Interim Remedial Measures Work Plan

TRW Automotive U.S. LLC

Former TRW Union Springs Facility

19 September 2019

Project No.: 0496229

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Former TRW Union Springs Facility

I, James Ryan, PE certify that I am currently an NYS registered professional engineer and that this Report Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

James Ryan, PE
Project Engineer
ERM Consulting & Engineering, Inc.
Date: 19 September 2019

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ACRONYMS AND ABBREVIATIONS

Name	Description
AOC	Area of Concern
ASTM	ASTM International
COC	Constitutes of Concern
CVOC	Chlorinated Volatile Organic Compounds
DER	Division of Environmental Remediation
EPA	United States Environmental Protection Agency
ERM	ERM Consulting & Engineering, Inc.
IDW	Investigation Derived Wastes
IRM	Interim Remedial Measure
IRMWP	Interim Remedial Measure Work Plan
LPW	LPW Development, LLC
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Conservation
NYSDOH	New York State Department of Health
R-C	Restricted- Commercial
RI	Remedial Investigation
RAOs	Remedial Action Objectives
R-R	Restricted- Residential
SCGs	Standards, Criteria, and Guidance
SCO	Soil Cleanup objectives
SVI	Soil Vapor Intrusion

TRW	TRW Automotive U.S. LLC
Village	Village of Union Springs New York
VOC	Volatile Organic Compound

1. INTRODUCTION

ERM Consulting & Engineering, Inc. (ERM) prepared this Interim Remedial Measure (IRM) Work Plan (IRMWP) on behalf of TRW Automotive U.S. LLC (TRW) for the Former Union Springs Facility, located at 107 Salem Street, Union Springs, New York (Figure 1; hereafter called the “Site”). TRW entered into a Brownfield Cleanup Agreement with the New York State Department of Environmental Conservation (NYSDEC) on 7 January 2016 as a Volunteer. The portion of the formerly owned TRW properties currently regulated under the Brownfield Cleanup Agreement has been assigned Brownfield Cleanup Program Site Number C706019 by the NYSDEC.

From December 2015 to September 2017, ERM conducted a remedial investigation (RI) to satisfy the requirements of the NYSDEC Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10; NYSDEC 2010). A draft summary report of the RI findings and a remedial alternatives analysis was prepared and submitted to the NYSDEC and New York State Department of Health (collectively, Regulators) for review on 13 April 2018 (hereafter called the “Report”). The Regulators provided a comment letter to the Report on 17 September 2018. ERM is preparing a response and revising the Report based on comments, follow-up discussions, and correspondence with the NYSDEC. Revisions will include addressing specific comments and removing the remedial alternatives analysis section of the Report. TRW intends to manage portions of the Site using IRMs to expedite Site remediation in some areas of concern (AOC) and to pilot test remedial technologies to support evaluation of proposed remedial strategies for other AOCs identified in the Report (Figure 2). This IRMWP presents the remedial goals, design basis, and implementation details for some of the proposed IRMs. Separate pilot-test work plans were previously submitted to the NYSDEC for the North Field AOC (ERM 2019a) and the South Field AOC (2019b). An IRMWP will be submitted for additional IRM activities to be conducted within the Former Canal AOC.

1.1 Goals and Objectives

The goal of the proposed IRMs are intended to minimize the potential for exposure to contaminants of concern (COCs) in shallow soil and through soil vapor intrusion (SVI) in the main building at the Site. The objectives of this IRMWP are to implement grade changes, and install soil covers and an asphalt cap at the North Field, Creamery Road and Berm AOCs, and to perform a joint/crack survey within the main building followed by sealing activities to minimize the potential SVI.

This proposed IRMWP addresses required elements for a Remedial Action Work Plan established within Section 5.3 of the NYSDEC’s DER-10 (NYSDEC 2010).

The current and contemplated future use of the Site is a mixture of restricted-residential (R-R) and restricted-commercial (R-C), as shown on Figure 2.

