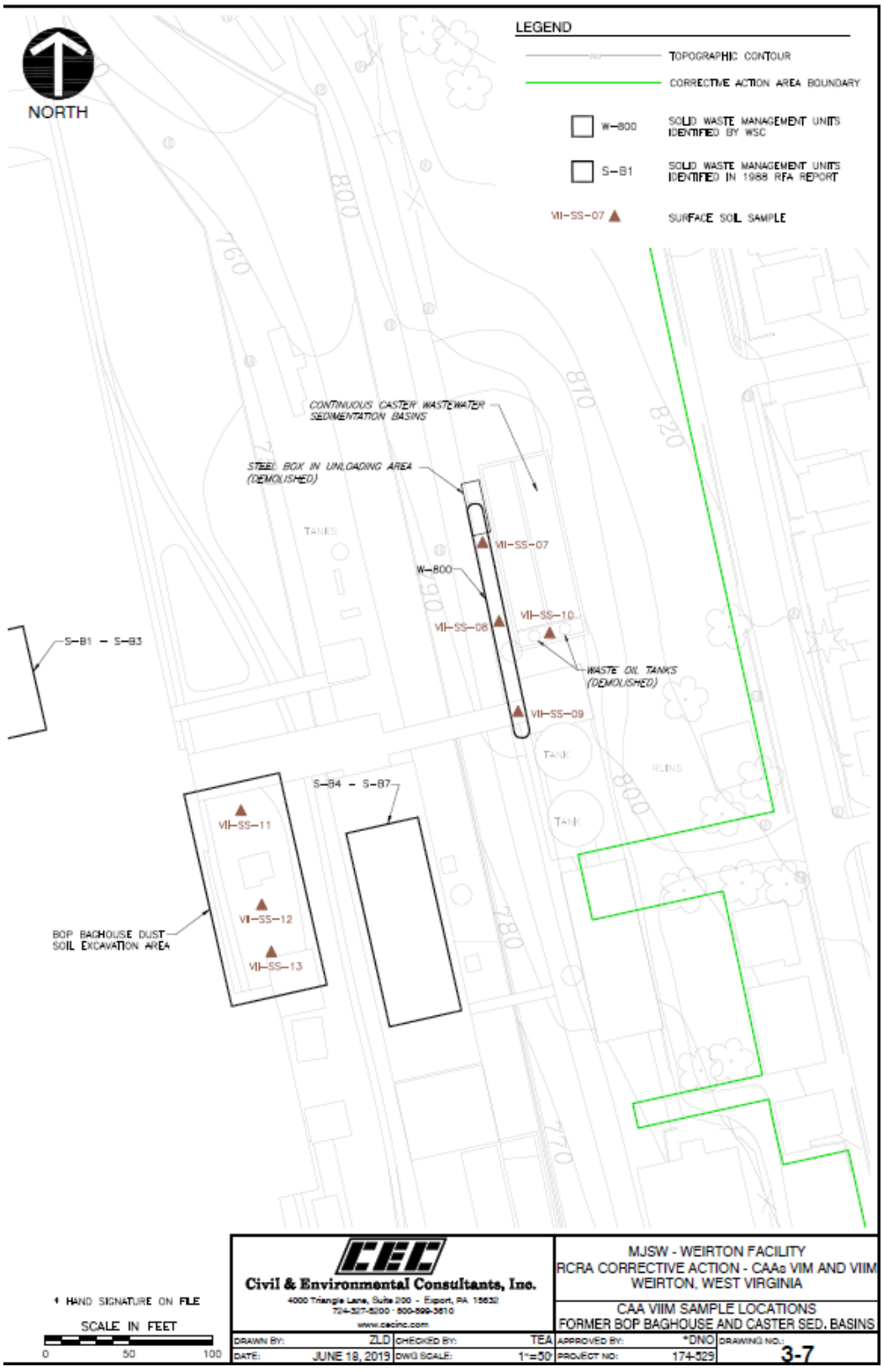
www.cecinc.com
MJSW - WEIRTON FACILITY
RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
CAA VIIM SAMPLE LOCATIONS
FORMER 400,000-GALLON FUEL OIL TANK
DRAWN BY: ZLD
CHECKED BY: TEA
APPROVED BY: *DNO
DRAWING NO.: 3-6
DATE: JUNE 18, 2019
DWG SCALE: 1"=50'
PROJECT NO: 174-329

