Statement of Basis

SI Group, Inc.
Rotterdam Junction Facility
Operable Unit 1 (OU1), East Side
Areas 2, 5, 7, 21, 22 & Bldgs. 9 and 37 Septic
Rotterdam Junction, Schenectady County
EPA ID No. NYD 002070118
Site No. 447001

August 2018

NEW YORK
STATE OF
OPPORTUNITY
Department of
Environmental
Conservation

Prepared by:
Division of Environmental Remediation
New York State Department of Environmental Conservation

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DECLARATION STATEMENT - STATEMENT OF BASIS

SI Group, Inc.
Operable Unit Number(s): 01
Responsible Party - RCRA Program
Rotterdam Junction, Schenectady County
Site No. 447001
August 2018

Statement of Purpose and Basis

This document presents the remedy for Operable Unit Number(s): 01: EAST SIDE REMEDIAL PROGRAM (OU1) and the RCRA Corrective Measure Permit for the SI Group, Inc. (SI Group) Rotterdam Junction site, a Class 2 active hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 373 (RCRA), and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR 300), as amended.

This decision is based on the Corrective Measure Study, performed by SI Group and required by the New York State Department of Environmental Conservation (the Department), for OU1 of the Schenectady International Rotterdam Junction site and the public's input to the remedy presented by the Department.

Description of Selected Remedy

For OU1, the elements of the selected remedy are as follows:

A plume containment Interim Corrective Measure (ICM) consists of a subsurface barrier wall within an associated flood protection levee on the eastern side.

Area 2 – Physical containment *via* subsurface barrier wall, limited excavation, *in-situ* treatment *via* soil vapor extraction (SVE), *in-situ* soil stabilization (ISS) with continued groundwater monitoring and monitored natural attenuation (MNA). A new diversion tank will be built in Area 2 as required by Order on Consent Index No. R4-2014-0131-17M2. The area where the diversion tank will be built will be excavated to a depth of the required footings for the required structures. The remaining contamination below the footing depth will be solidified in place due to its proximity to the barrier wall and underground infrastructure for the Waste Water Treatment Plant (WWTP). Contamination outside the area of excavation will be remediated by SVE. The barrier wall that was constructed as an ICM will prevent any contaminated groundwater from leaving the site. Residual groundwater contamination will be remediated by monitored natural attenuation and contained by the barrier wall.

Area 5, 21 and 22 – Physical containment *via* subsurface barrier wall, *in-situ* treatment *via* SVE and MNA. SVE will be used to remediate these areas. Residual groundwater contamination will be remediated by MNA and contained by the subsurface barrier wall.

Area 7 – Physical containment, limited excavation and continued groundwater monitoring. The contamination in this area exists around one boring. Therefore, excavation was chosen as the preferred remedy.

Buildings' 9 and 37 Septic System – Physical containment *via* a soil cover and monitored natural attenuation with groundwater monitoring. This area consists of the drywells for the Buildings' 9 and 37 septic system. Due to digging constraints in this area, a soil cover will be used until the drywells need to be replaced in the future. Residual groundwater contamination will be remediated by MNA and contained by the subsurface barrier wall.

The remaining areas of the site will be investigated under the State Superfund Program, and a Proposed Remedial Action Plan will be distributed for public comment at a later date.

For the Operating Permit, the elements of the Corrective Measures Permit are as follows:

SI Group submitted an application to renew their Part 373 permit. The previous Corrective Measures Permit included the implementation of the RCRA Facility Investigation and Corrective Measure Study. Both of these tasks have been completed under the previous permit. The newly issued permit requires SI Group to implement the remedial program presented in the Corrective Measures Study and selected by the Statement of Basis.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedies selected for the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) located on the site are protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

_____ _____

Date

Michael J. Ryan, P.E., Director
Division of Environmental Remediation

Statement of Basis
Operable Unit No. 1 (OU1)
SI Group, Inc.
Rotterdam Junction Facility, East Side
1000 Main Street, Route 5S
Rotterdam Junction, New York 12150
Site No. 447001

INTRODUCTION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Statement of Basis (SB) identifies the selected remedy and discusses the reasons for selection of the remedy. This document is a summary of the information that can be found in the site-related reports and documents.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment. The New York State Hazardous Waste Management Program (also known as the RCRA Program) requires corrective action for releases of hazardous waste and hazardous constituents to the environment. This facility is subject to both programs, and this remedy is consistent with the remedial requirements of both programs.

The remaining areas of the site will be investigated under the State Superfund Program, and a Proposed Remedial Action Plan will be distributed for public comment at a later date.

This SB selects the following remedial approach for the distinct areas that comprise Operable Unit No. 1 (OU1):

Area 2 – Physical containment *via* subsurface barrier wall, limited excavation, *in-situ* treatment *via* soil vapor extraction (SVE), *in-situ* soil stabilization (ISS) with continued groundwater monitoring and monitored natural attenuation (MNA). A new diversion tank is to be built in Area 2 as required by Order on Consent Index No. R4-2014-0131-17M2. The area where the diversion tank will be built will be excavated to a depth of the required footings for the required structures. The remaining contamination below the footing depth will be solidified in place due to its proximity to the barrier wall and underground infrastructure for the Waste Water Treatment Plant (WWTP). Contamination outside the area of excavation will be remediated by SVE. The barrier wall that was constructed as an Interim Corrective Measure (ICM) will prevent any contaminated groundwater from leaving the site. Residual groundwater contamination will be remediated by monitored natural attenuation and contained by the barrier wall.

Area 5, 21 and 22 – Physical containment *via* subsurface barrier wall, *in-situ* treatment *via* SVE and MNA. SVE will be used to remediate these areas. Residual groundwater contamination will be remediated by MNA and contained by the barrier wall.

Area 7 – Physical containment, limited excavation and continued groundwater monitoring. The contamination in this area exists around one boring. Therefore, excavation was chosen as the preferred remedy.

Buildings' 9 and 37 Septic System – Physical containment *via* a soil cover and monitored natural attenuation with groundwater monitoring. This area consists of the drywells for the Buildings' 9 and 37 septic system. Due to digging constraints in this area a soil cover will be used until the drywells need to be replaced in the future. Residual groundwater contamination will be remediated by MNA and contained by the subsurface barrier wall.

The remaining areas of the site will be investigated under the State Superfund Program, and a Proposed Remedial Action Plan will be distributed for public comment at a later date.

The purpose of this SB is to provide background information related to the site contamination and investigation (including ICMs), to present the remedy chosen by the Department, and present the basis for its selection. This document provides the opportunity for the public to be informed of and to participate in the development of the remedial program for the facility. Public input on all potential remedial alternatives, and on the information that supports the alternatives, is an important contribution to the corrective measure selection process.

FACILITY BACKGROUND

LOCATION: The SI Group, Inc. (SI Group) Rotterdam Junction site is located at 1000 Route 5S, Rotterdam Junction, Schenectady County. The site is located adjacent to the Mohawk River and is in the Mohawk River Valley flood plain. The area surrounding the site consists predominantly of residential property and some light commercial property *(Figure 1)*.

SITE FEATURES: The site is an active chemical manufacturing facility, entirely fenced and monitored by 24-hour security and encompasses approximately 21 acres. The site is split into two Operable Units (OUs). The focus of this SB is OU1, the east side of the facility, and includes Areas 2, 5, 7, 21, 22 and the septic system associated with Buildings 9 and 37. OU1 consists of approximately half of the site area and approximately two thirds of chemical processes. A phenolic resin is produced on this portion of the facility. The primary site features for OU1 are buildings that contain the equipment for the chemical manufacturing processes; three tank farms including, hazardous waste holding tanks; a railcar unloading area; a warehouse; a powder plant; a boiler house; two cooling towers; and the wastewater treatment plant (WWTP) *(Figure 2)*.

CURRENT ZONING AND LAND USE: The site is zoned for industrial use, and is an active chemical manufacturing facility that operates under Department Permit Number 4-4228-00056/00012. The remaining parcels in the surrounding area are zoned for residential and light commercial use.

PAST USE OF THE SITE: The Rotterdam Junction site was obtained by SI Group in 1948. Prior to 1948, the site was owned and operated by the Boston & Maine Railroad company. A 1913 Sanborn fire insurance map indicates that there were a series of railroad spurs entering the property and converging in the vicinity of a railroad round table and locomotive shed located in the south eastern portion of the site. There were 11 bays in the locomotive house. In addition, an oil house was located adjacent to the locomotive house. A 1933 Sanborn map indicates that the round table and locomotive shop had not substantially changed. The railroad appears to have been in use until sometime prior to SI Group purchasing the site. The round table foundation and portions of the locomotive shop still remain at the site.

The Rotterdam Junction facility commenced operations in 1951 for the manufacture of phenolic resins. In 1969, the facility initiated production of several alkylphenols including butylphenol, octylphenol, amylphenol, nonylphenol, dodecylphenol, and other substituted alkylphenols in the P-300 area located on the West Side.

Solid and hazardous waste has been generated at the facility since operations were initiated in 1951. The waste generated by the facility has been managed in tanks and containers over the years, with the waste either being treated on site by incineration/thermal treatment or shipped off site for treatment and disposal. In March 1998, the Department issued a Hazardous Waste Management Permit (Part 373 Permit) to SI Group allowing the Rotterdam Junction facility to store and incinerate hazardous waste generated onsite and from other SI Group facilities.

In 2003, SI Group closed the incineration facility at the Rotterdam Junction facility as well as the hazardous waste storage tanks and container storage areas used at the facility. Four storage tanks and the container storage area in Building 37 were then placed back in service for the storage of hazardous waste for less than 90 days. With the closure of these units, the Rotterdam Junction facility was no longer classified as a Treatment, Storage and Disposal Facility (TSDF), but re-classified as a large quantity generator of hazardous waste as specified in Title 6 of the New York Code of Rules and Regulations (6 NYCRR) Part 372 and issued a permit for corrective action.

OPERABLE UNITS: The site was divided into two operable units (OUs). An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

The site is managed as two OUs. The site is divided into the East Side OU (OU1) which consists of the eastern half of the site and the West Side OU (OU2) which consists of the western half of the site.

OU1 consists of approximately half of the site area and approximately two thirds of chemical processes. A phenolic resin is produced on this portion of the facility. The primary site features for OU1 are buildings that contain the equipment for the chemical manufacturing processes; three tank farms including, hazardous waste holding tanks; a railcar unloading area; a warehouse; a powder plant; a boiler house; two cooling towers; and the WWTP *(Figures 3 & 4)*.

OU2 consists of the remaining half of the site area and approximately one–third of the remaining chemical processes at the facility where alkyl phenols are manufactured. The primary site features for OU2 are three distillation columns with related process devices, three tank farms and several buildings used for process

control, office space and maintenance operations. The extreme western portion of OU2 is an employee parking lot and large warehouse used for shipping and receiving.

SITE GEOLOGY AND HYDROLOGY: Based on hydrogeological investigations completed at the Rotterdam Junction facility, a groundwater divide exists beneath the site which separates the site into two hydrogeological areas which have been termed the "West Side" and the "East Side". The subsurface geology consists of a sand/gravel unit that overlies a silt/clay unit. In general, the sand/gravel unit is continuous beneath the site and is derived from sand and gravel flood plain deposits associated with the Mohawk River. The thickness of the sand/gravel unit is 9 to 11 feet thick. It varies, primarily with changes in elevation of the silt/clay unit. As the elevation of the silt/clay unit decreases, the sand/gravel unit increases in thickness, and *vice versa*. The sand/gravel layer is generally at its thinnest in the vicinity of the north-south trending groundwater divide.

The silt/clay unit, which underlies the sand/gravel unit is also continuous across the site and consists primarily of lacustrine silt and clay. The silt/clay unit ranges in thickness from 49 to 81 feet; however, the actual thickness of the silt/clay unit beneath the areas of concern was not specifically determined during the various site investigations.

Groundwater is typically encountered at approximately 10 feet below the surface. Groundwater flow at the site generally occurs through the sand/gravel unit and is to the east on the East Side of the groundwater divide, and to the northwest on the West Side of the divide. The localized direction of groundwater flow at the site is believed to be primarily controlled by the elevation of the silt/clay unit.

ENFORCEMENT STATUS

SI Group was issued a permit (August 2012) for the Rotterdam Junction Site under Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 373 by the Department for the management of hazardous wastes at the facility. As one of the permit conditions, SI Group is required to identify, investigate, and remediate areas at the facility that are used for the storage, treatment and disposal of hazardous waste, or where hazardous waste was potentially released. These requirements are specified in Module II of the Part 373 Permit.

A RCRA Facility Investigation (RFI) was completed on the East Side of the facility on August 6, 2016. The RFI Report was approved by the Department on September 7, 2016. In their approval letter, the Department directed that a Corrective Measures Study (CMS) be performed for Areas 2, 5, 7, 21 and 22 and the septic system associated with Buildings 9 and 37.

Several Interim Corrective Measures were performed during the RFI. More details on the Interim Corrective Measures (ICMs) are discussed in the section entitled "INTERIM CORRECTIVE MEASURES" below.

In accordance with Appendix II-C, Section V of the Part 373 Permit, the Corrective Measures Study recommended a corrective measure alternative, for the contamination not addressed by the ICMs performed, based on the technical, human health and environmental criteria. Corrective measures alternatives for Areas 2, 5, 7, 21, 22 and the Buildings' 9 and 37 septic system that included the justification and recommendation of the corrective measures was directed by the Department *(Figure 4).*

The timing of the implementation of the remedy selected for Area 2 is impacted in part by SI Group's compliance with Consent Order No. 44-2014-0131-17M2, which requires certain improvements to the WWTP.

ENVIRONMENTAL ASSESSMENT

NATURE AND EXTENT OF CONTAMINATION:

The RFI describes the nature and extent of soil contamination for the Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) associated with the East Side of the facility (OU1) *(Figure 3)*.

