

A photograph of a forest stream with mossy rocks and a green overlay.

Material and Groundwater Management Plan

Revere Smelting & Refining Facility
Middletown, New York

JANUARY 31, 2011

REVISED NOVEMBER 9, 2016

MATERIAL AND GROUNDWATER MANAGEMENT PLAN

Revere Smelting & Refining Facility
Middletown, New York

January 31, 2011
Revised November 9, 2016

Client

Revere Smelting & Refining Corporation
65 Ballard Road
Middletown, New York 10941

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1 Introduction

On behalf of Revere Smelting & Refining Corporation (Revere), WSP USA Corp. has prepared this Material and Groundwater Management Plan (MGMP) for the Revere facility located at 65 Ballard Road, in Middletown, New York (Figure 1). This MGMP was revised to correct information presented in the previous version that is no longer accurate, particularly the limits of the Operable Units (OUs) and the nomenclature for groundwater extraction wells located at the site. This MGMP supersedes previous versions.

The Revere facility is a secondary lead smelter located approximately 7 miles east of Middletown, in the Town of Wallkill, Orange County, New York. Historical environmental investigations have identified impacts to environmental media as a result of operations at the site and the site has been listed in the *Registry of Inactive Hazardous Waste Disposal Sites in New York State* as Site # 3-36-053. Revere entered into a Consent Order (Order; Index # 3-20100528-80) with the New York State Department of Environmental Conservation (NYSDEC) on February 1, 2011 to investigate impacts within each of the following OUs, which were defined to prioritize corrective action and remediation activities on the site (Sheet 1):

- OU1 – all environmental media, other than groundwater (OU2), on property currently owned by Eco-Bat to the east of Ballard Road in the Town of Wallkill, Orange County, New York (Tax Parcels 41-1-70.21, 41-1-70.22, 41-1-70.23, 41-1-71.22, 41-1-73.1, 41-1-73.22, 41-1-74.82, and 41-1-76), except for the Facility (OU4), and all environmental media, other than groundwater, not owned by Eco-Bat in the Town of Wallkill, Orange County, New York within Tax Parcels 60-1-120 and 41-1-72.2.
- OU2 – all onsite groundwater.
- OU3 – all offsite media impacted by Revere's activities, except environmental media other than groundwater on property not owned by Eco-Bat that is included in OU1.
- OU4 – the Facility.

Revere is in varying stages of the Remedial Investigation/Feasibility Study (RI/FS) and Remedial Design/Remedial Action (RD/RA) process for OU1, OU2, and OU3 and the RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) process for OU4. Revere's operations within OU4 periodically require intrusive activities to address the day-to-day and long term needs of the facility.

This MGMP is intended to address the handling and management of impacted material temporarily stored onsite in locations outside of the storm water containment area in OU4 (Sheet 1). For purposes of this MGMP, materials are defined as:

- *Any potentially contaminated material including soil, sediment, concrete, rocks, and other building or utility construction materials from OU4 generated as part of facility-related construction projects.*

2 Background

2.1 Property Location and Description

Revere operates a secondary lead smelting facility located at 65 Ballard Road, approximately 7 miles east of Middletown, in the Town of Wallkill, Orange County, New York (Figure 1). The Revere facility was constructed in 1970 and acquired by Revere in 1973. Revere manufactures lead and lead alloys. The major raw material is used lead acid batteries, such as the typical automotive battery. Other raw materials used in production include battery-manufacturing by-products, lead-bearing baghouse dust from battery manufacturers and smelters, scrap metal from metal salvage yards, and virgin metal from metal brokers. In addition, Revere reclaims polypropylene from battery cases, and in the process, produces sodium sulfate.