1.1.1 Applicable Standards, Criteria, and Guidance

The following standards and criteria apply to the Site and the proposed IRM activities:

- 6 New York Codes, Rules and Regulations (NYCRR) Part 257 – Air Quality Standards
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 29 Code of Federal Regulations 1910.120 – Occupational Safety and Health Association Hazardous Waste Operations and Emergency Response.
- Site-specific soil cleanup objectives (SCOs) for polychlorinated naphthalenes (PCNs)

The following guidance applies to the Site and the proposed IRM activities:

- DER-10 – Technical Guidance for Site Investigation and Remediation (May 2010)
- CP-51 – Soil Cleanup Guidance
- Dam Safety regulations Part 673
- New York State Department of Health (NYSDOH) – Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 2006), including recent updates to Decision Matrices dated May 2017 (NYSDOH 2017)

1.2 Site Operational History

The Site was developed in approximately 1790 and has a long industrial history. The oldest building on the Site is the former Mill Building, which was constructed in the 1830s. Beginning in 1932, the Site was used by several companies for manufacturing electrical components for the automotive industry, with TRW operating the facility from 1990 through 1997. LPW Development, LLC (LPW) acquired the facility and associated properties from TRW in 1997. Since acquiring the property, LPW has been leasing the facility to various manufacturing and commercial tenants.

1.3 Nature and Extent of Contamination by AOC

A detailed account of the nature and extent of contamination at the Site is presented in the Report and in the Comprehensive Report: Site Characterization and Remedial Investigation, dated July 2015 (ERM 2015a). For the purposes of this IRMWP, a brief summary is presented below of the COCs proximal to the proposed IRM areas discussed in this work plan.

1.3.1 Creamery Road AOC (Areas 1 - 4)

The Creamery Road AOC is located in the western portion of the Site, adjacent to the abutting municipal park and also includes a small second area along the edge of the southern portion of the facility parking lot near Chapel Street. Since a portion of the municipal park is located on the Site and residential properties abut this AOC, the cleanup goal for this AOC will be R-R, as defined under 6 NYCRR §§375-1.8(g)(2)(ii), for Areas 1, 2, and 3 (Figure 3). Polycyclic aromatic hydrocarbons were identified in shallow soil (less than 2 feet below surface grade) at concentrations over applicable Standards, criteria, and guidance (SCGs), as shown on Figure 3, which is likely attributable to the presence of asphalt and slag in the fill material present throughout this area. Shallow soil samples collected at SB-421 exhibited detections of chromium and manganese at concentrations exceeding the R-R SCOs. There were detections of volatile organic compounds (VOCs) in soil at concentrations over the protection of groundwater standards in CB-77; however, no VOCs were detected in groundwater within this AOC at concentrations greater than applicable groundwater criteria. There were no other exceedances of applicable regulatory criteria within this AOC.

1.3.2 Berm AOC (Area 5)

The Berm AOC is located in the eastern portion of the Site, adjacent to the abutting municipal park that encompasses the Mill Pond (Figure 2). Metals were identified in shallow soil (less than 2 feet below surface grade) at concentrations over applicable SCGs, as shown on Figure 3. Pentachloronaphthalene (a PCN) was present at concentrations exceeding its proposed site-specific restricted residential SCO of 0.48 milligrams per kilogram at locations BSA-01, -02, -04 and -05. Aldrin and alpha-BHC were present in shallow soil at concentrations exceeding their restricted residential use SCOs at BSA-01. The Village's contemplated future use of the mill pond parcel is for recreational purposes; therefore, the cleanup goal for this AOC will be R-R (Figure 2). Results of the qualitative human-health exposure assessment and

Fish and Wildlife Resource Impact Analysis demonstrated that these impacts pose minimal risk to human health and the environment and, therefore, can be managed in place. The proposed IRM cleanup area is shown on the drawings and figures as Area 3 (Appendix A, Figure 6).

1.3.3 North Field AOC (Area 6)

COCs present within deeper soil and groundwater in the North Field AOC are addressed in the Phytoremediation Pilot Test Work Plan (ERM 2019a).

Shallow soil exceedances within this AOC include copper, which is present at concentrations above the R-C SCO (Figure 3).

1.3.4 Building Interior

Four rounds of SVI monitoring have been completed within the main building that demonstrated low concentrations of chlorinated VOCs (CVOCs) are present in indoor air within the facility (Figure 4; Table 1), but at concentrations below the applicable NYSDOH's guideline values for indoor air. Elevated concentrations of CVOCs in sub-slab soil gas suggest the presence of contamination beneath the facility. Characterization activities around the perimeter of the facility did not identify any significant CVOC impacts in soil or groundwater, suggesting that any impacts present beneath the facility are localized (ERM 2015a; ERM 2018).