Figure 4 – VIIM Sample Locations – Former BOP Baghouse and Caster Basins


NORTH
LEGEND
TOPOGRAPHIC CONTOUR
CORRECTIVE ACTION AREA BOUNDARY
W-800
SOLID WASTE MANAGEMENT UNITS IDENTIFIED BY WSC
S-B1
SOLID WASTE MANAGEMENT UNITS IDENTIFIED IN 1988 RFA REPORT
VII-SS-07
SURFACE SOIL SAMPLE
CONTINUOUS CASTER WASTEWATER SEDIMENTATION BASINS
STEEL BOX IN UNLOADING AREA (DEMOLISHED)
TANKS
VII-SS-07
W-800
VII-SS-10
VII-SS-08
S-B1 - S-B3
WASTE OIL TANKS (DEMOLISHED)
VII-SS-09
TANK
RUINS
TANK
S-B4 - S-B7
VII-SS-11
VII-SS-12
VII-SS-13
BOP BAGHOUSE DUST SOIL EXCAVATION AREA
800
760
810
820
790
780
770
HAND SIGNATURE ON FILE
SCALE IN FEET
0
50
100
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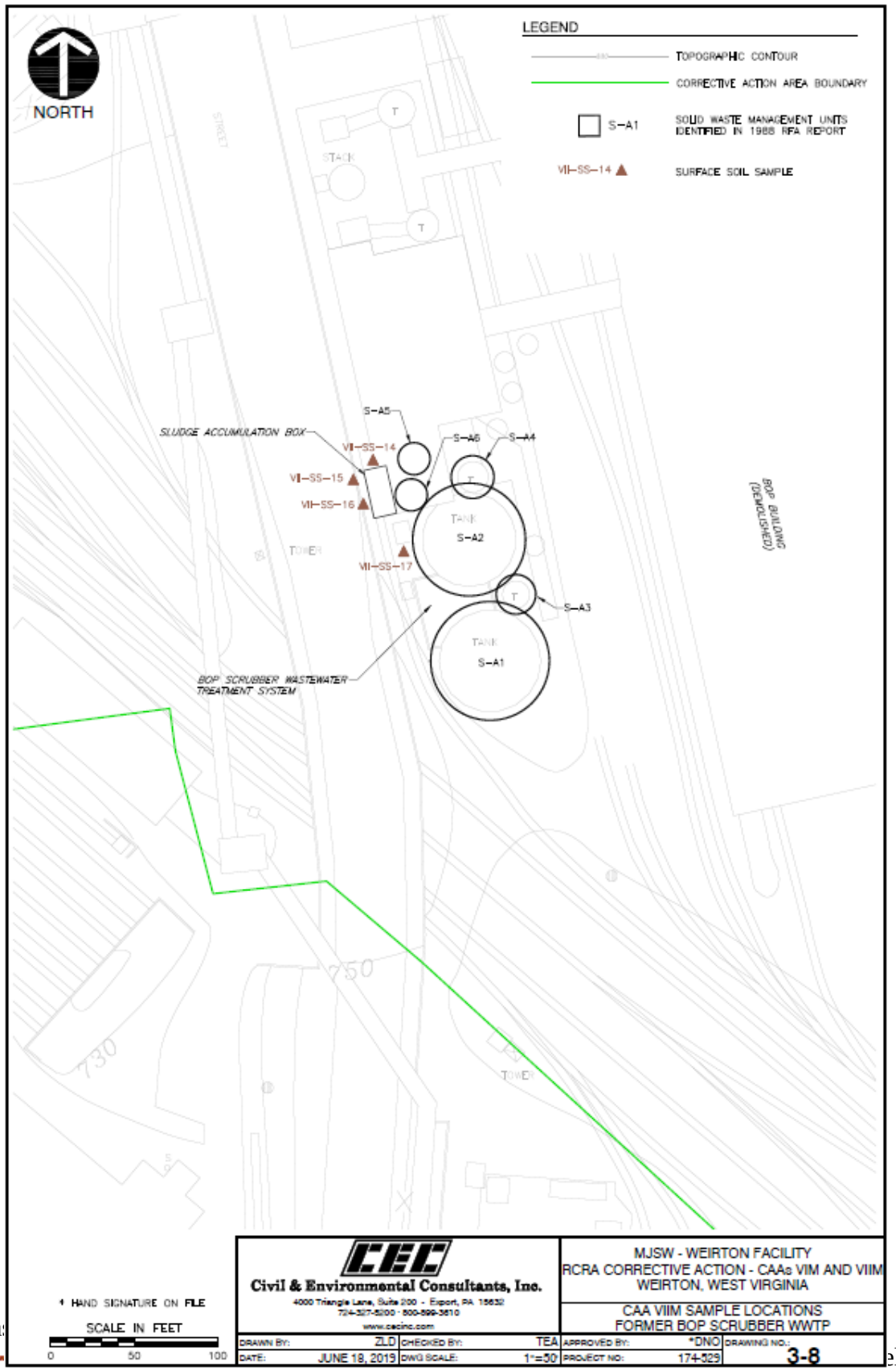
RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
CAA VIIM SAMPLE LOCATIONS
FORMER BOP BAGHOUSE AND CASTER SED. BASINS
DRAWN BY: ZLD
CHECKED BY: TEA
APPROVED BY: *DNO
DRAWING NO.: 3-7
DATE: JUNE 18, 2019
DWG SCALE: 1"=50'
PROJECT NO: 174-329