The facility consists of several buildings, including the main smelter building, a crystallizer building, a containment building, a wastewater treatment building, six large storm water tanks, and employee and truck parking areas (Sheet 1). In addition, a rail spur from the adjacent Norfolk and Southern Railroad right-of-way services the facility. The operational portion of the site (OU4) encompasses approximately 14 acres. Eco-Bat New York LLC owns the operational property and contiguous undeveloped property to the north and east of the facility and undeveloped property south of the railroad right-of-way. The Eco-Bat properties consist of the eight tax parcels listed in the definition of OU1, which together comprise 154.9 acres. The undeveloped areas are in varying degrees of past disturbance that range from second growth forest, reverting farmlands, maintained lawns, and wetlands.

The facility is located in a combined rural and industrial area of south-central New York, approximately 6,000 feet northwest of the Wallkill River. North of the facility are open, overgrown fields, wetlands, and mature woodlands. North of the woodlands is a Lukoil service station. East of the facility is a combination of open, overgrown fields, wetlands, and mature woodlands. President Container, Inc., operates in a facility located approximately 0.25 mile southeast of the site. Interstate Highway 84 is located approximately 0.6 mile south of the site. A Ball Aluminum can manufacturing facility is located west of the site across Ballard Road, and additional industrial development is located further west and south.

Revere is in the process of designing, permitting, and constructing a Wet Electrostatic Precipitator (WESP) emissions control unit that will be located in OU1 in the former Eastern Fill Area (EFA) (Sheet 1). The EFA was recently remediated by Revere, and an onsite containment cell was constructed in OU1 to dispose of lead and arsenic contaminated soils and sediments as part of the Phase I RD/RA for OU1.

2.2 Environmental Concerns Identified at the Site

Historical environmental investigations have identified impacts to environmental media (soil, sediment, and groundwater) as a result of operations at the site. Lead and arsenic are the primary contaminants of concern associated with the site.

A CMS for OU4 was prepared by ENTACT LLC (ENTACT), on behalf of Revere, and submitted to the NYSDEC on February 7, 2014¹ (ENTACT 2014). The purpose of the CMS was to develop and evaluate corrective measures alternatives that address risks to human health and the environment from exposures to impacted soils and source materials within OU4. Due to the current and expected future operations of the facility, Revere has determined that the implementation of final corrective measures is not practical or feasible and that a phased approach is warranted:

- Phase 1 – Interim Corrective Measures (ICMs) that will be implemented to address risks based on current land use and are consistent with the continued operations of the facility.
- Phase 2 – Final Corrective Measures that are implemented upon cessation of operations at the facility.

¹ The February 7, 2014 CMS was Revision 2.0.

The final corrective measure alternatives are discussed in detail in the February 7, 2014, CMS. Each of the four alternatives involve the use of existing OU4 surface cover (i.e. asphalt surface, concrete surface, building foundation, vegetated soil covers, gravel) and completion of the barrier wall system around the facility as the ICM to address risks based on current land use. On February 19, 2015, WSP submitted the *Interim Corrective Measure Completion Report – Phase III Barrier Wall Installation and Phase I and II Barrier Wall Extensions - Operable Unit 4* (WSP 2015), which presents the complete barrier wall system that encircles OU4 (WSP 2015). Sheet 1 shows the barrier wall system location and the location of groundwater extraction wells located inside the barrier wall that provide hydraulic groundwater containment.

Historical groundwater monitoring data indicate that onsite groundwater (OU2) is impacted by lead, pH, and sulfate in some areas (GWI 2009). The depth to groundwater in monitoring wells and piezometers installed in OU4 generally ranges from 5 feet to 10 feet below ground surface (bgs). Although not anticipated, shallow excavations in OU4 may require some amount of dewatering and groundwater management.

3 Purpose, Scope, and Applicability

The purpose of this MGMP is to ensure that lead impacted material removed from OU4 as part of routine facility operations is managed in accordance with applicable federal, state, and municipal laws and regulations. The plan presents procedures that will be followed during construction activities to ensure that impacted materials and groundwater are managed properly. The plan does not apply to:

- De minimis excavations that would not require any material management, transport, storage, or disposal, such as digging small holes for traffic signs or fence posts.
- Excavation/demolition projects within OU4 where the materials are temporarily stored wholly within the plant or the facility's storm water containment area (Sheet 1). For excavations in this category, only the post-excavation sampling described in Section 4.2 will be applicable. Data from the post excavation sampling will be shared with the NYSDEC to document the nature of materials left in place.