2. SCOPE OF PROPOSED IRM

The following subsections describe the planned IRM work for each AOC. The overall approach is to install a clean-fill cover in the areas of identified surface soil impacts. For IRMs conducted within Areas 1, 2, 3, and 5 (i.e., R-R areas as shown on Figure 3), a 2-foot-thick cover will be installed to meet the 6 NYCRR Part 375-3.8 requirements (NYSDEC 2006). For Areas 4 and 6 (i.e., R-C areas as shown on Figure 3), a 1-foot-thick cover will be installed to meet the 6 NYCRR Part 375-3.8 requirements (NYSDEC 2006). Construction details, including locations for each cover type (soil or asphalt), thickness, existing and finished grade profiles, and cover details, are provided on the IRM Design Drawings (Appendix A). To minimize off-Site disposal of impacted soils, excavation will be completed only in areas where excavation is required to maintain appropriate grades for stormwater drainage or meet other adjacent existing grade requirements (i.e., existing road elevations).

The building interior SVI will be addressed by implementing a program to survey the condition of the building floor to identify potential SVI pathways and then seal any identified potential pathways.

2.1 Creamery Road AOC Areas 1 and 2 Cover

A 2-foot-thick cover/cap consisting of a soil cover (meeting the requirements of 6 NYCRR §375—3.8(e)(4)(iii)) and asphalt cap areas will be installed in Areas 1 and 2. he cap will include an asphaltic concrete/paved area consistent with the current use of the area as over-flow vehicle parking. The design profile conforms with current uses in this area and includes minimum slopes of 2 percent and maximum slopes of 16 percent. The design incorporates the following objectives:

- Excavate to a 2-foot depth in this area and replace with structural fill and either a soil cover or asphalt capping system;
- Conform to surrounding grades and drainage patterns to the maximum extent practicable to minimize the amount of regrading necessary to establish the subgrade and final grades;
- Provide parking stalls with slopes nominally equal to 2 percent; and
- Provide sufficient offset from the basketball court and wheel stops on the western side of the parking area.

2.2 Creamery Road AOC Area 3 Cover

A 2-foot-thick soil cover will be installed in Area 3. The design incorporates the following objectives:

- Excavate to a 2-foot depth in this area and replace with structural fill and soil cover, and
- Conform to surrounding grade and drainage patterns to the maximum extent practicable to minimize the amount of regrading necessary to establish the subgrade and final grades.

2.3 Creamery Road AOC Area 4 Cover

A 1-foot-thick soil cover will be installed in Area 4. The design incorporates the following objectives:

- In Reach 1 (Appendix A), excavate a minimum 1-foot thickness around the existing drainage culvert to accommodate the installation of a 1-foot-thick soil cover and retain drainage out the existing culvert to the canal. In this area stormwater will be conveyed northward, consistent with current drainage patterns.
- In Reach 2 (Appendix A), install a new culvert (Culvert 1) and install the new soil cover above the new culvert to conform with surrounding grades. In this area stormwater will be conveyed northward, consistent with current drainage patterns.

- In Reach 3 (Appendix A), the existing culvert will be retained and integrated beneath the soil cover. In this area stormwater will be conveyed from the building westward, consistent with current drainage patterns;
- Conform to surrounding building elevations and existing grade and drainage patterns to the maximum extent practicable to minimize the amount of regrading necessary to establish the subgrade and final grades;
- Retain and/or replace existing non-stormwater features (e.g., fence, sidewalk, and culvert aprons).

2.4 Berm AOC Area 5 Cover

A 2-foot-thick soil cover will be installed in Area 5. The finished grade cover edges will taper and conform to the existing grade in this area (earthen berm toe). There will be no excavation as part of the IRM cover in Area 5. Excavation was excluded as an option due to the risk of undue stress to the stability of the earthen embankment (excavation of the embankment toe could cause structural impacts to the embankment).

2.5 North Field AOC Area 6 Cover

A 1-foot-thick soil cover will be installed in Area 6. There will be no excavation as part of the IRM cover in Area 6. The finished grade cover edges will taper and conform to the existing surface grade.

2.6 Building SVI Sealing

A survey will be conducted to identify significant cracks, joints, and penetrations in the building slab and foundations that could be potential pathways for SVI. Any notable potential preferential pathway through the building slab and/or foundation will be screened with a photoionization detector (PID) and documented. Following the survey, sealant will be installed at selected potential pathways to reduce the potential for SVI into the building.