Figure 5 – Former BOP Scrubber


NORTH
LEGEND
TOPOGRAPHIC CONTOUR
CORRECTIVE ACTION AREA BOUNDARY
S-A1
SOLID WASTE MANAGEMENT UNITS IDENTIFIED IN 1988 RFA REPORT
VII-SS-14
SURFACE SOIL SAMPLE
S-A5
SLUDGE ACCUMULATION BOX
VII-SS-14
S-A6
S-A4
VII-SS-15
VII-SS-16
TANK S-A2
VII-SS-17
S-A3
TANK S-A1
BOP SCRUBBER WASTEWATER TREATMENT SYSTEM
BOP BUILDING (DEMOLISHED)
STACK
TOWER
750
730
HAND SIGNATURE ON FILE
SCALE IN FEET
0
50
100
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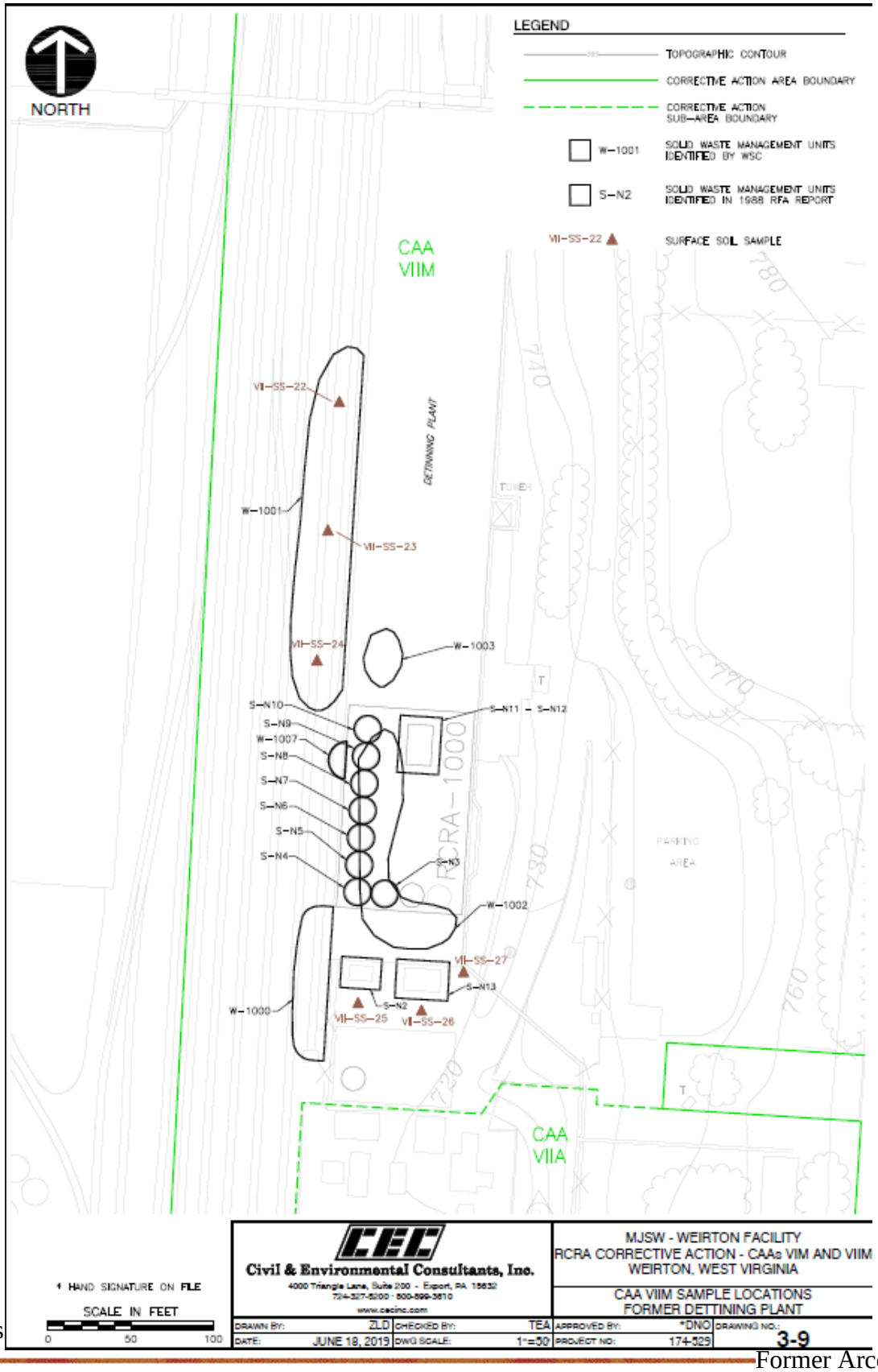
www.cecinc.com
MJSW - WEIRTON FACILITY
RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
CAA VIIM SAMPLE LOCATIONS
FORMER BOP SCRUBBER WWTP
DRAWN BY: ZLD
CHECKED BY: TEA
APPROVED BY: *DNO
DRAWING NO.: 3-8
DATE: JUNE 18, 2019
DWG SCALE: 1"=50'
PROJECT NO: 174-529