SOIL

Based upon the RFI, the primary contaminants of concern in saturated and unsaturated soils on the East Side of the facility are:

- Volatile Organic Compounds (VOCs): 2-butanone; benzene; ethylbenzene; toluene; styrene and xylene.
- Semi-Volatile Organic Compounds (SVOCs): phenol, 2-methylphenol; 4-methylphenol; anthracene; benzo(a)anthracene; benzo(b)fluoranthene; chrysene; fluoranthene; fluorene; naphthalene; phenanthrene; and phenol.

Additional details are provided below:

SURFACE SOIL

Area 2: Area 2 is occupied by numerous structures and impervious areas. The areas directly north, east and west of the northern end of Area 2 are largely paved. Therefore, no surficial soil samples were collected within Area 2.

Area 5: The surface soil sample collected in Area 5, SS-1, had no parameters detected in exceedance of the Part 375 Unrestricted soil cleanup objectives (SCOs). Therefore, no surficial soil contamination was identified in Area 5.

Area 7: In the one surface soil sample collected from Area 7, metals, polychlorinated biphenyls (PCBs) and pesticides were detected at concentrations slightly exceeding Part 375 Unrestricted SCOs. These concentrations were all below Restricted Residential levels. During investigation activities, no significant source of PCBs or pesticides were identified at the facility. Therefore, surficial soil contamination in Area 7 is believed to be limited in nature and no additional surface soil samples were collected.

Area 21: A majority of Area 21 is paved and only small areas on the northern and eastern edges are permeable surfaces. One surface sample was collected from this area and only the parameters 4,4'-DDE and zinc were detected at a level slightly above the Part 375 Unrestricted SCO. Both of these parameters were well below their respective Restricted Residential SCOs. Therefore, exposure to the relatively low concentrations of these parameters in surficial soils from phenol, 4,4'-DDE and zinc in Area 21 is minimal.

Area 22: One soil sample was collected in Area 22 during RFI sampling activities. Only the PCB aroclor 1248 was detected marginally above the Part 375 Unrestricted SCOs. Similar to the other surface sample locations, the concentration of PCBs was below the Restricted Residential SCO.

Buildings' 9 and 37 Septic System: The area associated with the Buildings' 9 and 37 septic system is largely occupied by numerous structures and impervious areas. Therefore, no surficial soil samples were collected within the septic system area of Buildings 9 and 37.

SUBSURFACE SOIL

Area 2: The analytical results for the soil samples collected from eight borings advanced in the northern portion of Area 2 identified two areas of contamination.

The first area is centered on soil borings GP99-14 and GP100-14. The soil samples collected from the sand and gravel unit, at depths of 13 to 15 feet, exhibited site related VOC contaminant xylene at concentration as high as 5,000 ppm. Xylene contamination was also present in nearby soil boring GP118-15 in the fill unit samples at 5.2 ppm. Soil borings (GP117-15 located east of GP99-14 and GP115-15 located west of GP100-14), contained concentrations less then GP118-15 and delineate the extent of the contamination observed in this area. North of these borings is the barrier wall component of the East Side ICM (ESICM) which serves to delineate the northern extent of the contamination.

The second area of contamination related to Area 2 is located around GP113-15, GP114-15 and GP116-15 (west of Area 2). Xylene was the VOC of concern found in these borings as high as high as 1.2 ppm. All detections in these soil borings, while occasionally above the Unrestricted SCOs, were well below the Part 375 Industrial Use SCOs. Compared to the area of VOC contamination identified around GP99-14 and GP100-14, this area of contamination is of much lower concentration and at a shallower depth. This is a distinct area of contamination separate from the other VOC contamination in the vicinity of GP99-14 and GP100-14 within Area 2. This is further illustrated by the very low detections of VOCs and SVOCs observed in GP115-15 (xylene 1.5 ppm), located between this shallower area and the deeper VOC contamination. In soil boring GP116-15, the sample collected from the sand and gravel unit at a depth of 10 to 11 feet had SVOC detections at concentrations slightly above Unrestricted SCOs which do not appear to be related to Area 2 since the contaminants are located up-gradient of the Area 2 source area. This contamination could be a result of historic releases from Area 1, which are associated with the West Side of the Facility and were remediated in accordance with the West Side CMS.

Area 5: The subsurface investigation in Area 5 resulted in the identification of two distinct areas of contamination. The first area primarily consists of site related VOCs and SVOCs which encompass soil borings GP133-15, GP102-15, GP134-15 and GP103-15, located along the eastern edge of Area 5, on the border with Areas 19 and 22. Concentrations of ethylbenzene (1,600 ppm), xylenes (4,700 ppm) and phenol (35 ppm) were found in these borings. This area of contamination is delineated by the barrier wall to the east, Area 22 and its associated borings to the south, and soil borings GP84-14, GP82-14 and GP101-15, which had significantly lower contamination than those mentioned, to the west and northwest.

The other area of contamination observed in Area 5 was the area around soil boring GP101-15. A number of polyaromatic hydrocarbon (PAH) compounds: benzo(a)anthracene 13 ppm; benzo(a)pyrene 12ppm; and benzo(a)fluroanthene 17 ppm were detected. These concentrations are above both Part 375

Unrestricted and Industrial Use SCOs. Contamination was limited to this boring and did not extend to other nearby locations. Additionally, this soil boring did not exhibit the same constituents as other nearby borings discussed above. This area of contamination is believed to be limited to the area immediately adjacent to this soil boring and within the sand and gravel unit.

Area 7: Two overlapping areas of contamination were observed in soil borings from Area 7. The first consists of site related VOCs exceeding Part 375 Unrestricted SCOs in three soil borings (GP104-15, GP87-14 and GP88-14) located in the central and western parts of Area 7. These borings contained ethylbenzene (170 ppm) and xylene (680 ppm). This area of contamination is delineated by soil boring GP85-14 to the north; GP86-14 to the east; GP107-15, GP106-15, GP105-15 and the barrier wall to the south and west; and GP104-15, GP143-17, GP144-17, and GP145-17 to the northwest.

The other area of observed contamination consists of phenol at concentrations moderately exceeding the Part 375 Unrestricted SCOs but well below the Industrial Use SCOs in soil borings GP85-14, GP87-14, GP 88-14, GP107-14 and GP87-14. The highest concentration of phenol was observed in the fill unit in GP107-15 (10 ppm). Soil borings GP108-15 and GP109-15, located east of this area of contamination serve to delineate the eastern limits. GP86-14 largely delineates the northern extent of the contamination, although additional minor amounts of phenol could persist north of GP85-14. The western and southern limits of this contamination are positively delineated by soil borings GP105-15 and GP106-15 in which no phenol was detected.

Area 21: The results of the soil borings in Area 21 indicate two horizons of contamination. The first is located in the shallow soils in the vicinity of soil boring GP110-15 and consists of both site related VOC and SVOC contamination. Contaminates of concern found in this boring are xylene (110 ppm) and phenol (290 ppm). This horizon of contamination is localized to the area around GP110-15 as evidenced by much lower to no detections of VOCs and SVOCs west, north and east of this soil boring as well as Area 4 to the south. The second horizon of contamination consists of VOCs in the deeper soils and is centered primarily on soil boring GP130-15 (xylene 2,500 ppm) and phenol (900 ppm). This area is delineated to the north and west of GP130-15 by other borings and to the east by the barrier wall. The VOC concentrations detected in GP131-15 were significantly lower than those in GP130-15 indicating a decrease in contamination to the south.

Area 22: Two areas of contamination were identified in Area 22. The first area of contamination is located in the northeast section of Area 22 adjacent to Areas 5 and 19. Soil borings GP122-15 and GP123-15 each had significant detections of site related VOCs ethylbenzene (1,800 ppm) and xylene (3,200 ppm). Further to the south, soil boring GP124-15 had no parameters detected above Unrestricted SCOs. This area of contamination appears to be a continuation of contamination identified just north of GP122-15 during the Area 5 investigation. The southern extent of this contamination is located between GP123-15 and GP124-15.

The second area of contamination is located in the southern section of Area 22 around soil boring GP135-15, VOCs (ethylbenzene 3.9 ppm and xylene 13 ppm) were found in this boring. This area of contamination is delineated by the barrier wall to the east, south and southwest, and the RTO excavation to the northwest. The northern limit of this contamination is generally defined by GP124-15.

Buildings' 9 and 37 Septic System: In the Buildings' 9 and 37 septic system area, the greatest contamination (VOCs, metals, PCBs and pesticides) was observed in the sample of fill collected from the

1.1- to 2-foot interval in GP95-14 (xylene at 1,600 ppm, aroclor 1248 at 58 ppm, several pesticides as high as 950 ppm, and beryllium at 2,930 ppm). Soil borings GP136-15 and GP137-15, located west and south, respectively, of GP128-15 illustrate a further reduction in VOC concentration from those observed in GP95-14, GP127-15 and GP128-15. To the east of GP95-14, soil boring GP129-15 generally delineates the eastern limit of the contamination.

Some site related VOC contamination was observed in the area centered on soil boring GP95-14 and in the area near the Buildings' 9 and 37 septic system. This VOC contamination extended west to GP136-15, south to GP137-15 and west to GP129-15, but decreased drastically over those distances. These borings largely delineate the extent of the VOC contamination.

A second area of contamination was identified in the fill unit in boring GP137-15 and consisted of low to moderate concentrations of PAHs. This PAH contamination extended west to GP138-17, east to GP140-17 and north to GP128-15. The southern extent of this contamination extends beyond GP139-17 and adjacent to Building 2. The levels of contamination are generally consistent with historic fill related impacts.

GROUNDWATER

Area 2: Groundwater contamination was identified on the northeast side of Area 2 in monitoring wells OW61-14, OW68-14 and OW77-15. Xylene was found in well OW77-15 as high as 110,000 ppb. In addition, monitoring well OW15a-85 exhibits the occasional presence of light non-aqueous phase liquid (LNAPL). Groundwater in this area is contained by the barrier wall and caisson pumping system operated under the ESICM. Two ECISM monitoring wells, OW36-95 and OW37-94, located on the outside of the barrier wall from the facility did not have any parameters detected in exceedance of the TOGS 1.1.1 ambient water quality standards. Therefore, while contaminated groundwater is present north and east of the northern end of Area 2, it is contained by the current ESICM.

Area 5: A groundwater sample collected from unused pumping well PW-5, located in the center of Area 5 contained metals iron (9,300 ppb), magnesium (31,200 ppb), manganese (2,500 ppb), and sodium (402,000 ppb) at concentrations slightly above of the TOGS 1.1.1 ambient water quality standards.

In addition to the sample from PW-5, nearby ESICM monitoring wells OW7aR-97 (located inside the barrier wall) and OW40-94 (located outside the barrier wall) were sampled as part of RFI activities in December 2015 and were determined to contain site related VOC concentrations above the TOGS 1.1.1 ambient water quality standards. The significant reduction in concentrations observed between OW7aR-97 and OW40-94 indicates that contaminated groundwater is being retained by the barrier wall and removed by the pumping wells located nearby as part of the ESICM. The remaining contamination observed outside the barrier wall is believed to be residual in nature and has been attenuating over time based on the sampling program included as part of the ESICM.

Area 7: One groundwater sample was collected from OW5a-84, which is located in Area 7 and revealed the presence of Delta-BHC and several metals at concentrations exceeding the TOGS 1.1.1 ambient water quality standards. However, these exceedances were generally low and not indicative of a significant groundwater quality issue in Area 7.

Area 21: Groundwater sampling was not specifically performed within Area 21. Groundwater impacts downgradient of Area 21 are discussed above as part of the Area 5 summary of groundwater impacts.

Area 22: Two ESICM monitoring wells are located in Area 22 and were used to evaluate groundwater in the area. Monitoring well OW6aR-96 is located on the northwest edge of Area 22 and was sampled during ESICM activities in December 2015. Site related VOCs and SVOCs were detected in exceedance of the TOGS 1.1.1 ambient water quality standards in this well. This indicates that groundwater in the vicinity of Area 22 is impacted; however, the sample collected during ESICM activities in December 2015 from monitoring well OW41-94 (outside the barrier wall to the east of Area 22) had no parameters exceeding groundwater standards. This result indicates that potentially contaminated groundwater is being captured by the barrier wall/pumping well system.

Buildings' 9 and 37 Septic System: Each of the groundwater samples collected in the area of the Buildings' 9 and 37 septic system exhibited evidence of contamination. Monitoring wells OW61-14, OW62-14, OW73-15, OW75-15 and OW76-15 each detected site related VOCs at concentrations exceeding the TOGS 1.1.1 ambient water quality standards. Xylene was the most predominant VOCs found in Well OW75-15 at 100,000 ppb.

Groundwater contamination appears to be prevalent across the area investigated in relation to the Buildings' 9 and 37 septic system. Based upon the analytical results, the concentration of constituents decreases further down-gradient from this area and is ultimately contained by the barrier wall and groundwater collection system installed as part of the ESICM.

SOIL VAPOR

Soil vapor intrusion sampling was conducted in occupied structures, including Buildings 1, 2, 22, 27, and 37. In general, the volatile site-specific contaminants of concern (benzene, ethylbenzene, toluene and total xylenes) were detected in all sub-slab, indoor air and outdoor air samples collected as part of the RFI. Concentrations identified in the sub-slab vapor samples ranged from 3.8 to 60.3 ug/m^3 and were generally slightly higher than indoor air concentrations that ranged from 3.8 to 123.8 ug/m^3, with a few exceptions. However, concentrations in indoor air were either comparable to those detected in the associated outdoor air samples or outdoor samples contained higher concentrations than the indoor air. Collectively, these results suggest little to no impact from sub-slab soil vapors to indoor air with regard to site-specific contaminants. Rather, indoor air concentrations are generally consistent with nearby outdoor air concentrations.