ERM anticipates that potential pathways may include concrete floor cracks and joints, perimeter gaps, and miscellaneous penetrations (e.g., floor drains, gaps around mechanical equipment, and supports), as well as utility pits with covers. These pathways will be sealed with a low-VOC and zero-CVOC watertight product that is compatible with the existing floor coating. Utility pits with covers will be coated, where practicable, in such a way as to encompass the entire cover plus at least 3 inches of the surrounding floor.

3. IMPLEMENTATION OF PROPOSED IRM

An ERM representative will be on site during all aspects of the remedial activities and will be under the supervision or responsible charge of a professional engineer.

3.1 Site Access

ERM met with LPW (the current property owner) on 17 June 2019 and reviewed the location and nature of the proposed IRMs documented in this IRMWP. LPW then signed an acknowledgment and approval for TRW to proceed with the IRMs on the parcel they own (i.e., Creamery Road AOC, Building Interior, North Field AOC, and South Field AOC) as outlined in this IRMWP (Appendix B).

ERM met with the Village of Union Springs New York (”Village”) board of Trustees on 21 May and 24 July 2019. ERM reviewed the proposed IRMs along Creamery Road that abut Frontenac Municipal Park, which is owned by the Village, and the proposed IRM on the Berm AOC, which is owned by the Village. The Village has signed an acknowledgment and approval for TRW to proceed with the IRMs as outlined in this IRMWP (Appendix B).

3.2 Site Preparation

Certain Site preparations will be required prior to implementation of the IRM. All Site preparation activities will be carried out in coordination with LPW and the Village. The major components of the Site preparation activities are described below.

3.2.1 Subsurface Clearance

Dig Safely New York will be notified prior to the initiation of intrusive activities at the Site. They are required by law to identify, locate, and mark member-company utilities in areas proposed for subsurface intrusive investigation. An independent underground utility locating service will be contracted by ERM to scan, clear, and mark the utilities within the proposed IRM areas to a minimum distance of 10 feet outside of each of the planned IRM areas prior to the initiation of the intrusive work. Utilities located and surveyed during previous Site work are summarized on Figure 5.

Work completed within the critical zones (i.e., less than 10 linear feet) of known utilities will be conducted following ERM’s Subsurface Clearance Procedures and Policies. This will require hand clearance to locate utilities within the proposed excavation areas and may result in adjustments to the proposed scope of work to maintain the health and safety of personnel, prevent property damage, or avoid or minimize interferences to Site activities.

3.2.2 Survey, Field Mark-out, and As-Built Drawings

A pre-construction survey will be performed in the IRM work areas prior to the implementation of the excavation and grading activities. The pre-construction survey will include marking out the property boundaries, the soil boring locations used to delineate the extent of the proposed excavation and grading areas, and locations of known utilities.

Following construction completion, the IRM areas (i.e., excavation and grading areas) will be surveyed. ERM’s subcontracted surveyor will measure horizontally and vertically key locations (e.g., changes to grade, inverts of storm water piping, edge of asphalt, bollards, etc.). All Site survey work will be conducted under the supervision of a New York-licensed surveyor and tied to the site survey coordinate system - NAD83 New York State Planes, Central Zone, US Foot.

The updated survey will be used to prepare as-built diagrams for the IRM areas, which will be incorporated into the Construction Completion Report and provided to current property owners.

3.2.3 Mobilization

ERM will coordinate with our remedial subcontractors and review engineering plans and submittals that are relevant to the IRMs. ERM will coordinate with the Village and LPW to determine the best areas for staging heavy equipment for excavating and grading, imported soil, and excavated soil that will minimize the handling of materials and interference with commercial and park access. Once these areas have been identified, equipment, supplies and materials will be mobilized and temporarily staged at the Site. As part of the process, the remedial subcontractor will obtain any permits required by the Town of Springport, the Village, or other applicable authorities with jurisdiction over the IRM work areas.

3.2.4 Clearing and Grubbing

A small amount of existing vegetation (e.g., woody shrubs, small trees) that may interfere with the excavation, cover installation, and grading activities will be removed prior to performing intrusive work. Vegetation that is removed will be managed as construction debris or may be chipped and utilized in the proposed Bioremediation Pilot Testing (ERM 2019b).

In addition, the chain-link fencing will be removed in IRM Area 4 and replaced following completion of the remedial activities. Temporary fencing or other physical barrier may be installed during construction and prior to fence replacement to limit access to the IRM work areas.