Figure 6 – VIIM Sample Locations Former Detinning Plant


NORTH
LEGEND
TOPOGRAPHIC CONTOUR
CORRECTIVE ACTION AREA BOUNDARY
CORRECTIVE ACTION SUB-AREA BOUNDARY
W-1001 SOLID WASTE MANAGEMENT UNITS IDENTIFIED BY WSC
S-N2 SOLID WASTE MANAGEMENT UNITS IDENTIFIED IN 1988 RFA REPORT
VII-SS-22 SURFACE SOIL SAMPLE
CAA VIIM
CAA VIIA
DETINNING PLANT
TOWER
PARKING AREA
RCRA-1000
VII-SS-22
W-1001
VII-SS-23
VII-SS-24
W-1003
S-N10
S-N9
W-1007
S-N8
S-N7
S-N6
S-N5
S-N4
S-N3
S-N11 - S-N12
W-1002
VII-SS-27
S-N13
S-N2
VII-SS-25
VII-SS-26
W-1000
780
770
760
750
740
730
720
HAND SIGNATURE ON FILE
SCALE IN FEET
0 50 100
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www.cecinc.com
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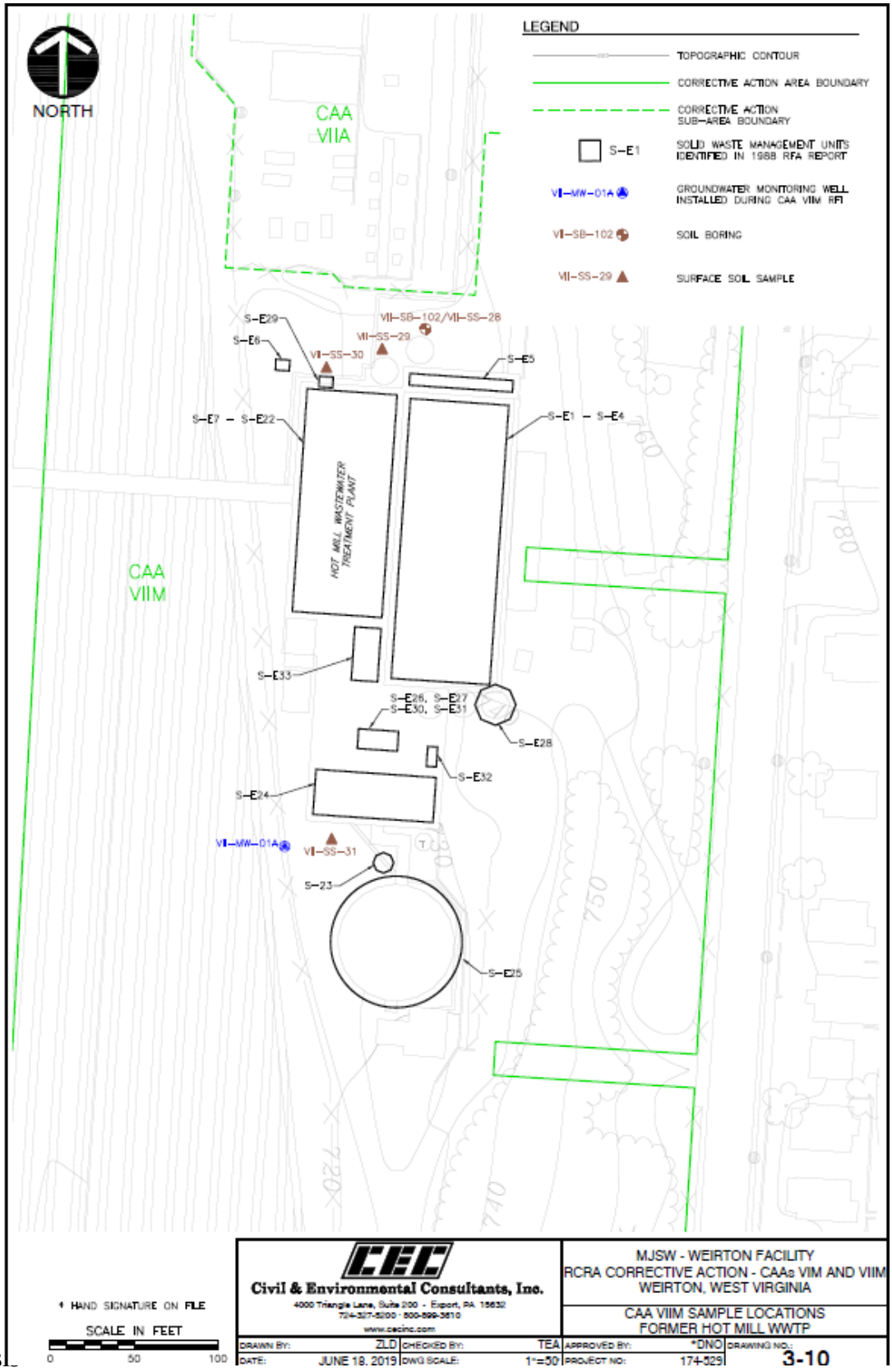
RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
CAA VIIM SAMPLE LOCATIONS
FORMER DETTINING PLANT
DRAWN BY: ZLD
CHECKED BY: TEA
APPROVED BY: *DNO
DRAWING NO.: 3-9
DATE: JUNE 18, 2019
DWG SCALE: 1"=50'