Based upon the concentrations of sub-slab and indoor air sample results, no further actions are needed to address soil vapor intrusion in the occupied on-site buildings.

INTERIM CORRECTIVE MEASURES

East Side Interim Corrective Measures

During 1993 and 1994, SI Group constructed an ICM for the east side of the of the facility (ESICM) which is documented and approved by the Department in the report "Certification of Construction for the East Side ICM, dated February 13, 1995. The ESICM consists of the following components: soil/bentonite subsurface barrier wall, flood prevention dike, groundwater extraction system, and groundwater monitoring wells. The purpose of the soil/bentonite barrier wall is to provide a hydraulic barrier between on-site groundwater contamination and the Mohawk River. The groundwater extraction system effectively lowers the groundwater table on the inside of the barrier wall, creating an inward gradient. The ESICM

includes both chemical and hydraulic monitoring. The permit requires the effectiveness of the subsurface barrier wall be monitored by collecting groundwater samples for hydraulic and chemical monitoring. The hydraulic monitoring program provides a method of evaluating the effectiveness of the barrier wall and the groundwater extraction system while the purpose of the chemical monitoring program is to assess changes in groundwater chemistry both inside and outside of the barrier wall.

EXPOSURE ASSESSMENT

The site is an active facility. The facility is fenced and gated, which restricts public access. However, persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. The aquifer for the area is heavily used by both municipal supply wells and private wells. Many of these wells are near the Mohawk River and have a hydraulic connection to it. Private and public water supply wells have been sampled and no site related contamination has been detected. Monitoring wells exist between the water supply wells and the plant that serve as early warning wells.

SUMMARY OF ALTERNATIVES

Several alternatives to address the remaining contamination in Areas 2, 5, 7, 21, 22 and the Buildings' 9 and 37 septic system were evaluated in the CMS. To address contaminated soil, options included: No Further Action; Containment; Soil Vapor Extraction (SVE) and Enhanced Bioremediation; *In-situ* Thermal Desorption; and Excavation and Off-site Disposal. There is groundwater contamination on the majority of the East Side of the facility. The barrier wall constructed as an ICM prevents the contaminated groundwater from leaving the site. There are a series of groundwater collection wells and a caisson system that collect the contaminated groundwater and pump it to the WWTP. Groundwater will continue to be monitored in accordance with the Groundwater Monitoring Plan and the Groundwater Response Plan to determine the effectiveness of any ICM completed for these areas and remedial action for contaminated soil, and also to monitor contaminated groundwater to prevent it from leaving the site. All alternatives include institutional controls, site management and continued groundwater monitoring as part of the final remedy. The CMS Report describes alternatives, considerations and expected costs in more detail.

The primary difference in remedial alternatives for this site is the *in-situ* alternatives (SVE and ISSS) versus *ex-situ* alternatives (excavation). The Department has tentatively selected a remedy for the site that includes:

- limited excavation, SVE, ISSS, physical containment *via* the barrier wall and monitored natural attenuation for Area 2;
- SVE with physical containment *via* the barrier wall for Areas 5, 21 and 22;
- limited excavation with physical containment *via* the barrier wall for Area 7; and
- soil cover with monitored natural attenuation for the Buildings' 9 and 37 septic area.

The Department believes that by implementing these selected remedies the major sources of soil contamination will be eliminated and groundwater contamination will be significantly reduced in each area without compromising the structural integrity of any surrounding structures. In addition, these alternatives are more protective of the aquifer and the Mohawk River than if no action is taken. As noted above, the existing barrier wall groundwater collection and treatment systems for contaminated

groundwater will continue operation, and institutional controls and site management will ensure that these systems are maintained and operated effectively.

SCOPE AND EVALUATION OF CORRECTIVE MEASURE(S)

The Department has selected the following remedies for the site.

Area 2 – "Limited excavation, SVE, ISSS, physical containment *via* the barrier wall and monitored natural attenuation" have been selected as the remedy for this area. An evaluation of the data collected during the RFI suggests that the contamination of concern in Area 2 is present as VOCs, with the highest concentrations being in the upper 15 feet and located in the vicinity of borings GP99-14 (ethylbenzene 820 ppm and xylene 5,000 ppm) and GP100-14 (xylene 1,300 ppm) *(Figure 5)*.

In Area 2, in the vicinity of GP100-14, a new diversion tank associated with the facility's WWTP, will be constructed. Construction of this tank will need to be completed in late 2019 to comply with the existing Order on Consent Index No. R4-2014-0131-17M2. It was determined that ISSS was the better alternative for remediating contaminated soil under the new diversion tank area. This alternative will stabilize the contamination located in the soil while also providing an appropriate structural base for the new diversion tank. Although this option was originally eliminated from the evaluation as part of the Task II CMS, the need for a suitable foundation for the diversion tank, and the expedited schedule for this project have made this alternative feasible at this time. As part of the ISSS, it is anticipated that the upper 10 feet of soil in the area will be excavated to provide capacity for expansion during stabilization activities and allow for the installation of the new diversion tank foundation.

The area surrounding boring GP99-14, will be remediated by using SVE. The total SVE treatment area is approximately 4,100 square feet. SVE will leave some contamination in inaccessible areas with concentrations greater than the Part 375 Unrestricted SCOs. Area 2 will receive a complete cover system following the construction of the remedy and diversion tank of either asphalt/concrete or one-foot of clean soil cover and seeded.

Excavation, SVE, ISSS and MNA are proven technologies for the nature and extent of contaminants present in Area 2 and are expected to be effective at significantly reducing any potential future impact to public health or the environment.

Areas 5, 21 and 22 – SVE and a cover system have been selected as the remedy for these areas. An evaluation of the data suggests that a band of contamination extends from Area 21 through Area 5 and down to Area 22. The contamination of concern in Areas 5, 21 and 22 is present as VOCs and SVOCs. The contaminants of concern are: benzo(a)anthracene 13 ppm; benzo(a)pyrene 12 ppm; benzo(b)fluoranthene 17ppm; ethylbenzene 1,800 ppm; and xylene 4,700ppm. The highest concentrations of these contaminants reside in the upper 18 feet and typically are were found located close to the barrier wall. Although some deep contamination is present, the deeper contamination is considered to be a result of on-going contaminated groundwater migration from west to east across the site. In general, the contamination is consistent with historical fill in the area. These areas of more significant contamination, above 18 feet below ground surface (bgs), will be remediated by SVE. The total SVE treatment area is approximately 14,500 square feet in Area 5, 9,100 square feet in Area 21 and 6,000 square feet in Area 22 *(Figure 6)*.

SVE will leave some residual contamination in these areas, a cover system will be installed following completion of SVE in the areas as needed *(Figure 8)*. Approximately 12,600 square feet in Area 5 and 8,625 square feet in Area 21 is already paved; as such, this pavement will be repaired, as needed, following completion of SVE activities and will serve as the cover system for this portion of Areas 5 and 21. The paved surface that serves as a cover system will be properly maintained in accordance with an updated Site Management Plan to limit contact with subsurface soils. The remaining grass areas within Areas 5, 21 and 22 (approximately 46,975 square feet) will be provided with or maintained with a one (1) foot clean soil cover and seeded. A pre-design sampling program will be utilized to determine if the upper one foot of soil within these areas are clean (*e.g.*, less than the Unrestricted SCOs). For areas with contamination detected at concentrations greater than the Part 375 Unrestricted SCOs, a one (1) foot clean soil cover will be installed and seeded. Due to the location of Areas 5, 21 and 22 within the floodway of the Mohawk River, no additional fill can be readily placed within these areas. Therefore, these existing grass areas will be excavated to a depth of one (1) feet below grade prior to being backfilled with one (1) feet of clean backfill material and seeded to maintain existing elevations.

SVE is a proven technology for the nature and extent of contaminations present in Areas 5, 21 and 22 and is expected to be effective at significantly reducing any potential future impact to public health or the environment.

Area 7 – Limited excavation has been selected as the remedy for this area. An evaluation of the data suggests that the highest contaminant concentrations in Area 7 are present in a single boring, GP88-14 (ethylbenzene 170 ppm and xylene 680 ppm). The contamination around GP88-14 will be excavated. The approximate volume is estimated to be 3,200 square feet *(Figure 7).* The excavation will be advanced to a maximum depth of 12 feet and is constrained by the existing cooling tower, several utilities, overhead power lines, and the RTO pipe rack. Upon completion of the excavation, the area will be backfilled with clean fill and will receive either top soil and seed or will be paved.

Excavation is a proven technology for the type and concentration of contaminations present in Area 7 and is expected to be effective at significantly reducing any potential future impact to public health or the environment.

Buildings' 9 and 37 Septic Area – Cover System is the selected remedy for the Buildings' 9 and 37 septic area. Xylene has been found in soil at a concentration of 1,600 ppm in boring GP 95-14. No active remediation was selected for the Buildings' 9 and 37 septic area due to the inaccessible nature of the subsurface. The Buildings' 9 and 37 septic area has numerous utilities that run through the area in the subsurface. These utilities include the septic system itself as well as a natural gas line, water line, and both freshwater and chemical sewers. In addition, overhead electrical lines are located within this area, and the area is bounded by an electrical substation and Building 37. The entire area will receive a cover system of either asphalt/concrete or a one (1) foot clean soil cover. Much of the Buildings' 9 and 37 septic area (approximately 3,200 square feet) is already paved; as such, this pavement will serve as the cover system for this portion of the Buildings' 9 and 37 septic area. All paved/concrete surfaces that serve as cover systems will be properly maintained in accordance with a Site Management Plan to limit contact with subsurface soils. The remaining portion of the Buildings' 9 and 37 septic area that is currently a grass area (and comprised of approximately 1,050 square feet) will be provided with or maintained with a one (1) foot clean soil cover. A pre-design sampling program will be utilized to determine if the upper one foot

of this area is clean. For areas with contamination concentrations greater than the Part 375 Unrestricted SCOs, a one (1) foot clean soil cover will be installed and seeded. In the future when the drywell needs to be replaced this area will be actively remediated *(Figure 8)*.

For all areas and recommended remedies any contaminated groundwater will continue to be contained by the barrier wall system and pumped to the WWTP. Samples will be collected to for analysis to determine in MNA is viable for the remaining contamination left in the area.

Institutional controls have been implemented that include a Soil and Stormwater Management Plan which ensures that any soil that is excavated in the area is properly tested and managed. It is anticipated that the Soil Management Plan would be updated to include the procedures necessary to excavate and manage of soils in areas where a cover system is placed. The remaining soil contamination is contained on-site and it is expected that natural processes should allow the concentration and toxicity of the remaining contaminated media to reduce over time. The remedial objectives for the soils should be met within 30 years, which is within the expected minimum active life of the Rotterdam Junction facility.

REMEDIATION OBJECTIVES

The remedial objectives and actions to attain them are listed below:

Remedial Action Objectives	Remedial Action
1. Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards	Achieved by availability and connection of the site to the municipal public water supply. Achieved through the containment of contaminated groundwater by means of the East Side Interim Corrective Measures as well as the West Side Groundwater Response Plan/Groundwater Monitoring Plan, which provides an early detection system for any potential migration of contamination from the West Side.
2. Prevent contact with, or inhalation of volatiles, from contaminated groundwater	The Soil and Stormwater Management Plan includes protocols to handle potentially contaminated soil and/or groundwater during future excavation activities to protect construction and utility workers. The East Side Interim Corrective Measures as well as the West Side Groundwater Response Plan/Groundwater Monitoring Plan will require continued monitoring of groundwater to assess contaminant concentrations over time and ensure a plume does not migrate off-site. The East Side RFI indicated that based upon the concentrations of sub-slab and indoor air sample results, vapor intrusion does not appear to be impacting the indoor air within the on-site structures.
3. Restore ground water aquifer to pre-disposal/pre-release conditions to the extent practicable.	The East Side Interim Corrective Measures (a groundwater collection and treatment system) and West Side Groundwater Response Plan/Groundwater Monitoring Plan have been implemented at the site. These include provisions for periodic groundwater monitoring to monitor effectiveness of the collection system with regard to concentrations and plume boundaries.
4. Remove the source of ground or surface water contamination to the extent practicable	Installation of soil vapor extraction systems in select portions of Areas 2, 5, 21 and 22 where soil exceeds the soil cleanup objectives (SCOs). Excavation of the upper 5-10 feet in a select portion of Area 2 and the implementation of in-situ soil stabilization to address deeper soils. Excavation of the accessible contaminated material identified in Area 7 to a maximum depth of up to 10 feet bgs where soil exceeds SCOs. Source material associated with the Buildings 9 and 37 is not

Remedial Action Objectives	Remedial Action
	accessible for removal; however, the existing ESICM provides for containment of residual impacts from this area.
5. Prevent the migration of contaminants that would result in surface water contamination	The East Side Interim Corrective Measures (a groundwater collection and treatment system) and West Side Groundwater Response Plan/Groundwater Monitoring Plan have been implemented at the site. As part of the ESICM, contaminated groundwater is collected and undergoes treatment to remove chemical contaminants. Treated groundwater is monitored in accordance with a NYS SPDES discharge permit prior to discharge to the Mohawk River.
6. Prevent ingestion/direct contact with contaminated soil	Limited source removal (excavation) within portions of Areas 2 and 7 where soil exceeds SCOs. Placement of a 1-foot clean soil cover within accessible locations in Areas 2, 5, 7, 21, 22 and the septic system associated with Buildings 9 and 37. Installation of soil vapor extraction systems in select portions of Areas 2, 5, 21 and 22 where soil exceeds the SCOs. Continued implementation of the site wide Soil and Stormwater Management Plan which ensures that contaminated soil and/or groundwater encountered during excavations are handled properly.
7. Prevent inhalation exposure to contaminants volatilizing from soil	The East Side RFI indicated that based upon the concentrations of sub-slab and indoor air sample results, vapor intrusion does not appear to be impacting the indoor air within the on-site structures.
8. Prevent migration of contaminants that would result in groundwater or surface water contamination	Source removal within Areas 2, 5, 7, and 22 via excavation or soil vapor extraction. Implementation of *in situ* soil stabilization (ISSS) within portions of Area 2 where future access will be limited by the construction of the new wastewater diversion tank. Implementation of a Groundwater Monitoring/Groundwater Response Plan. The East Side Interim Corrective Measures (a groundwater collection and treatment system) and West Side Groundwater Response Plan/Groundwater Monitoring Plan have been implemented at the site. As part of the ESICM, contaminated groundwater is collected and undergoes treatment to remove chemical contaminants. Treated groundwater is monitored in accordance with a NYS water discharge permit prior to discharge to the Mohawk River.