3.2.5 Temporary Soil Erosion and Sediment Controls, Stormwater Controls and Stormwater Management

Soil and stormwater management controls will be installed at the Site to minimize the potential for erosion and migration of excavated soil and to control precipitation and stormwater runoff in the IRM work areas. Active stormwater pipes are present in the proposed excavation area in Creamery Road AOC Area 4. Erosion and sediment controls will be installed following New York State Standards and Specifications and will include the outfall in Area 4. North of the construction areas there is an unnamed stream, the former canal, and wetlands. Temporary soil erosion and storm water controls will be installed within and immediately around the IRM areas during construction phases. The installation, maintenance and management of soil erosion, sediment controls, and stormwater controls will follow the provisions in the New York State Standards and Specifications for Erosion and Sediment Controls (Blue Book; NYSDEC 2016), as outlined in subsequent sections. The total area of disturbance for the IRM work is less than 1 acre, as shown on the Drawings (Appendix A), therefore a State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity will not be required.

3.2.5.1 Temporary Controls

Temporary controls will be integrated to address the management of 2-year storm events at the Site and will use a combination of temporary storm drain inlet protection, berms, water barriers, and sediment barriers such as silt fence, staked turbidity curtains, and/ or silt filter socks/bags. The design of the temporary soil erosion, sediment control measures and surface water controls will be finalized prior to the construction phase and controls will be installed prior to proceeding with construction activities. Permanent controls are described in subsequent sections.

3.2.6 Traffic Flow and Support Facilities

Traffic Flow

General non-construction vehicular flow will be restricted and controlled using temporary physical barriers (i.e., high-visibility barricades, cones, caution tape) and/or signage. General public traffic will be prohibited in the construction areas. Access to the main building and the abutting Village properties will be accommodated and controlled by construction workers conducting traffic control. Construction traffic flow will vary by work area, but in general will be limited to asphalt or concrete paved areas to the extent practicable (e.g., Creamery Road, Mill Building parking lot, and Howland Street).

3.2.6.1 Support Facilities and Work Zones

A temporary work trailer will likely be mobilized to the facility to support the proposed IRM construction activities. The work trailer will be staged on Site in an area that will minimize interference with facility operations. A support zone will be established near the work trailer and will include personal decontamination station, portable bathrooms, supplies and materials, etc. The personal decontamination station will be used to clean reusable personal protective equipment (PPE), sampling equipment, and hand tools. The personal decontamination station will be equipped with cleaning solutions and supplies, and will have appropriate containers for temporary storage of decontamination fluids, solids, and PPE. ERM will utilize the subcontractor's personal decontamination station and the basement level of the Mill Building that houses the seep water treatment system, as their support facility.

Due to the distribution of the IRM areas across the Site, the work zone will vary throughout the duration of the project. Work zones will be controlled access areas. Work zones within the Berm and North Field AOCs are located within and secured by existing perimeter fencing. Work zones outside of the existing fencing will be established with cones, caution tape, or equivalent demarcation boundaries during construction. Due to the close proximity of IRM Areas 1, 3, and 4 to Creamery Road and Frontenac Park, it is envisioned that ERM's remedial excavation subcontractor will protect the work zones with temporary fencing and signage to control access. The fencing will be moved as necessary and the work will be sequenced in such a way that minimizes closure of Creamery Road and portions of Frontenac Park.

Temporary staging areas will be established to store NYSDEC pre-approved imported materials for backfilling and installation of the cover or for any affected soil that is excavated that is not live-loaded for off-site transportation and disposal. The intent is to construct the staging areas as close to the excavation areas as feasible, while minimizing interference to property usage. The staging area locations will be coordinated with ERM's remedial excavation subcontractor, the property owners and their tenants prior to mobilization. Temporary soil staging areas will be constructed with double layers of 6-mil polyethylene sheeting bermed at the sides with hay bales or equivalent materials. Staged excavated soils will be covered at the end of each work day and during moderate or heavy precipitation events. It is anticipated that excavated soil will be dry and dewatering will not be required. However, in the event water management within the excavated soil staging areas is required, it will be pumped into Department of Transportation-approved drums and/or containers and managed as outlined in subsequent sections discussing IRM waste.