PROJECT NO: 174-329

Figure 7 – VIIM Sample locations Former Hot Mill


NORTH
LEGEND
TOPOGRAPHIC CONTOUR
CORRECTIVE ACTION AREA BOUNDARY
CORRECTIVE ACTION SUB-AREA BOUNDARY
S-E1
SOLID WASTE MANAGEMENT UNITS IDENTIFIED IN 1988 RFA REPORT
VII-MW-01A
GROUNDWATER MONITORING WELL INSTALLED DURING CAA VIM RFI
VII-SB-102
SOIL BORING
VII-SS-29
SURFACE SOIL SAMPLE
CAA VIIA
CAA VIIM
HOT MILL WASTEWATER TREATMENT PLANT
S-E29
S-E6
VII-SS-30
VII-SB-102/VII-SS-28
VII-SS-29
S-E5
S-E7 - S-E22
S-E1 - S-E4
S-E33
S-E26, S-E27
S-E30, S-E31
S-E28
S-E32
S-E24
VII-MW-01A
VII-SS-31
S-E23
S-E25
760
780
750
720
710
HAND SIGNATURE ON FILE
SCALE IN FEET
0
50
100
Civil & Environmental Consultants, Inc.
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RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
CAA VIIM SAMPLE LOCATIONS
FORMER HOT MILL WWTP
DRAWN BY: ZLD
CHECKED BY: TEA
APPROVED BY: *DNO
DRAWING NO.: 3-10
DATE: JUNE 18, 2019
DWG SCALE: 1"=50'
PROJECT NO: 174-325