Because existing data for OU4 are insufficient to predetermine whether a generated material would be hazardous, this MGMP was conservatively prepared on the basis that soils from OU4 must first be tested before such soils are handled as not impacted by lead. As such, the provisions of this MGMP will apply to all future construction activities by Revere and its subcontractors in all areas of OU4, and are not specific to a single location or facility project.

4 Material Management

The MGMP includes a program for providing notice to the NYSDEC of proposed construction activities, general procedures for pre-excavation and post-excavation sampling, criteria for temporary storage of lead-impacted materials, and reporting requirements.

4.1 Notice of Excavation/Demolition Activities

Revere will provide a minimum of 24-hour's notice to the NYSDEC for proposed construction activities requiring excavation and/or demolition of up to 10 cubic yards (CY) of material and 5 business days' notice for all construction activities requiring removal of more than 10 CY of material, except where exigent circumstances require shorter notice. For a 24-hour notice project, the maximum amount of material that will be moved within that 24 hour period is 10 CY. Revere will provide prompt notice to the NYSDEC in the event that a project initially planned for 10 CY or less will necessarily expand to greater than 10 CY due to unforeseeable conditions realized during construction. The 10 CY threshold is based on the typical size of a standard roll-off container and will allow Revere to move forward quickly with routine construction activities that may require small volumes of material removal.

The notice will include a summary of the work to be conducted and a schematic showing the proposed excavation/demolition area, anticipated material volumes to be removed, and number and location of proposed samples (if necessary) in accordance with Section 4.2 below. If applicable, the notice will also include a schematic showing the location of any temporary storage areas in OU1 or in portions of OU4 outside the storm water containment area. The notice will be distributed electronically to the Department.

4.2 Material Characterization and Post-Excavation Sampling

For materials being disposed of offsite, the requirements of 6 NYCRR Parts 370 to 372 concerning generation, characterization, handling, storage, and disposal of waste shall be followed.

Pre-excavation/demolition sampling will not be required for projects generating less than 10 CY. One composite sample will be collected from the excavated/demolished material and analyzed for Target Analyte List (TAL) Metals using Environmental Protection Agency (EPA) Method 6010B and for lead using the Toxicity Characteristic Leaching Procedure (TCLP).

For materials temporarily stored onsite in locations outside of the storm water containment area in OU4, Revere will submit a sampling plan concurrent with the notice of excavation/demolition activities for projects requiring removal of more than 10 CY of material. Pre-excavation/demolition sampling may be proposed to confirm characterization and develop/modify appropriate health and safety procedures based on specific sampling data. At a minimum, one composite sample will be collected per 10 CY of removed material and analyzed for TAL Metals and TCLP-Lead.

Post-excavation sampling will also be conducted for all excavations (both greater and less than 10 CY) to document materials left in place. For excavations greater than 10 CY, an estimate of the number of post-excavation samples will be provided with the sampling plan submitted to the NYSDEC concurrent with the notice of excavation activities. At a minimum, one sample from the excavation floor per 900 square feet of surface area and one sample per 30 linear feet of sidewall will be collected and analyzed for TAL Metals and TCLP-Lead.

4.3 Material Stockpiling and Temporary Storage Outside of the OU4 Storm Water Containment Area

4.3.1 Non-Hazardous Material and Uncontaminated Material Suitable for Reuse

Excavated material, which has been confirmed to be non-hazardous under the Resource Conservation and Recovery Act (RCRA) based on pre-excavation TCLP analysis and determined (in consultation with the NYSDEC

on a project-specific basis) to be uncontaminated and suitable for reuse based on total metals analysis, may be temporarily staged within and/or adjacent to the excavation area prior to reuse as backfill. A material reuse determination will be made by the NYSDEC on a project-specific basis based on the analytical data provided by Revere in its notice of excavation activities and/or weekly project status reports. All backfill must meet the protection of groundwater soil cleanup objective for lead of 450 mg/kg.