3.3 IRM Construction

3.3.1 Excavation and Cover Limits

The horizontal and vertical limits of the combined excavation and cover have been defined using the following:

- Data collected in the RI;

- To achieve the cover requirements based on the current and future anticipated use of the properties, in accordance with applicable regulations;
- Limitations presented by paved areas (e.g., access roads, employee parking lots, etc.), the facility building, and the Brownfield Cleanup Program property boundary; and
- Achieving SCOs and/ or cover requirements in 6 NYCRR §375—3.8(4)(iii) .

Excavation beyond these proposed extents should not be necessary to meet the remedial action objectives based on the available data set. In each of the IRM excavation/cover areas, pre-approved materials (e.g., stone, topsoil, asphalt) will be imported to achieve a final compacted thickness of 1 foot for R-C areas or 2 feet for R-R areas (Figure 3). Some of these areas will require excavation of materials to meet the final grade specifications (Appendix A, Sheets C-101 through C104) and to maintain surface water drainage.

3.3.2 Excavation Sequencing

Establishing an effective excavation order and sequence will be critical to avoid construction inefficiencies and delays, and to minimize access restrictions along Creamery Road (i.e., temporary closure), and not adversely impact other proposed remedial activities on the Site (e.g., the Phytoremediation and Bioremediation Pilot Test implementation). Excavation and grading work will be conducted in manageable segments or areas to limit the amount of exposed excavation area at any given time to enable quicker response to storm events and to minimize the closure time of sections of Creamery Road. The specific order of the intrusive work will be finalized during the mobilization phase and will be coordinated with ERM's environmental subcontractor and property owners.

3.3.3 Post Excavation Soil Sampling

Excavation of potentially impacted soils will be conducted as part of the cover construction in Areas 1, 2, 3, and 4. Documentation soil samples will be collected from the bottom of the excavation in Areas 1, 2, 3 and 4 at a frequency of one sample for every 900 square feet of excavation bottom to document the level of contamination remaining. In these areas, soil samples will be collected upon completion of the extent of excavation and prior to backfilling. Samples will be collected at the frequency, locations, and methods as described in DER-10 Section 5.4(b) 5 for surface soil remediation excavations with a perimeter of greater than 20 feet. Confirmation samples will be collected from the perimeter of these excavation areas for any faces that do not extend to a paved area or a building foundation to demonstrate that the cover extends to all areas which contain exceedances of SCOs within the top two feet. Confirmation samples will be collected at 0 to 2 inches below grade, 2 to 12 inches below grade and 12 to 24 inches below grade from each excavation side wall for every 30 linear feet of sidewall. All samples will be analyzed for VOCs by United States Environmental Protection Agency (EPA) method 8260C, semi-volatile organic compounds by EPA Method 8270D, and metals by EPA method 6010C.

Confirmation samples will be collected to confirm the cover encompasses all areas which contain exceedances of SCOs within the top two feet in Areas 5 and 6. Confirmation sampling will be conducted surrounding each area to be covered at 0 to 2 inches below grade, 2 to 12 inches below grade and 12 to 24 inches below grade. Confirmation samples from Area 5 will be analyzed for PCNs by EPA method 8270D SIMS, pesticides by EPA method 8081B, and metals by EPA method 6010C. Confirmation samples collected along the west edge of Area will also be analyzed for VOCs by EPA method 8260C. Confirmation samples from Area 6 will be analyzed by EPA method 6010C for metals.

The Quality Assurance Project Plan (ERM 2015) will be followed when collecting the confirmation samples. The results will be validated and presented in the Construction Completion Report.

3.3.4 Backfill, Grading, and Surface Restoration

Backfill material, including structural fill, soil, and topsoil, will be selected to meet 6 NYCRR 375-6.7(d) and applicable DER-10 requirements. Documentation on the sources of structural fill will be presented to the NYSDEC for pre-approval. As discussed with NYSDEC, no sampling is required for structural fill that contain less than 10 percent fines (No. 80 sieve). Soil samples will be collected from sources of cover soil and topsoil and analyzed for appropriate COCs in accordance with the requirements presented in 6 NYCRR Part 360; analytical results will be submitted to the NYSDEC for pre-approval. Analytical methods will consistent with those presented in the Quality Assurance Project Plan (ERM 2015) and detection limits will be sufficient to determine compliance with SCOs. Category B deliverables will be provided to NYSDEC.

ERM will maintain documentation demonstrating that each load of imported fill came from an approved source and will provide copies of these documents to NYSDEC.