Figure 8 – Sample Locations – Former Pori and Harp Plants

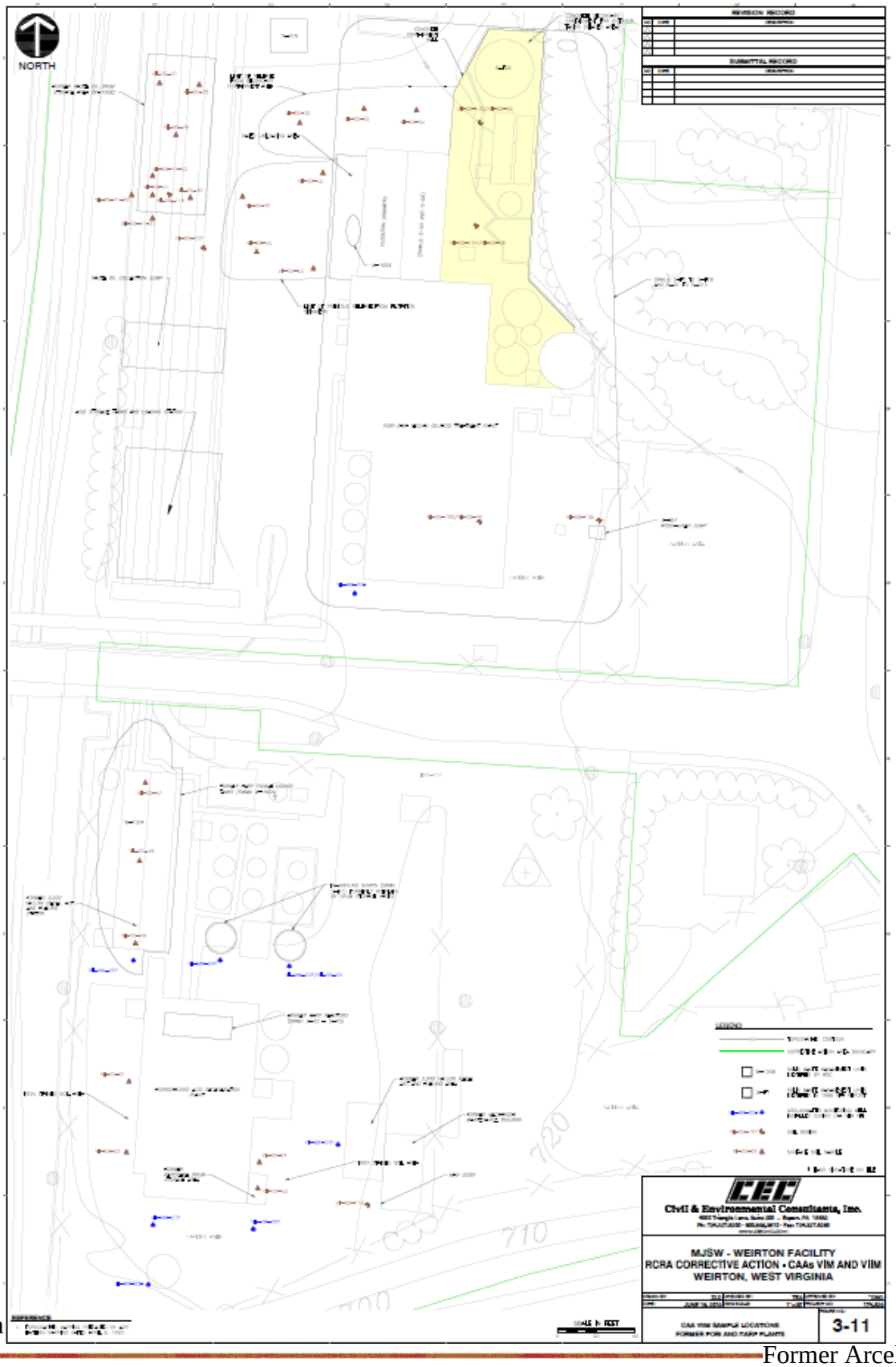
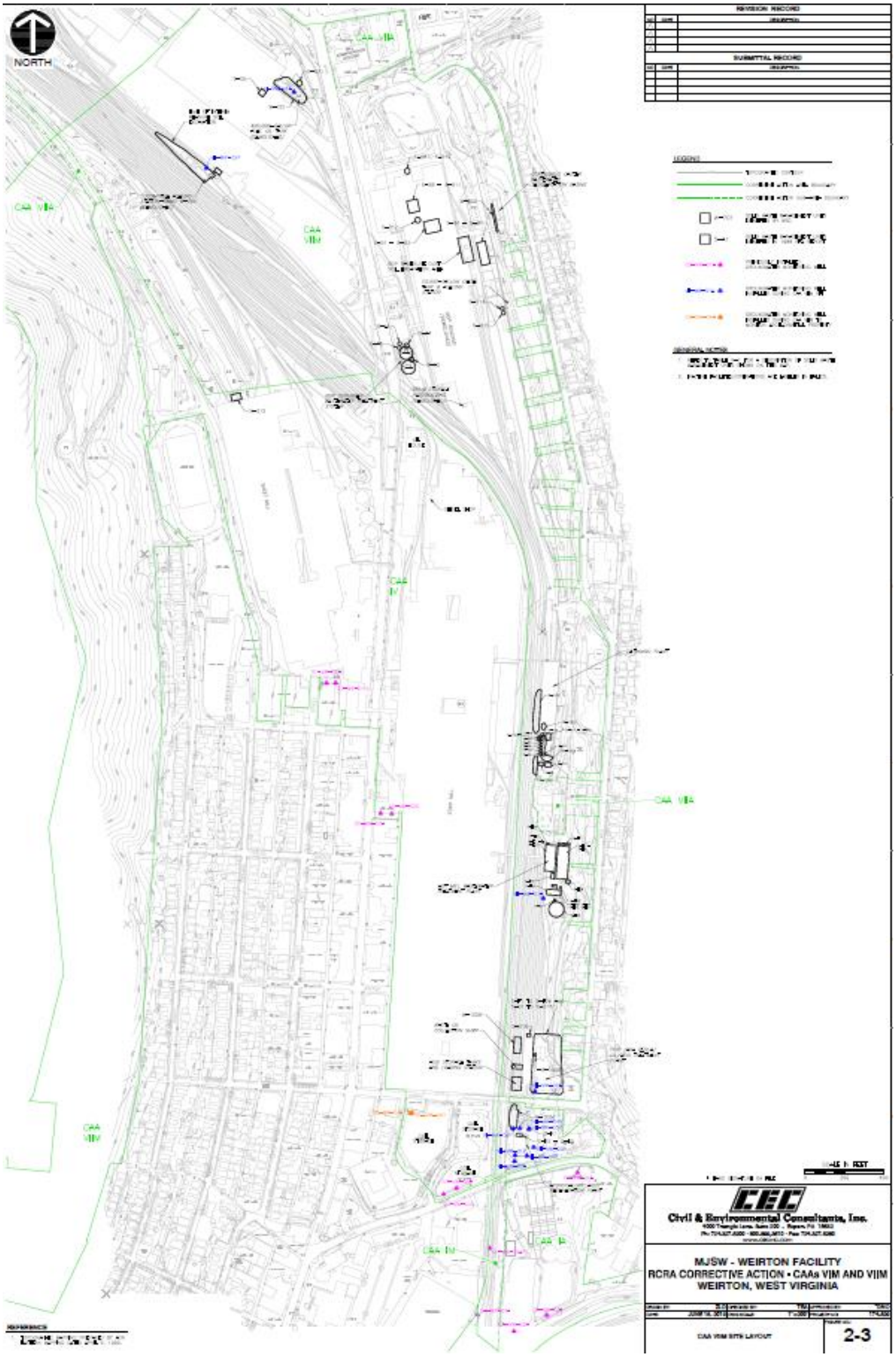

NORTH
REVISION RECORD
SUBMITTAL RECORD
Civil & Environmental Consultants, Inc.
MJSW - WEIRTON FACILITY
RCRA CORRECTIVE ACTION - CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
CAA VIM SAMPLE LOCATIONS
FORMER FOR AND TARP PLANTS
3-11

Figure 9 – Wooded Hillside

Figure 10 – CAA VIIM Site Layout


NORTH
CAA VIIM
CAA VIIM
CAA VIIM
CAA VIIM
CAA VIIM
CAA VIIM
CAA VIIM
CEC
Civil & Environmental Consultants, Inc.
MJSW - WEIRTON FACILITY
RCRA CORRECTIVE ACTION • CAAs VIM AND VIIM
WEIRTON, WEST VIRGINIA
2-3