4.3.2 Uncharacterized Material, Hazardous Material, and Contaminated Material Unsuitable for Reuse

Temporary stockpile and storage locations will be selected based on field conditions, project sequencing, and site logistics for uncharacterized material, material confirmed to be RCRA hazardous by pre-excavation/demolition TCLP analysis, and non-hazardous but contaminated material deemed unsuitable for reuse by the NYSDEC. These materials will be retained in OU4 or within select areas of OU1. In order of preference, such materials will be:

1. Placed directly into covered and lined leak-proof roll-off containers and temporarily stored adjacent to the area of excavation.
2. Transported to a pre-selected and pre-approved area within OU1 or OU4 and placed into covered leak-proof roll-off containers.
3. Temporarily stockpiled adjacent to the area of excavation.
4. Transported to a pre-selected and pre-approved area within OU1 or OU4 and temporarily stockpiled.

All material from projects generating less than 10 CY will be managed following option 1 above. If the materials cannot be managed in a lined roll-off near the area of excavation/demolition (due to access constraints or other project-specific constraints), then Revere will provide the NYSDEC a detailed notification of the storage plan as described in Section 4.1. The notice shall be submitted to the NYSDEC at least 5 business days before commencing excavation activities, unless exigent circumstances require a shorter notification period.

Containers used for excavated/demolished material characterized as hazardous will be suitable for over-the-road transport of hazardous materials in accordance with federal and state transportation regulations.

Material stockpiled prior to disposal will be placed within an engineered berm lined with polyethylene sheeting as containment, and covered to prevent infiltration of storm water. Engineered berms will be designed by appropriate personnel and may consist of straw bale barriers, gravel bag barriers, sand bag barriers, and fiber rolls as appropriate based on the existing grade material (pavement, asphalt, or soil) and slope of the temporary storage area. Natural soil berms constructed of native materials will not be used based on an assumption that most surface soils in OU1 and OU4 contain some detectable concentration of lead. Stockpiles will be actively managed by Revere or its subcontractor to prevent run-off.

Material characterized as RCRA hazardous may be temporarily stored for up to 90 days before being transported offsite for appropriate disposal or treatment. Material to be disposed offsite may require additional sampling and analysis to meet disposal facility requirements, and Revere will conduct the necessary sampling and analysis.

Appropriate signage and other barriers (temporary fencing) to restrict access to material will be installed and maintained by Revere and/or its subcontractor.

4.4 Material Reuse and Disposal

Only material confirmed to be non-hazardous under RCRA by TCLP analysis of either pre- or post-excavation samples and determined to be uncontaminated by the NYSDEC based on total metals analysis may be reused as backfill within the same excavation or another excavation in OU4 containing similar contaminants under the predetermined beneficial use determination (BUD) in 6 NYCRR 360.1.15(b)(8). All backfill must meet the protection of groundwater soil cleanup objective for lead of 450 mg/kg. Any excess non-hazardous material will be transported offsite to a facility permitted to accept and treat or landfill the material.

Material found to be characteristically RCRA hazardous by TCLP analysis will be disposed of at a licensed hazardous waste treatment or disposal facility within 90 days of excavation. Hazardous material will be transported to a permitted facility under appropriate manifests, applicable permits, and applicable state and federal laws and regulations.

4.5 Reporting Requirements

At the conclusion of each project that requires post-excavation sampling, a brief report will be submitted electronically to the Department. The report will include all sampling results generated during the project.

For projects that exceed a week of construction activity, a weekly status report will also be distributed electronically to the Department. At a minimum, the report will include all available analytical data from the project for the previous week's work and an anticipated schedule of completion.

5 Groundwater Management

The depth to groundwater from monitoring wells and piezometers installed in OU4 (Sheet 1) generally range from 5-feet to 10-feet bgs. Although not anticipated, shallow excavations in OU4 may require some amount of localized dewatering to control groundwater infiltration into the open excavation. The MGMP includes a program for providing notice to the NYSDEC of potential dewatering and general procedures for discharge of groundwater into Revere's existing recycled process water system.