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in the above table. Potential remedial alternatives for the Site were identified, screened and evaluated in the CMS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Attachment C.

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Continued Operation of the ESICM

The ESICM will continue to be implemented. As previously noted, the ESICM was designed and installed to capture all groundwater from the east side of the site and small area of the west side of the site behind the boiler house. Groundwater is collected *via* both a caisson system and from a series of groundwater extraction wells and ensures that contaminated groundwater does not migrate off-site. This collected groundwater is directed to manholes where it is pumped to the waste water treatment system. The current Groundwater Monitoring Plan that has been implemented for monitoring the performance of the barrier wall located on the East Side will continue to be implemented to ensure that contaminated groundwater is not migrating off site.

3. Remedial Components

The corrective measures recommended for Area 2 include a combination of the following: physical containment with monitored natural attenuation and continued groundwater monitoring; SVE of the area where the diversion tank will not be built and ISS has also been selected as part of the remedy for the area of the new diversion tank, which is to be constructed as part of the on-going WWTP project.

The area shown in red within the blue shaded area on Figure 7 has been selected as the location of a new diversion tank associated with the Facility's WWTP, the construction of which will be completed in late 2019. As previously discussed in Section 4, it was determined that ISS was the better alternative for the new diversion tank area. This alternative will provide an appropriate structural base for the new diversion tank while also stabilizing contamination present beneath this tank. Although this option was originally eliminated from the evaluation as part of the Task II CMS, the need for a suitable foundation for the diversion tank, and the expedited schedule for this project have made this alternative feasible at this time. As part of the ISS, it is anticipated that the upper 10 feet of soil in the area shown on Figure 7 will be excavated to provide capacity for expansion during stabilization activities and allow for the installation of the new diversion tank foundation.

The area shown in yellow on Figure 7, will be remediated using SVE. The total SVE treatment area is approximately 4,100 square feet. A pre-design investigation will be conducted within these areas to determine the radius of influence of the vapor extraction wells that will be utilized during the design and operation of the SVE system as well as the collection of data that will be utilized to determine the system design and operational requirements.

Since the SVE treatment will leave some contamination in inaccessible areas, and other portions of Area 2 identified on Figure 7, with contamination concentrations greater than the remedial goals, a cover system will be installed. Following all active remediation, including the excavation/ISSS and in-situ SVE, the highlighted areas on Figure 7 will receive a cover system of either asphalt/concrete or one-foot of clean soil cover and seeded.

The portion of Area 2 to receive the limited excavation and ISS, as shown on Figure 7, is approximately 7,000 square feet and will have an incorporated cover system, (i.e., the finished surface surrounding the new diversion tank will be an asphalt cover and the diversion tank itself will serve as the cover for that portion of Area 2). The portion of Area 2 that will receive in-situ SVE (shown in yellow on Figure 7), is already paved; as such, this pavement will be repaired, as necessary following implementation, and serve as the cover system for this portion of Area 2. All paved/concrete surfaces that serve as cover systems would be properly maintained in accordance with an updated Operation & Maintenance (O&M) Plan to limit contact with subsurface soils. Lastly, the remaining portion of Area 2 (represented in green on Figure 7 and comprised of 3,900 square feet) will be provided with or maintained with a one-foot clean soil cover. There are no parameters exceeding the Part 375 Restricted Residential SCOs in this area. A pre-design sampling program will be utilized to determine if soil in the upper one foot of this area meets Part 375 Unrestricted SCOs. For areas with contamination greater than the Part 375 Unrestricted SCOs, a one-foot clean soil cover will be installed and seeded.

As previously noted, existing and new impervious features would be properly maintained in accordance with an updated O&M Plan. In addition, engineering controls and institutional controls (East Side Groundwater Collection System [GWCS], Groundwater Monitoring Plan, and the Soil Management Plan) would continue to be utilized to control contamination remaining in the area. Additional details associated with the East Side GWCS are detailed in Section 5.1. It is anticipated that the Soil Management Plan will be updated to include the procedures necessary to excavate and manage of soils in areas where a cover system is placed.

The corrective measures recommended for Areas 5, 21 and 22 include a combination of the following alternatives: physical containment with monitored natural attenuation and continued groundwater monitoring and SVE. The details of the selected corrective measures are provided below.

As shown on Figure 8, in yellow, a band of contamination extends from Area 21 through Area 5 and down to Area 22 with concentrations exceeding the remedial goals. This area of more significant contamination will be remediated by SVE. The total SVE treatment area is approximately 14,500 square feet in Area 5; 9,100 square feet in Area 21 and 6,000 square feet in Area 22. A pre-design investigation will be conducted within these areas to determine the radius of influence of the vapor extraction wells that will be utilized during the design and operation of the SVE system. In addition, this investigation will allow for the collection of data that will be utilized to determine the system design and operational requirements.

Since the SVE treatment will likely leave some contamination a cover system will be installed following completion of SVE in the areas shown in yellow and green on Figure 8. Approximately 12,600 square feet in Area 5 and 8,625 square feet in Area 21 is already paved; as such, this pavement will be repaired, as needed, following completion of SVE activities and will serve as the cover system for this portion of Areas 5 and 21. The paved surface that serves as a cover system will be properly maintained in accordance with an updated O&M Plan to limit contact with subsurface soils. The remaining grass areas within Areas 5, 21 and 22 (approximately 46,975 square feet) will be provided with or maintained with a one (1) foot clean soil cover and seeded. A pre-design sampling program will be utilized to determine if the upper one foot of soil within these areas are clean (e.g., less than the Unrestricted SCOs). For areas with contamination detected greater than the Part 375 Unrestricted SCOs, a one (1) foot clean soil cover will be installed and seeded. Due to the location of Areas 5, 21 and 22 within the floodway of the Mohawk River, no additional fill can be readily placed within these areas. Therefore, these existing grass areas will be excavated to a depth of one (1) feet below grade prior to being backfilled with one (1) foot of clean backfill material and seeded to maintain existing elevations.

The selected remedy for Areas 5, 21 and 22 also includes continued implementation of the ESICM. Groundwater in portions of Areas 5, 21 and 22 is impacted but is currently being captured by the barrier wall and GWCS. The barrier wall and the GWCS will continue to be operated.

Existing and new impervious features will be properly maintained in accordance with an updated O&M Plan. In addition, engineering controls and institutional controls (East Side GWCS, Groundwater Monitoring Plan, and the Soil Management Plan) will continue to be utilized to control contamination remaining in the area.

The corrective measures chosen for Area 7 include a combination of the following alternatives: physical containment; limited excavation and continued groundwater monitoring. The details of the selected corrective measures are provided below.

Limited excavation was selected for the vicinity of boring GP88-14 with a total area of 3,200 square feet, shown as the hatched area on Figure 9. The excavation will be advanced to a maximum depth of 12 feet and is limited by the existing cooling tower, several utilities, overhead power lines, and the RTO pipe rack. Upon completion of the limited excavation, the area will be backfilled with clean fill and will receive either top soil and seed or will be paved.

Following the limited excavation, the entire area shown in green on Figure 9, consisting of approximately 15,900 square feet (12,700 square feet outside the limits of the excavation), will receive a cover system of either asphalt or a one (1) foot clean soil cover. Approximately 3,800 square feet is already paved; as such, this pavement will serve as the cover system for this portion of Area 7. The paved surface that serves as a cover system will be repaired (as needed) and properly maintained in accordance with a Site Management Plan to limit contact with subsurface soils. The remaining grass area (approximately 8,900 square feet) will be provided with or maintained with a 1 foot of clean soil cover. A pre-design sampling program will be utilized to determine if the upper one foot of this area is clean. For areas with contamination greater than the Part 375 Unrestricted SCOs, a one (1)-foot clean soil cover will be installed and seeded.

The selected corrective measures for Area 7 also includes continued implementation of the ESICM. The barrier wall (located to the south of Area 7) and the GWCS will continue to be operated in order to prevent the off-site migration of contaminated groundwater. The corrective measure selected for Buildings' 9 and 37 septic area are provided below:

Physical containment via a cover system; monitored natural attenuation and continued groundwater monitoring. No active remediation was selected for the Buildings' 9 and 37 septic area due to the inaccessible nature of the subsurface. The Buildings' 9 and 37 septic area has numerous utilities that run through the area in the subsurface. These utilities include the septic system itself as well as a natural gas line, water line, and both freshwater and chemical sewers. In addition, overhead electrical lines are located within this area, and the area is bounded by an electrical substation and Building 37. The contaminated soil surrounding the drywell will be excavated in the future when the drywell is replaced.

Since contamination will remain in the Buildings' 9 and 37 septic area, the entire area will receive a cover system of either asphalt/concrete or a one (1)-foot clean soil cover. Much of the Building's 9 and 37 septic area (approximately 3,200 square feet) is already paved; as such, this pavement will serve as the cover system for this portion of the Buildings' 9 and 37 septic area. All paved/concrete surfaces that serve as cover systems will be properly maintained in accordance with a Site Management Plan to limit contact with subsurface soils. The remaining portion of the Buildings' 9 and 37 septic area that is currently a grass area (and comprised of approximately 1,050 square feet) will be provided with or maintained with a 1-foot clean soil cover. A pre-design sampling program will be utilized to determine if the upper one foot of this area is clean. For areas with contamination greater than the Part 375 Unrestricted SCOs, a one (1)-foot clean soil cover will be installed and seeded.

The selected corrective measures for the Buildings' 9 and 37 septic area also includes continued implementation of the ESICM.

PUBLIC PARTICIPATION

The public was notified that May 2, 2018 through June 18, 2018 was the chosen public comment period.

Any questions or comments regarding the Statement of Basis were submitted to:

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Division of Environmental Remediation
1130 N. Westcott Rd
Schenectady, NY 12306
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Document Availability

This SB and the referenced reports were made available to the public. The public was encouraged to view these documents, which are available at the following repositories:

SI Group, Inc.
1000 Main St
Rotterdam Junction NY 12150
(518) 347-4200

Schenectady County Public Library
99 Clinton St
Schenectady, NY 12305
(518) 388-4500

Files related to the remediation of this site are available on SI Group's website (http://www.siigroup.com), at the Schenectady County Public Library, or can be viewed at NYSDEC Region 4 Office, 1130 N. Westcott Rd., Schenectady NY 12306. If interested in seeing files at the NYSDEC Region 4 Location, please contact the individual listed above for an appointment.

There were no questions or comments received by the Department during the public comment period.

Attachment A

Data Tables

Table 1 – Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,2-Dichlorobenzene	1.7 to 1.9	3	0 / 20
1,4-Dichlorobenzene	0.88 J	3	0 / 20
2-Butanone	29 J to 110	50	1 / 20
4-Methyl-2-Pentanone	290	NS	NA
Acetone	3.5 J to 340 J	50	1 / 20
Benzene	1.5 to 65 J	1	13 / 20
Benzene, (1-methylethyl)-	15 to 360 J	5	9 / 20
Chlorobenzene	6.2 to 1,000 J	5	6 / 20
Cyclohexane	1.2 J to 4.7 J	NS	NA
Ethylbenzene	170 to 30,000 †HJ	5	10 / 20
Methylcyclohexane	4.9 ^ to 98 ^J	NS	NA
Styrene	210 F1 to 340	5	2 / 20
Toluene	20 to 1,900 †J	5	9 / 20
Xylenes, Total	1.4 J to 100,000 †	5	10 / 20
SVOCs			
1,1'-Biphenyl	2.7 J to 47	5	1 / 20
2,4-Dimethylphenol	1.6 J to 340 J	50	6 / 20
2,4-Dinitrotoluene	0.46 J	5	0 / 20
2-Methylnaphthalene	9 J to 18 J	NS	NA
2-Methylphenol	0.79 J to 1,100	NS	NA
4-Methylphenol	12 to 430 J	NS	NA
Acetophenone	1 J to 41	NS	NA
Atrazine	6.9 J	7.5	0 / 20
Benzaldehyde	2.4 J to 13	NS	NA
Bis(2-Ethylhexyl) Phthalate	2.3 J to 2.8 J	5	0 / 20
Di-N-Butylphthalate	0.7 J	50	0 / 20
Naphthalene	2.1 J to 53 J	10	5 / 20
Phenol	9.6 J to 4,400 B	2	7 / 20

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Pesticides/PCBs			
4,4'-DDT	0.089 JB to 0.098 JB	0.2	0 / 8
Delta-BHC	0.11 JN	0.04	1 / 8
Gamma-Chlordane	0.012 J	NS	NA
Heptachlor Epoxide	0.014 J	0.03	0 / 8
Methoxychlor	0.24 J to 0.38 J	35	0 / 8
Metals			
Aluminum	65 J to 430	NS	NA
Arsenic	27 to 31	25	3 / 8
Barium	81 to 300	1,000	0 / 8
Calcium	102,000 to 184,000	NS	NA
Chromium	1.4 J to 6.4	50	0 / 8
Cobalt	0.71 J to 2.2 J	NS	NA
Copper	1.7 J to 5.3 J	200	0 / 8
Iron	4,800 to 33,500 J	300	8 / 8
Lead	3.3 J to 3.8 J	25	0 / 8
Magnesium	20,300 J to 38,700	35,000	3 / 8
Manganese	420 J to 4700 J	300	8 / 8
Nickel	4.1 J to 28	100	0 / 8
Potassium	670 to 18,000	NS	NA
Sodium	113,000 to 454,000	20,000	8 / 8
Vanadium	1.6 J to 3.1 J	NS	NA
Zinc	6.2 J to 14	2,000	0 / 8