<u>Structural Fill</u>

Material used as structural fill shall be imported from a NYSDEC-approved source, meeting the gradation in the Drawings (Appendix A) and in accordance with ASTM International (ASTM) D-2487, derived from NYSDEC-approved borrow sources. It shall not contain objectionable quantities of debris, roots, or organic matter and shall be free of frozen materials, rock, gravel, or clods of clay larger than 3 inches in any dimension. Structural fill shall be compacted to 98 percent of Standard Proctor Compaction density as defined by ASTM D-698. The moisture content of the compacted fill shall be in the range of -3 to +1 percent of optimum moisture content as defined by ASTM D-698.

<u>Cover Soil</u>

Material used as cover soil shall be imported from a NYSDEC-approved source, classifying as CL, ML, CL-ML, SC, SW, SP or SM in accordance with ASTM D-2487, recovered from the Site or approved borrow sources. It shall not contain objectionable quantities of debris, roots, or organic matter and shall be free of frozen materials, rock, gravel, or clods of clay larger than 3 inches in any dimension. Cover soil shall be compacted to 90 percent of Standard Proctor Compaction density as defined by ASTM D-698. The moisture content of the compacted fill shall be in the range of -3 to +3 percent of optimum moisture content as defined by ASTM D-698.

<u>Topsoil</u>

Topsoil shall be imported from a NYSDEC-approved source and will consist of friable loamy soil (as classified by the U. S. Department of Agriculture Handbook No. 18, Soil Survey Manual), free of subsoil, roots, grass, excessive amounts of weeds, refuse, foreign matter, rocks and stones over 1-1/4 inches in diameter; fall within an acidity range (pH) of 5.5 to 7.5; contain a minimum of 3 percent and a maximum of 10 percent organic matter. No more than 15 percent by weight shall be larger than a No. 10 U.S. Standard Sieve.

Topsoil shall be placed in a relatively dry state and shall be placed during relatively dry weather. Topsoil shall be manually spread around areas not to receive topsoil, such as trees, plants, roads, and wells. Placed topsoil shall be lightly compacted to prevent excessive erosion prior to seeding. Topsoil areas shall be left clean and raked, ready to receive landscaping.

<u>Asphaltic Concrete</u>

Asphaltic concrete will be specified in accordance with NY Department of Transportation requirements for the loadings and level of service for the areas to be paved.

3.3.5 Permanent Stormwater Controls

A new stormwater conveyance pipe (Culvert 1) will be installed as part of the Area 4 IRM. This culvert has been designed to convey runoff as well as run-on from adjacent areas and rooftop drainage for the 100-year/24-hour return period storm event. A reno mattress has been specified to safely convey stormwater and minimize erosion between the existing culvert and the proposed culvert in Area 4.

Erosion and sediment controls will be installed following New York State Standards and Specifications and will include the outfall in Area 4.

3.3.6 IRM Waste

Solid and potentially liquid investigation derived waste (IDW) will be generated during the excavation and cover activities and during equipment decontamination activates. Materials that may become IDW and require proper management include:

- Excavated soil;
- Decontamination fluids, such as wash water;
- PPE; and
- Disposable sampling equipment.

All excavations are surficial and no dewatering liquids are anticipated. IDW will be segregated according to waste type. IDW generated during assessment activities will be placed in Department of Transportation-approved 55-gallon drums, and/or in one or more lined roll-off dumpsters, properly labeled with contents, and stored on Site in a secure area. Characterization, transportation, and disposal of IDW will be conducted by ERM in accordance with NYSDEC guidelines. Liquid waste may be treated with the on-Site groundwater treatment system. Any liquids that are treated on Site will be tracked and all IDW management will be summarized in the Construction Completion Report.

3.4 Restoration, Revegetation, Cleanup and Demobilization

3.4.1 Revegetation

Exposed soil areas will be stabilized with a regionally appropriate turf grass seed. These areas include IRM areas with a soil cover, as well as areas outside of the IRM areas disturbed during construction activities. The seeded areas will be inspected periodically for excessive erosion and success of the vegetation growth. Additional restoration of eroded areas or reseeding will be completed as necessary and appropriate until at least 80 percent of the disturbed area has been revegetated.

3.4.2 Cleanup and Demobilization

At the conclusion of IRM construction and Site restoration activities, demobilization will occur. Temporary modifications made to the Site as part of construction activities, including but not limited to soil stockpile areas, construction barricades, job trailer, other temporary support facilities, and temporary stormwater control features will be removed. All general construction trash and associated containers will be removed and disposed of properly.