5.1 Notice of Dewatering Activities

Revere will provide notice to the NYSDEC of the potential for dewatering activities associated with any excavation conducted under the provisions of this MGMP. The notice will include an estimate of the anticipated dewatering volume, method of conveyance to discharge location, and duration of proposed activities.

5.2 Groundwater Discharge

Extracted water will be discharged into Revere's storm water sump located south of the scrubber building on the southern portion of the facility. The sump receives storm water runoff from the roofs and paved areas of the facility as well as extracted groundwater from the groundwater extraction system (Sheet 1) installed around the perimeter of the containment building.

Water is pumped from the sump to a recycle water storage tank. Water from the recycle tank is then pumped through sand filters, utilized in facility operations, treated by the facility's wastewater treatment system, and discharged under permit to the Town of Wallkill sanitary sewer.

5.3 Groundwater Conveyance

Groundwater may be pumped directly from the open excavation to the storm water sump. Alternatively, Revere may utilize temporary fractionation (frac) tanks if high volumes of water are anticipated and/or the location of the excavation is not conducive to direct pumping. Pre-treatment of discharged water will not be required; however, Revere may elect to filter the water to remove solids if necessary.

6 References

2014. ENTACT LLC. Corrective Measures Study, Operable Unit 4, Revision 2, Revere Smelting & Refining Site, Middletown, New York. NYSDEC Site No. 3-36-053. February 7.
2009. Ground Water Investigations, Inc. *Quarterly Monitoring Report – September 2009*. Revere Smelting and Refining Corporation, Middletown, New York. November.
2015. WSP USA Corp. Interim Corrective Measure Completion Report – Phase III Barrier Wall Installation and Phase I and II Barrier Wall Extensions - Operable Unit 4, Revere Smelting & Refining Corporation, Middletown, New York. February 19.

Figure

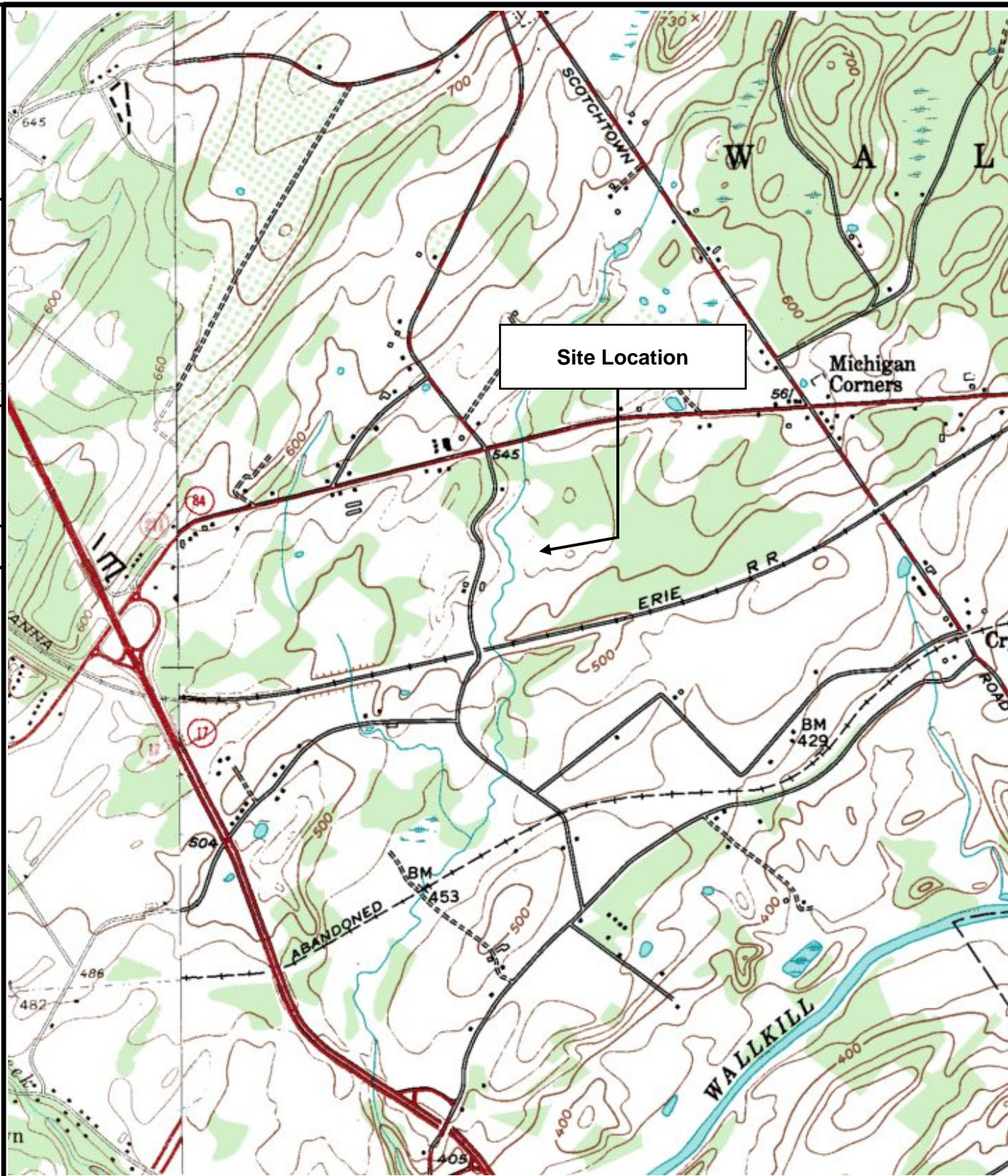
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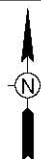
Approved:

Drawn By:

A



REFERENCE:
7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE
ORANGE COUNTY, NEW YORK
PHOTOREVISED 1957 SCALE 1:24,000



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SCALE, FEET



WSP USA Corp.
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FIGURE 1

SITE LOCATION MAP

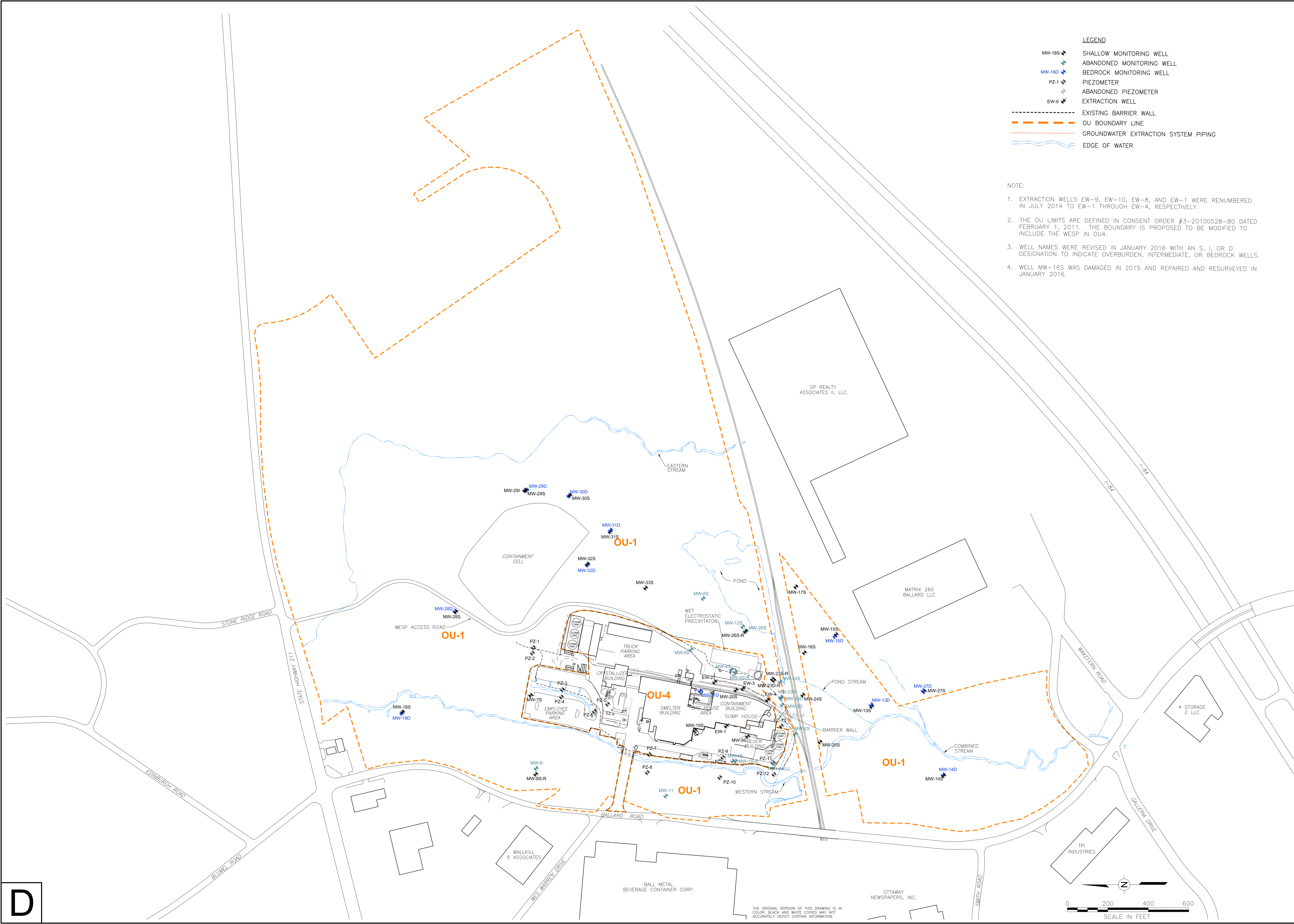
REVERE SMELTING & REFINING FACILITY
MIDDLETOWN, NEW YORK

PREPARED FOR
RSR CORPORATION
DALLAS, TEXAS

Sheet

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- LEGEND

 - MW-18S SHALLOW MONITORING WELL
 - MW-18D ABANDONED MONITORING WELL
 - PZ-1 BEDROCK MONITORING WELL
 - PZ-1 PIEZOMETER
 - EW-9 ABANDONED PIEZOMETER
 - EW-9 EXTRACTION WELL
 - EXISTING BARRIER WALL
 - OU BOUNDARY LINE
 - GROUNDWATER EXTRACTION SYSTEM PIPING
 - EDGE OF WATER
- NOTE:

 - EXTRACTION WELLS EW-9, EW-10, EW-8, AND EW-1 WERE RENUMBERED IN JULY 2014 TO EW-1 THROUGH EW-4, RESPECTIVELY.
 - THE OU LIMITS ARE DEFINED IN CONSENT ORDER #3-20100528-80 DATED FEBRUARY 1, 2011. THE BOUNDARY IS PROPOSED TO BE MODIFIED TO INCLUDE THE WESP IN OU4.
 - WELL NAMES WERE REVISED IN JANUARY 2016 WITH AN S, I, OR D DESIGNATION TO INDICATE OVERBURDEN, INTERMEDIATE, OR BEDROCK WELLS.
 - WELL MW-16S WAS DAMAGED IN 2015 AND REPAIRED AND RESURVEYED IN JANUARY 2016.

OPERABLE UNIT BOUNDARIES

AS-BUILT AND CONTINGENT EXPANSION CONSTRUCTION DRAWING PACKAGE
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SHEET 1

Drawing Number
00020422-044

REVISIONS

REV	DESCRIPTION
1	1/18/2016
2	1/18/2016

SEAL

DRAWN BY

CHECKED

APPROVED

EGC

CJA

AS

11/18/2016

11/18/2016

11/18/2016

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