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b - SCG: Standard Criteria or Guidance – Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1)
NS – No standard criteria or guidance value.
NA – Not applicable, no standard criteria or guidance value for comparison.
J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B = Compound detected in laboratory blank sample.
N = Presumptive evidence of material.
^ = ICV, CCV, ICB, CCB, ISA, ISS, CRI, CRA, DLCK or MRL standard: Instrument related QC outside acceptable limits.
F1 = MS and/or MSD Recovery outside acceptable limits.
† = Result is from a second run at a specified dilution. Result from initial run exceeded the calibration run. Dilution factors and other details provided in the analytical laboratory report.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
1,1,2,2-Tetrachloroethane	.0053 J	NS	NA	NS	NA
1,1,2-Trichloroethane	.0053 J	NS	NA	NS	NA
1,2,4-Trichlorobenzene	.0053 J to 0.620	NS	NA	NS	NA
1,2-Dibromoethane	.0053 J	NS	NA	NS	NA
1,2-Dichlorobenzene	0.00032 J to 37	1.1	2 / 128	1,000	0 / 128
1,3 Dichlorobenzene	0.00023 J to 0.0053 J	2.4	0 / 128	560	0 / 128
1,4 Dichlorobenzene	0.00027 J to 0.4 J	1.8	0 / 128	250	0 / 128
2-Butanone	0.0024 J to 0.026 J	0.12	0 / 128	1,000	0 / 128
2-Hexanone	0.0026 J	NS	NA	NS	NA
4-Methyl-2-Pentanone	0.0026 J	NS	NA	NS	NA
Acetone	0.0043 J to 0.29	0.05	12 / 128	1,000	0 / 128
Benzene	0.00034 J to 0.4	0.06	0 / 128	89	0 / 128
Benzene (1-methylethyl)	0.00025 J to 14 J	NS	NA	NS	NA
Bromomethane	0.097 J	NS	NA	NS	NA
Carbon Disulfide	0.00057 J to 0.002	NS	NA	NS	NA
Chlorobenzene	0.00016 J to 8.2 J	1.1	3 / 128	1,000	0 / 128
Chloroform	0.00036 J	0.37	0 / 128	700	0 / 128
Cis-1,2-Dichloroethene	0.00079 J	0.25	0 / 128	1,000	0 / 128
Cyclohexane	0.00054 J to 13,000	NS	NA	NS	NA
Ethylbenzene	0.00024 J to 1800	1	22 / 128	780	7 / 128
Methyl Acetate	0.38 J	NS	NA	NS	NA
Methyl T-Butyl Ether (MTBE)	0.00032 J to 0.019 J	0.93	0 / 128	1,000	0 / 128
Methylcyclohexane	0.00056 J to 65	NS	NA	NS	NA
Methylene Chloride	0.00051 J to 7.6	0.05	1 / 128	1000	0 / 128
Styrene	0.0053 J	NS	NA	NS	NA
Tetrachloroethene	0.063 J	1.3	0 / 128	300	0 / 128
Toluene	0.00021 J to 60	0.7	15 / 128	1000	0 / 128
Trans-1,2-Dichloroethene	0.00066 J to 0.001 J	0.19	0 / 128	1,000	0 / 128
Trichloroethylene	0.0028 J	0.47	0 / 128	400	0 / 128
Xylenes	0.00067 J to 5,000	0.26	25 / 128	1000	13 / 128
SVOCs					
1,1'-Biphenyl	0.036 J to 43	NS	NA	NS	NA
2,4-Dimethylphenol	0.087 J to 8.2	NS	NA	NS	NA
2-Methylnaphthalene	0.011 J to 1.3 J	NS	NA	NS	NA

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
2-Methylphenol	0.017 J to 4.3	0.33	3 / 124	1,000	0 / 124
4-Methylphenol	0.021 J to 11	NS	NA	NS	NA
Acenaphthene	0.012 J to 1.3 J	20	0 / 124	1,000	0 / 1124
Acenaphthylene	0.014 J to 0.5 J	100	0 / 124	1000	0 / 124
Acetophenone	0.016 J to 1.4 J	NS	NA	NS	NA
Anthracene	0.110 J to 5.1	100	0 / 124	1,000	0 / 124
Atrazine	0.130 J to 1.5	NS	NA	NS	NA
Benzaldehyde	0.036 J to 0.16 J	NS	NA	NS	NA
Benzo(a)Anthracene	0.019 J to 13	1	0 / 124	11	1 / 124
Benzo(a)Pyrene	0.014 J to 12	1	1 / 124	1.1	1 / 124
Benzo(b)Fluoranthene	0.026 J to 17	1	1 / 124	1.1	1 / 124
Benzo(G,H,I)Perylene	0.047 J to 3.9	100	0 / 124	1,000	0 / 124
Benzo(k)Fluoranthene	0.021 J to 6.4	0.8	2 / 124	110	0 / 124
Bis(2-Ethylhexyl) Phthalate	0.016 J to 8.1	NS	NA	NS	NA
Butyl Benzyl Phthalate	0.027 J to 0.31 J	NS	NA	NS	NA
Carbazole	0.01 J to 0.79 J	NS	NA	NS	NA
Chrysene	0.014 J to 13	1	2 / 124	110	0 / 124
Dibenzo(A,H)Anthracene	0.027 J to 1.4	0.33	0 / 124	1	1 / 124
Dibenzofuran	0.014 J to 2.3	7	0 / 124	1,000	0 / 124
Diethylphthalate	0.075 J	NS	NA	NS	NA
Dimethylphthalate	0.017 J to 0.11 J	NS	NA	NS	NA
Di-N-Butylphthalate	0.45 J to 1.8 J	NS	NA	NS	NA
Fluoranthene	0.013 J to 37	100	0 / 124	1,000	0 / 124
Fluorene	0.0089 J to 2.2	30	0 / 124	1,000	0 / 124
Indeno(1,2,3-Cd)Pyrene	0.028 J to 5.2	0.5	2 / 124	11	0 / 124
Naphthalene	0.015 J to 3.8	12	0 / 124	1,000	0 / 124
Phenanthrene	0.013 J to 20	100	0 / 124	1,000	0 / 124
Phenol	0.082 J to 290	0.33	33 / 124	1,000	0 / 124
Pyrene	0.019 J to 22	100	0 / 124	1,000	0 / 124

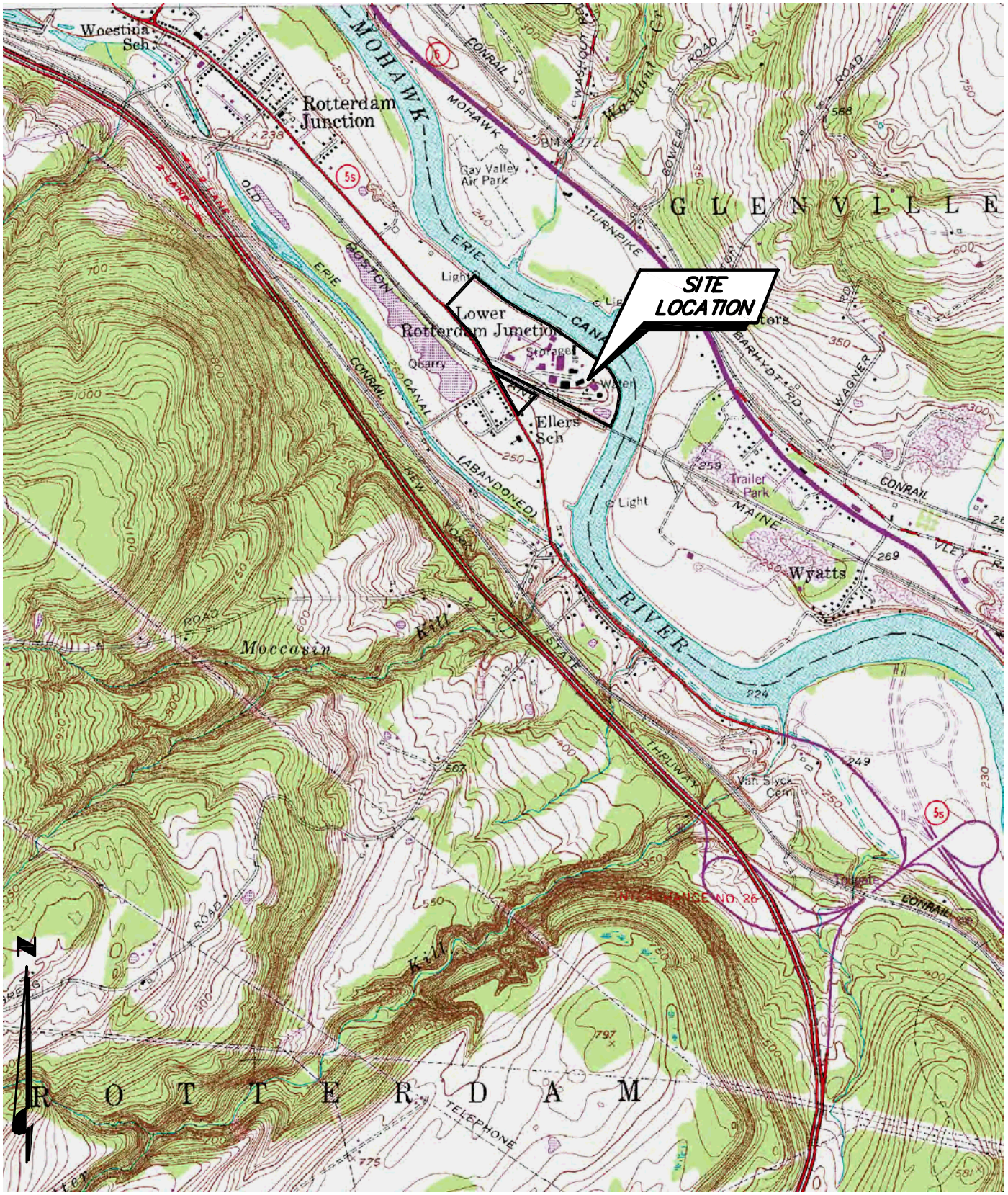
Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Pesticides/PCBs					
Aroclor-1248	0.04 J to 58 J	0.1	1 / 24	25	1 / 24
Aroclor-1254	0.00018 J	0.1	1 / 24	25	0 / 24
4,4'-DDD	0.00048 J to 0.14 J	0.0033	1 / 24	180	0 / 24
4,4'-DDE	0.00045 J to 0.62 JN	0.0033	3 / 24	120	0 / 24
4,4'-DDT	0.00066 J to 0.12 J	0.0033	4 / 24	94	0 / 24
Aldrin	0.0054 J to 0.95 R	0.005	2 / 24	1.4	0 / 24
Beta-BHC	0.00058 J to 0.65	0.036	0 / 24	14	0 / 24
Delta-BHC	0.00055 J to 0.53 J	0.04	1 / 24	1,000	0 / 24
Dieldrin	0.00057 J	0.005	0 / 24	2.8	0 / 24
Endosulfan I	160 JN	2.4	0 / 24	920	0 / 24
Endosulfan II	0.00047 JN	2.4	0 / 24	920	0 / 24
Gamma-Bhc (Lindane)	0.01 J to 1400 R	NS	NA	NS	NA
Gamma-Chlordane	0.002 JN to 0.49 JN	0.1	0 / 24	23	0 / 24
Heptachlor	550	0.042	1 / 24	29	0 / 24
Heptachlor Epoxide	0.015 JN to 0.76 J	NS	NA	NS	NA
Methoxychlor	0.00048 JR to 0.15 JN	NS	NA	NS	NA
Metals					
Aluminum (Fume Or Dust)	1,340 to 27,100 J	NS	NA	NS	NA
Antimony	0.53 J to 18.7 J	NS	NA	NS	NA
Arsenic	1.6 J to 10.2	13	0 / 24	16	0 / 24
Barium	13.5 J to 2930	350	1 / 24	10,000	0 / 24
Beryllium	0.37 to 0.69	7.2	0 / 24	2,700	0 / 24
Cadmium	0.052 J to 0.67 J	2.5	0 / 24	60	0 / 24
Calcium	1,040 BJ to 135,000	NS	NA	NS	NA
Chromium	3.4 to 81.2	30	1 / 24	6,800	0 / 24
Cobalt	3.2 J to 10.3	NS	NA	NS	NA
Copper	3.5 J to 30.1	50	0 / 24	10,000	0 / 24
Iron	6,790 to 25,900	NS	NA	NS	NA
Lead	4.4 to 344	63	1 / 24	3,900	0 / 24
Magnesium	2,080 J to 64,900	NS	NA	NS	NA
Manganese	165 to 531 J	1,600	0 / 24	10,000	0 / 24
Mercury	0.01 J to 0.77	0.18	2 / 24	5.7	0./24

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Nickel	4.6 J to 27.3	30	0 / 24	10,000	0 / 24
Potassium	331 J to 1020	NS	NA	NS	NA
Sodium	45.5 J to 1300	NS	NA	NS	NA
Vanadium (Fume Or Dust)	10 to 31	NS	NA	NS	NA
Zinc	13.4 to 703	109	0 / 24	10,000	0 / 24

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use, unless otherwise noted.
NS – No standard criteria or guidance value.
NA – Not applicable, no standard criteria or guidance value for comparison.
J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B = Compound detected in laboratory blank sample.
N = Presumptive evidence of material.

Attachment B

Figures



SOURCE: NYSDOT 7.5' Topographic
QUADRANGLE: ROTTERDAM JUNCTION, NY

SCALE: 1"=2000'

FIGURE 1

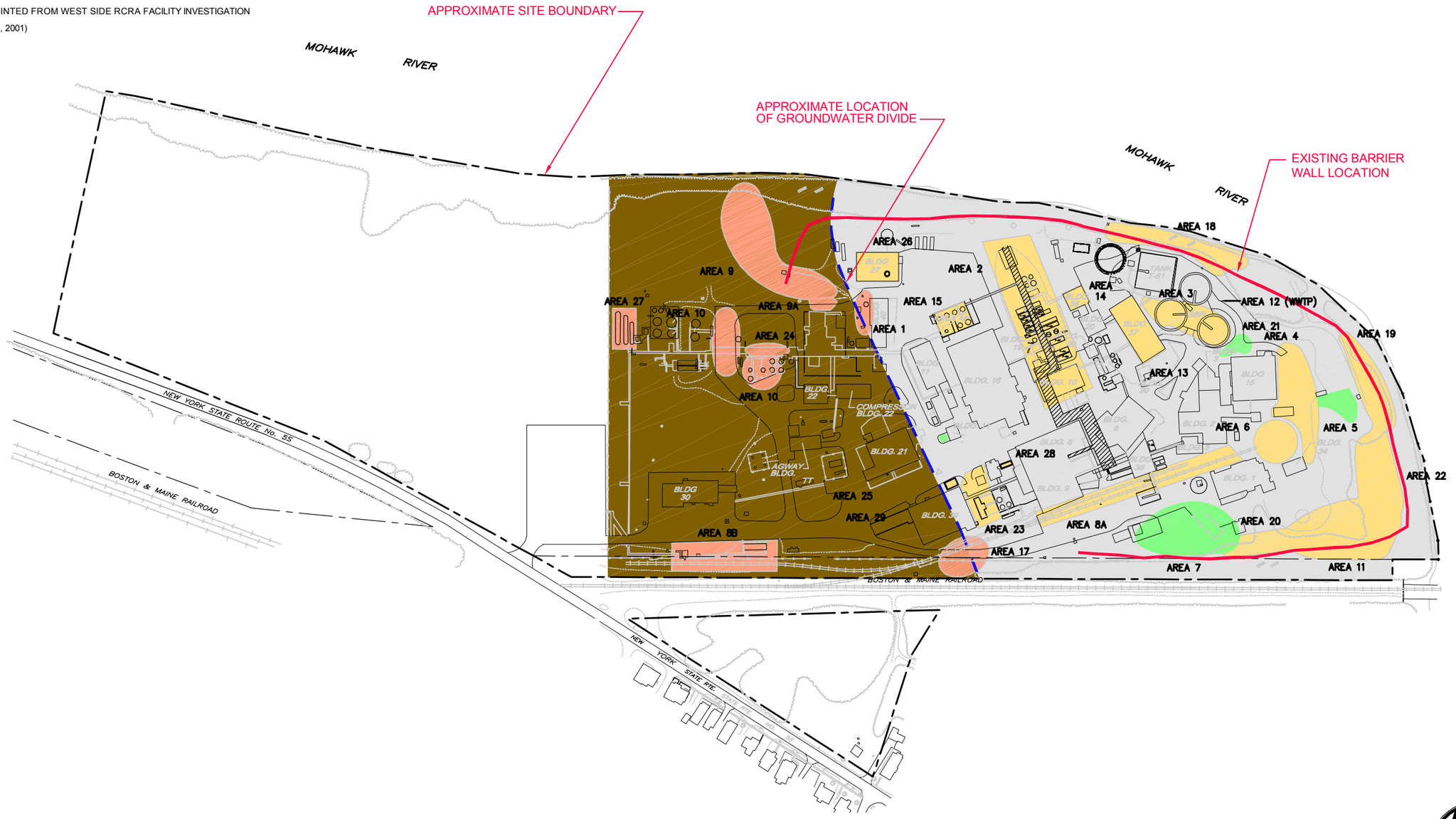
SITE LOCATION MAP

ROTTERDAM JUNCTION PLANT
SI GROUP, INC.
Rotterdam, New York
January, 2016

MAP REFERENCE: TOPOGRAPHIC SURVEY OF ROTTERDAM JUNCTION PROPERTY, SCHENECTADY CHEMICALS, INC. DATED OCTOBER 4, 1994 PROVIDED BY C.T. MALE ASSOCIATES, P.C.

MAP REPRINTED FROM WEST SIDE RCRA FACILITY INVESTIGATION

(CRA; MAY, 2001)



LEGEND

- APPROX. SITE BOUNDARY
- GROUNDWATER DIVIDE (APPROXIMATE LOCATION)
- EXISTING BARRIER WALL LOCATION (SLURRY WALL)
- SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN – NO INVESTIGATION AT THIS TIME
- SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN – PROPOSED INVESTIGATION EAST SIDE
- SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN – WEST SIDE
- WEST SIDE OU2
- EAST SIDE OU1

MAP REFERENCE: TOPOGRAPHIC SURVEY OF ROTTERDAM JUNCTION PROPERTY, SCHENECTADY CHEMICALS, INC. DATED OCTOBER 4, 1994 PROVIDED BY C.T. MALE ASSOCIATES, P.C.

0 250 500

Scale in feet

FIGURE 2

SITE PLAN

ROTTERDAM JUNCTION PLANT
SI GROUP, INC.
Rotterdam, New York
January, 2016

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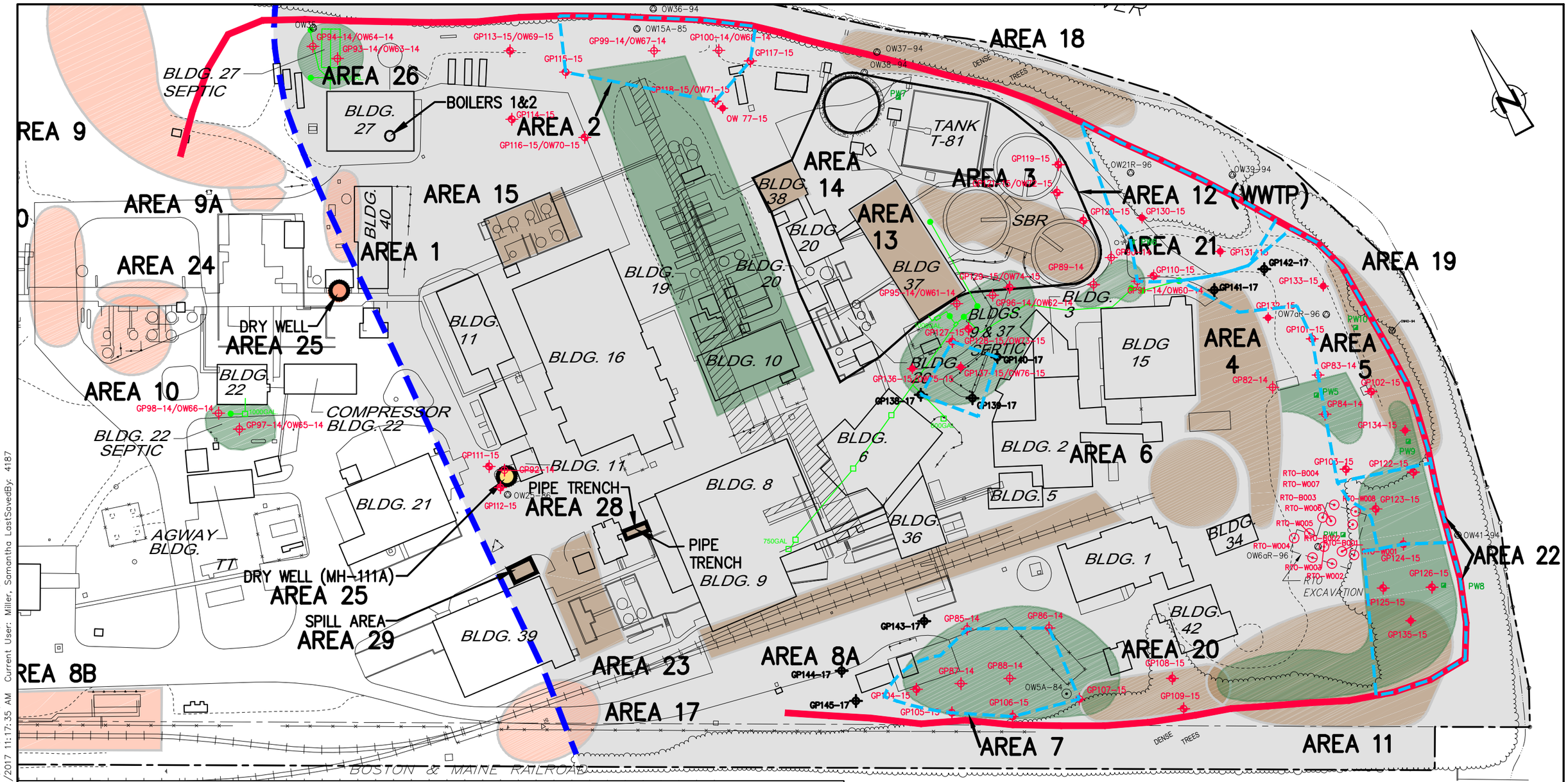

LEGEND

- EAST SIDE
- 2017 SOIL BORING
- SOIL BORING/MONITORING WELL – PHASE I
- SOIL BORING/MONITORING WELL – PHASE II
- SOIL BORING/MONITORING WELL – PHASE III
- SURFACE SOIL – PHASE I
- SURFACE SOIL – PHASE II
- ESICM MONITORING
- SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN – WEST SIDE
- PW1 PUMPING WELL TO BE SAMPLED
- PROPERTY BOUNDARY
- GROUNDWATER DIVIDE (APPROXIMATE LOCATION)
- EXISTING BARRIER WALL LOCATION (SLURRY WALL)
- APPROXIMATE CONTAMINATION
- SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN NO INVESTIGATION AT THIS TIME
- SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN PROPOSED INVESTIGATION

MAP REFERENCE:
TOPOGRAPHIC SURVEY OF ROTTERDAM JUNCTION PROPERTY, SCHENECTADY CHEMICALS, INC. DATED OCTOBER 4, 1994 PROVIDED BY C.T. MALE ASSOCIATES, P.C.

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FIGURE 5

APPROXIMATE EXTENT OF CONTAMINATION

EAST SIDE Corrective Measures Study

ROTTERDAM JUNCTION FACILITY SI GROUP, INC.

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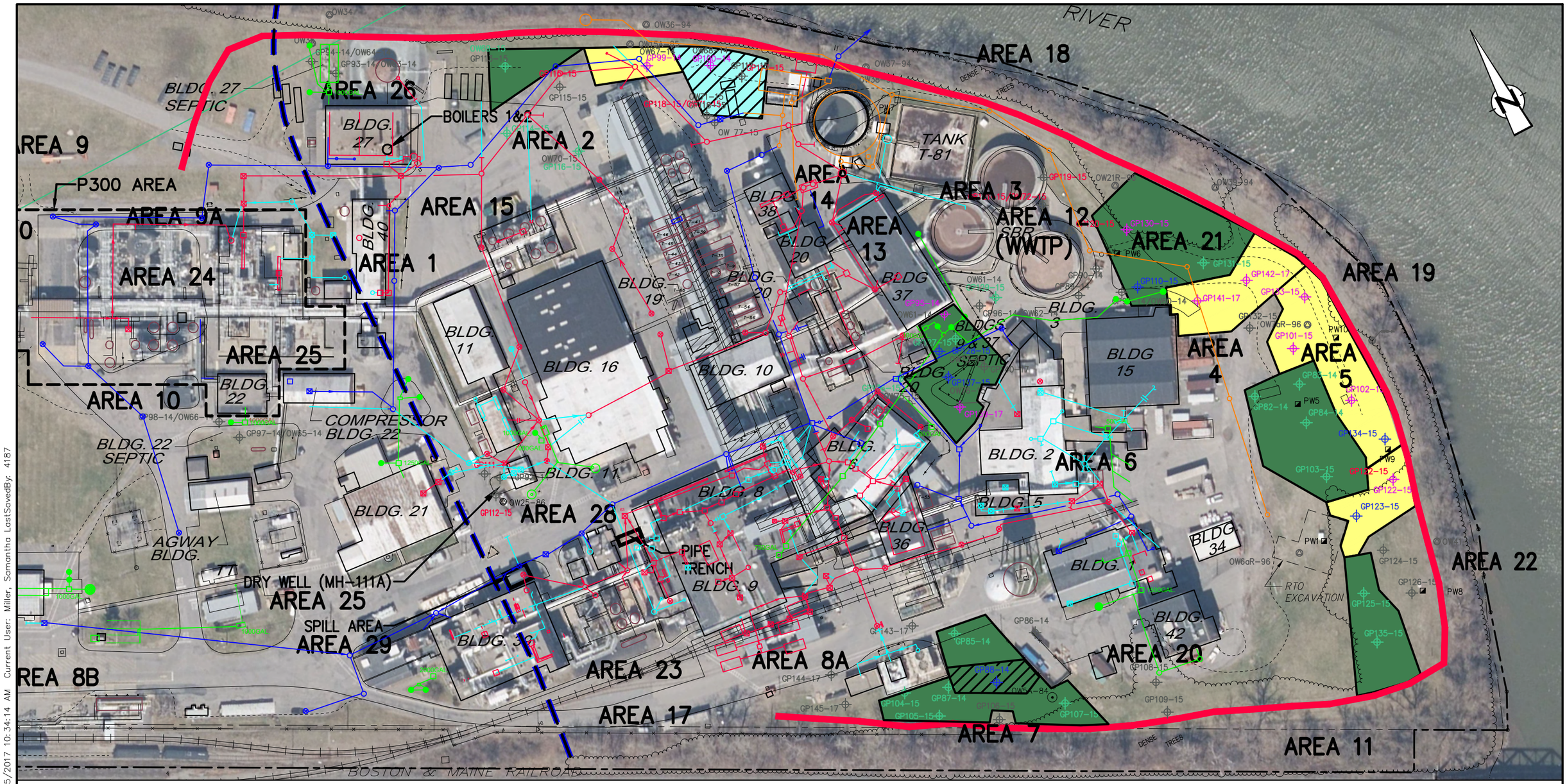

LEGEND

- GREATER THAN UNRESTRICTED, LESS THAN RESIDENTIAL SCOs
- GREATER THAN RESIDENTIAL, LESS THAN INDUSTRIAL SCOs
- GREATER THAN INDUSTRIAL SCOs
- LESS THAN UNRESTRICTED SCOs
- ESICM MONITORING
- ROUND MANHOLE OPEN COVER
- ROUND MANHOLE CLOSED COVER
- SQUARE MANHOLE OPEN COVER
- SQUARE MANHOLE CLOSED COVER
- PROPERTY BOUNDARY
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- EXISTING BARRIER WALL LOCATION (SLURRY WALL)
- OUTFALL MONITORING AND FORCE MAIN COLLECTION SYSTEM
- CHEMICAL SEWER
- FRESH WATER SEWER
- SANITARY SEWER
- SEWER ABANDON IN PLACE
- 000GAL SEPTIC TANK
- DRY WELL
- TANK
- PW1 PUMPING WELL TO BE SAMPLED
- 1' CLEAN COVER AS NEEDED BASED ON PRE-DESIGN SAMPLING
- EXCAVATION
- IN-SITU SOIL STABILIZATION
- SOIL VAPOR EXTRACTION / 1' CLEAN COVER AS NEEDED BASED ON PRE-DESIGN SAMPLING

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MAP REFERENCE:
TOPOGRAPHIC SURVEY OF ROTTERDAM JUNCTION PROPERTY, SCHENECTADY CHEMICALS, INC. DATED OCTOBER 4, 1994 PROVIDED BY C.T. MALE ASSOCIATES, P.C.

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FIGURE 6
EAST SIDE RECOMMENDED CORRECTIVE MEASURES
EAST SIDE Corrective Measures Study

ROTTERDAM JUNCTION FACILITY — SI GROUP, INC.

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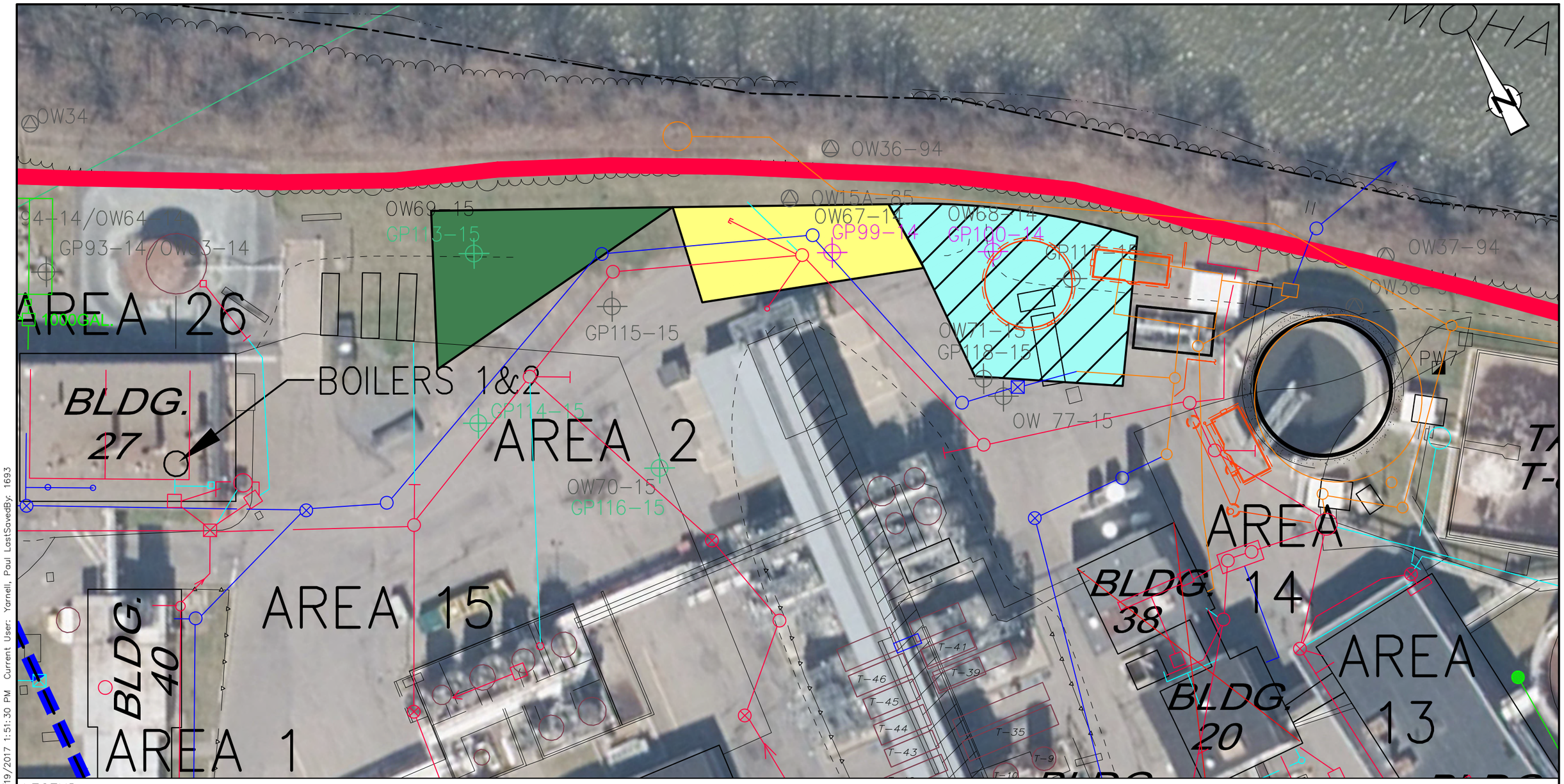

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- TANK
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- IN-SITU SOIL STABILIZATION
- SOIL VAPOR EXTRACTION / 1' CLEAN COVER AS NEEDED BASED ON PRE-DESIGN SAMPLING

MAP REFERENCE:
TOPOGRAPHIC SURVEY OF ROTTERDAM JUNCTION PROPERTY, SCHENECTADY CHEMICALS, INC. DATED OCTOBER 4, 1994 PROVIDED BY C.T. MALE ASSOCIATES, P.C.

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FIGURE 7
AREA 2 RECOMMENDED CORRECTIVE MEASURES
EAST SIDE Corrective Measures Study

ROTTERDAM JUNCTION FACILITY | SI GROUP, INC.

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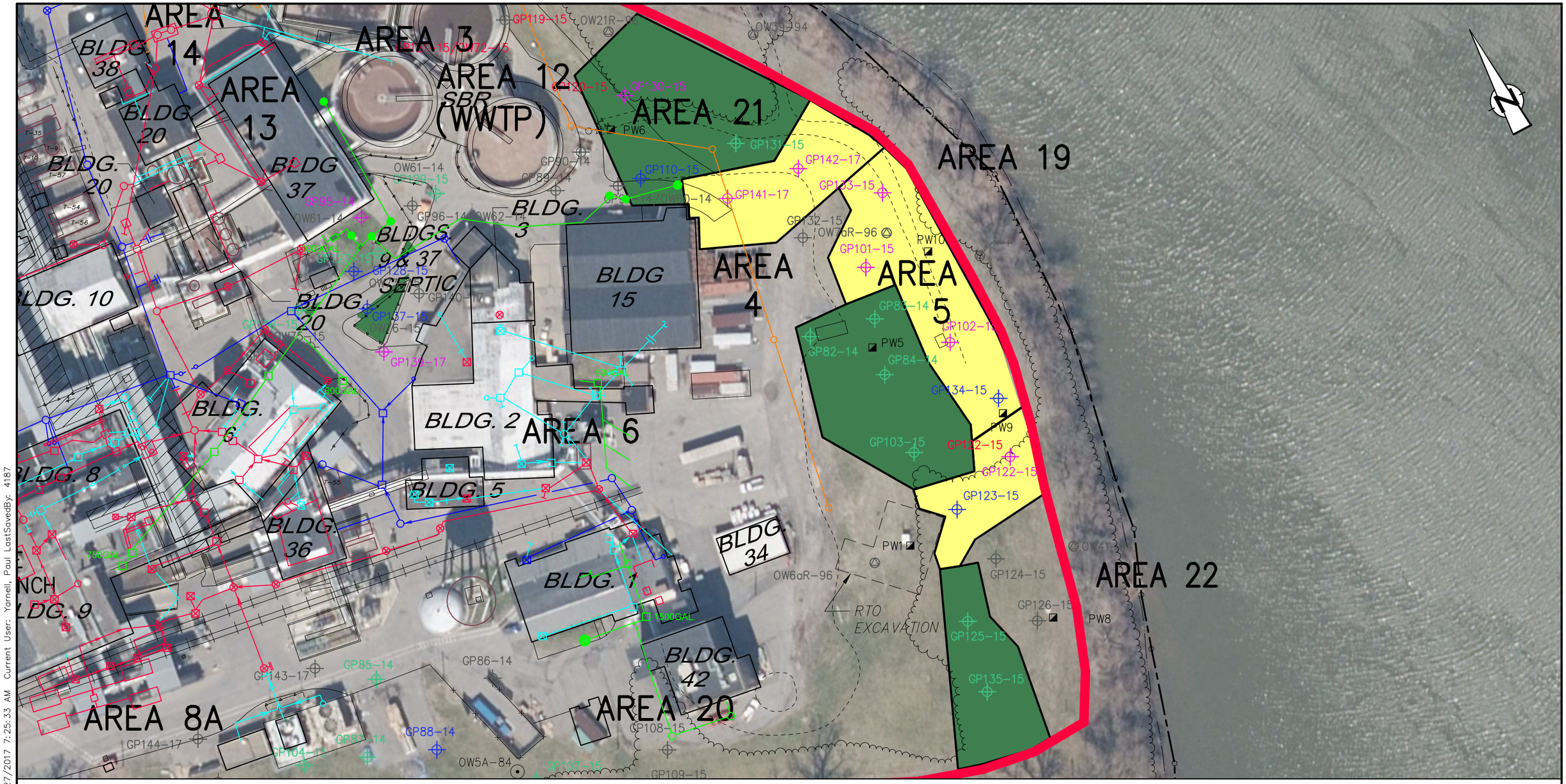

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- DRY WELL
- TANK
- PW1 PUMPING WELL TO BE SAMPLED

MAP REFERENCE:
TOPOGRAPHIC SURVEY OF ROTTERDAM JUNCTION PROPERTY, SCHENECTADY CHEMICALS, INC. DATED OCTOBER 4, 1994 PROVIDED BY C.T. MALE ASSOCIATES, P.C.

- 1' CLEAN COVER AS NEEDED BASED ON PRE-DESIGN SAMPLING
- SOIL VAPOR EXTRACTION / 1' CLEAN COVER AS NEEDED BASED ON PRE-DESIGN SAMPLING

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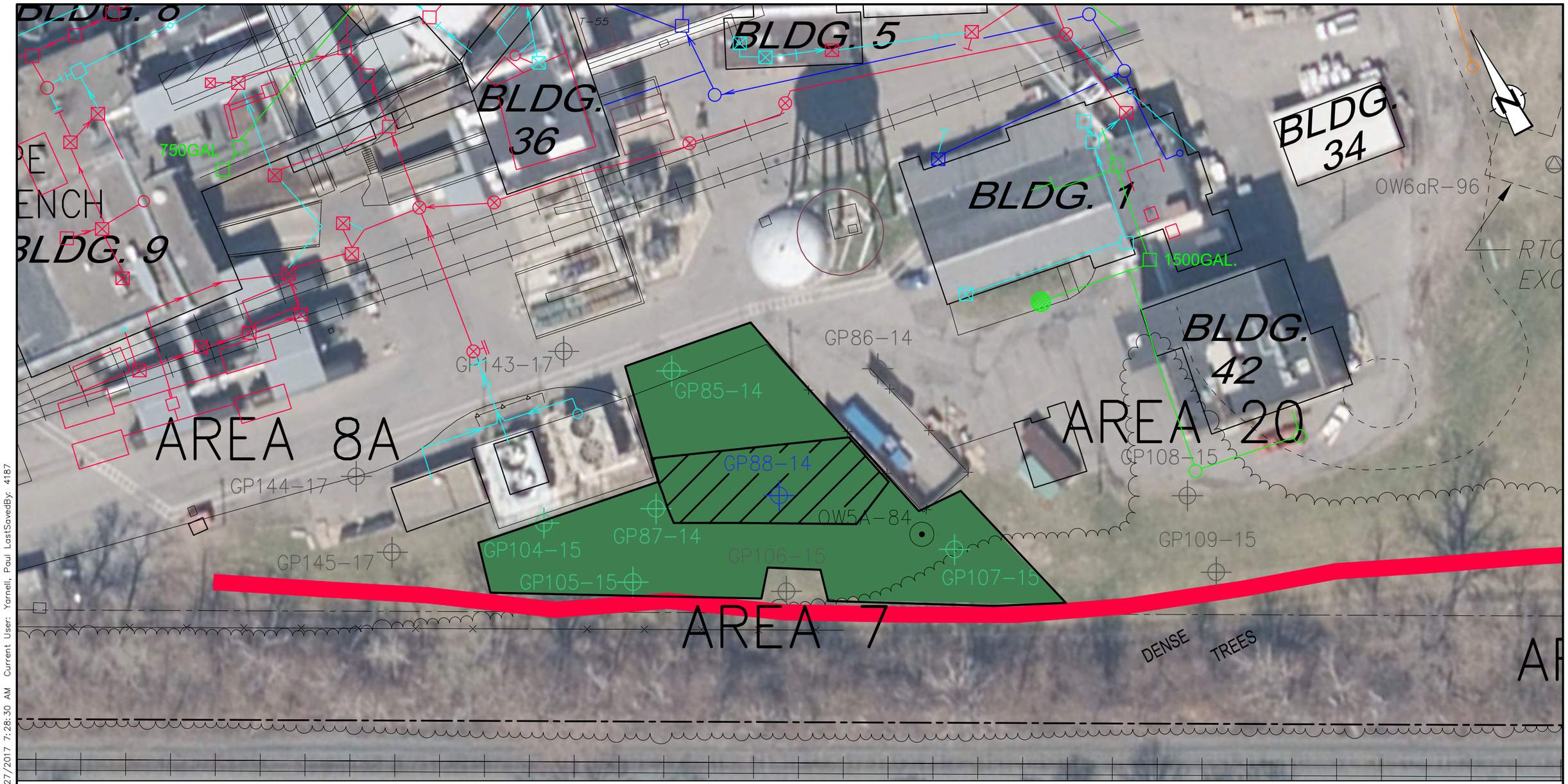
FIGURE 8

AREAS 5, 21 & 22 RECOMMENDED CORRECTIVE MEASURES

EAST SIDE Corrective Measures Study

ROTTERDAM JUNCTION FACILITY — SI GROUP, INC.



LEGEND

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- EXCAVATION

MAP REFERENCE:
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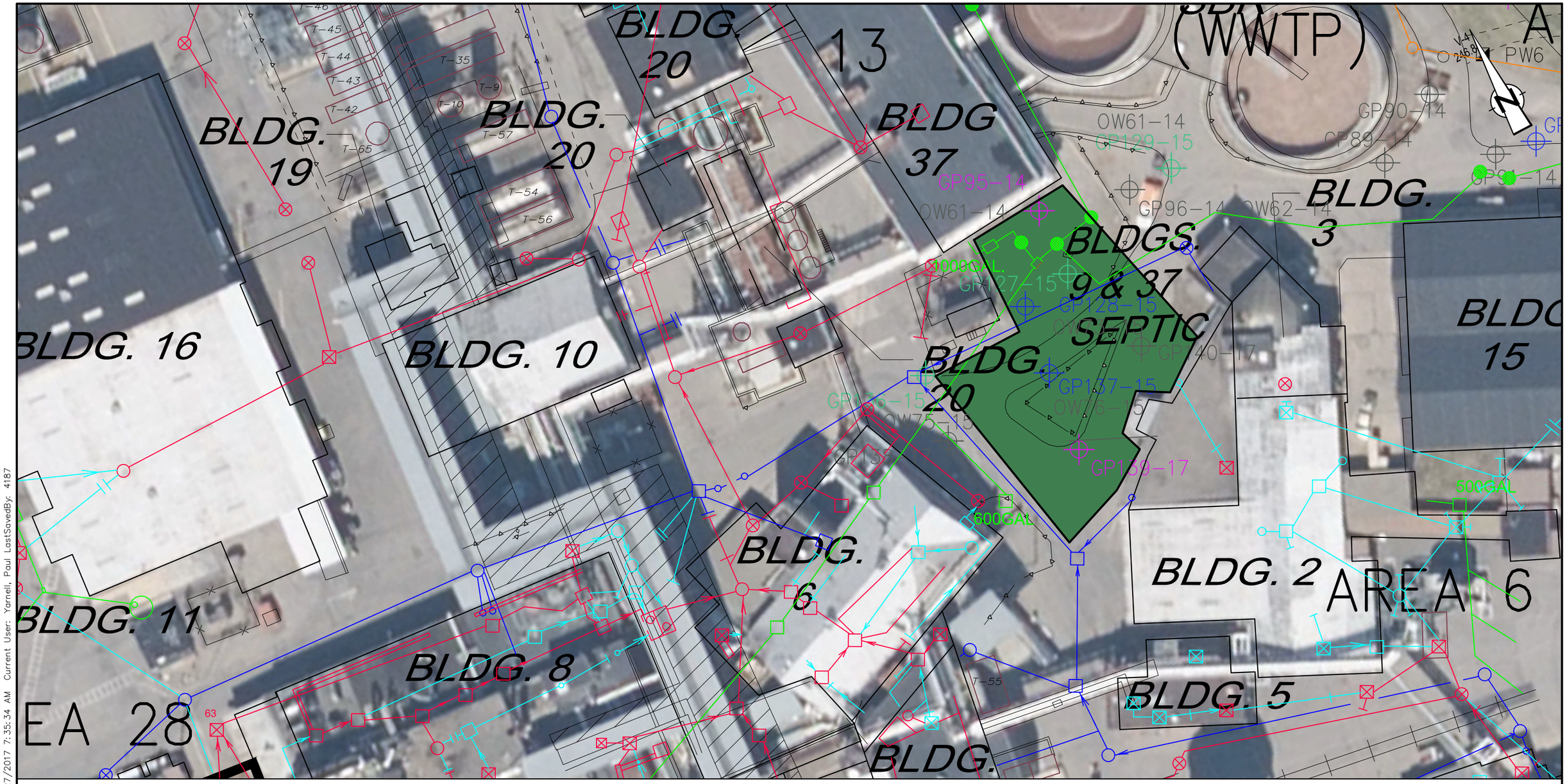
FIGURE 9
AREA 7 RECOMMENDED CORRECTIVE MEASURES
EAST SIDE Corrective Measures Study
ROTTERDAM JUNCTION FACILITY | SI GROUP, INC.



LEGEND

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FIGURE 10
BUILDINGS 9 AND 37 SEPTIC AREA
RECOMMENDED CORRECTIVE MEASURES
EAST SIDE Corrective Measures Study
ROTTERDAM JUNCTION FACILITY SI GROUP, INC.

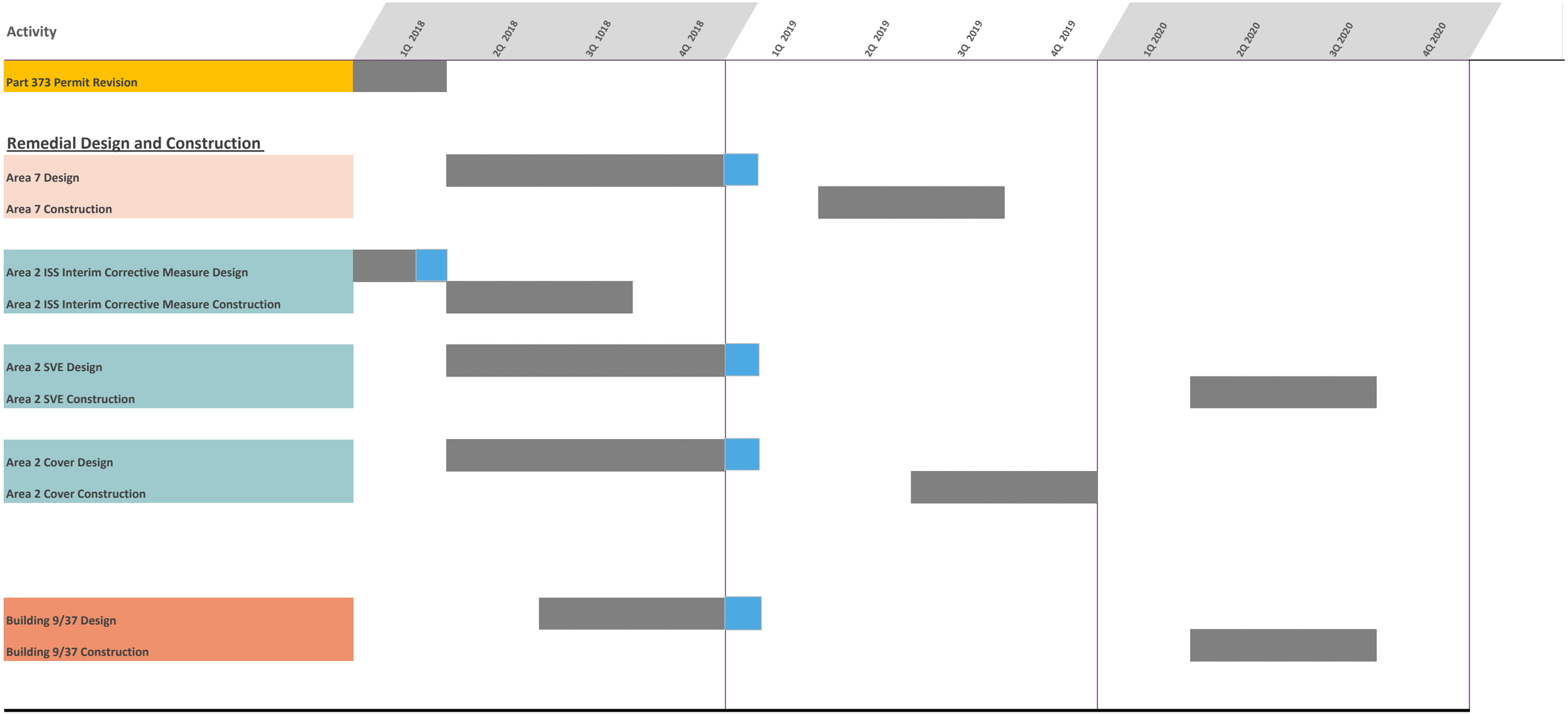
Attachment C
Cost Table

The estimated cost for implementation of the selected remedies are:

Area(s)	Description	Capital Cost	Annual Costs	Total Cost (Present Worth Analysis)
2	Soil/Gravel Cover, Soil Vapor Extraction and *In-Situ* Soil Stabilization	$4,575,600	$230,000	$5,006,000
5	Soil/Gravel Cover and Soil Vapor Extraction	$2,100,000	$230,000	$2,530,000
7	Excavation	$1,920,000	$0	$1,920,000
21	Soil/Gravel Cover and Soil Vapor Extraction	$1,840,000	$230,000	$2,270,000
22	Soil/Gravel Cover and Soil Vapor Extraction	$1,460,000	$230,000	$1,890,000
Buildings 9 & 37	Soil Cover and Continued Groundwater Monitoring	$170,000	$0	$170,000
Subtotal East Side Remedial Costs (Capital and Remedy O&M)				$13,786,000
Existing East Side Interim Corrective Measures (Present Worth Analysis)				$1,610,000
East Side Total Cost (Present Worth Analysis)				$15,396,000

Attachment D
Compliance Schedule

East Side Design/Construction Timeline

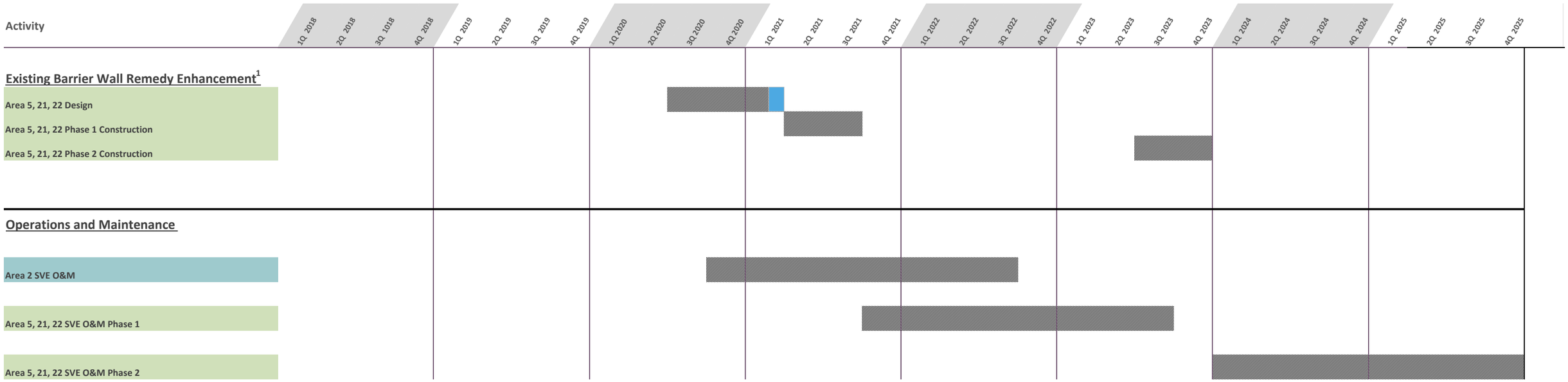


Notes:

Denotes NYSDEC review period.

1. During implementation, the individual tasks within the schedule may vary; however, the overall timeline will remain unchanged.
2. A final schedule for each SWMU Area will be submitted to the Department for approval as part of the Design Work Plan for each area.
3. Schedule is contingent upon 30 day design review by the NYSDEC.
4. Inclement and unanticipated weather events may affect the overall schedule.

East Side Existing Containment Remedy Enhancement and Operations & Maintenance Schedule



Notes:

Denotes NYSDEC review period.

1. As part of the CMS, the existing containment remedy consisting of the east side barrier wall and extraction system, has been selected as a component of the final site remedy. This schedule proposes enhancements to the existing remedy to further improve the effectiveness of the existing remedy
2. During implementation, the individual tasks within the schedule may vary; however, the overall timeline will remain unchanged.
3. A final schedule for each SWMU Area will be submitted to the Department for approval as part of the Design Work Plan for each area.
4. Schedule is contingent upon 30 day design review by the NYSDEC.
5. Inclement and unanticipated weather events may affect the overall schedule.