All construction equipment and materials scheduled for demobilization will be decontaminated prior to leaving the Site. The decontamination materials will be collected and disposed of appropriately.

3.5 Building Interior

Sub-slab and indoor air criteria and procedures are discussed in NYSDEC's DER-10 guidance document and NYSDOH's SVI Guidance (NYSDOH 2006). The key guide for determining the NYSDOH's appropriate response actions can be found the Soil Vapor/Indoor Air Decision Matrices (NYSDOH 2017).

Comparison of sub-slab soil gas and indoor air data (Figure 4; Table 1) indicates that the concrete slab of the facility is currently an effective barrier that minimizes migration of vapors from beneath the slab into the building (i.e., vapor intrusion). Interpretation of data from collocated sub-slab soil vapor and indoor air sampling locations indicates that there are likely indoor sources of tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene, which are contributing to, or are completely responsible for, the presence of these compounds in indoor air.

Soil Vapor/Indoor Air Matrices A and B were used to define the recommended action. Four locations sampled during the 2019 monitoring event had sub-slab soil gas concentrations greater than the threshold that trigger the recommended response in the Decision Matrices. The potential for vapor intrusion could be further reduced/mitigated through the identification and sealing of cracks or features that could act as pathways for SVI. The building interior survey will be conducted with a PID that is capable of detecting VOCs at the parts per billion level. The PID will be placed in joints, cracks, and other floor penetrations, or as close as possible, to determine if VOCs are entering the building through such features.

The objective of the IRM is to reduce the potential for SVI; however, as noted, data suggests that an indoor source of CVOCs is contributing to some or all of the CVOC detections in indoor ambient air.

3.5.1 Concrete Slab and Build Foundation Sealing Documentation

During implementation of the SVI IRM, the location, size, general description (e.g., crack, joint, penetration, etc.), PID reading, and sealing method for each potential pathway will be tracked and summarized in the Construction Completion Report. All sealing products will be below the New York VOC product limits and will not contain CVOCs. The proposed products planned to be utilized, with manufacturer information sheets, are included in Appendix C.

4. SUPPORT DOCUMENTS

The work will be performed in conformance with the approved supporting documents from the RI Work Plan, such as the Quality Assurance Project Plan and the Community Air Monitoring Plan (ERM 2015). The approved RI Health and Safety Plan will be revised to address potential risks associated with the tasks outlined in this IRMWP. The revised Health and Safety Plan will be reviewed and approved by ERM's senior health and safety team prior to mobilization to the Site. It is envisioned that the proposed work can be completed using "Level D" PPE.

5. REPORTING

Following completion of the IRM construction activities, an as-built drawing set will be completed and included in a Construction Completion Report. The Construction Completion Report will meet the requirements of section 1.5 of DER-10 and will provide a summary of the completed IRM activities described in this IRMWP, description of significant deviations from the IRMWP, results of closure sampling activities, results of waste characterization sampling, and copies of other key documents (e.g., photo documentation, field logs, waste manifests, clean fill documentations, etc.).

6. SCHEDULE

Table 2 presents a general schedule of anticipated IRM-related activities. Subsequent to receipt of NYSDEC's approval, ERM's remedial excavation subcontractor will mobilize to the Site. NYSDEC will be notified a minimum of 5 days in advance of construction activities at the Site.

7. REFERENCES

ERM (Environmental Resources Management). 2015a. *Comprehensive Report: Site Characterization and Remedial Investigation, 107 Salem Street, Union Springs, New York*. ERM Project Number 0096370. July 2015.

_____. 2018. *Draft Remedial Investigation and Alternatives Analysis Report, 107 Salem Street, Union Springs, New York*. ERM Project Number 0331722. April 2018.

_____. 2019a. *Phytoremediation Pilot Test Work Plan, 107 Salem Street, Union Springs, New York*. ERM Project Number 0496229. July 2019.

_____. 2019b. Bio*remediation Pilot Test Work Plan, 107 Salem Street, Union Springs, New York*. ERM Project Number 0033862. July 2019.

NYSDEC (New York State Department of Environmental Conservation). 2006. 6 NYCRR PART 375 Environmental Remediation Programs, Division of Environmental Remediation, Albany. December 2006.

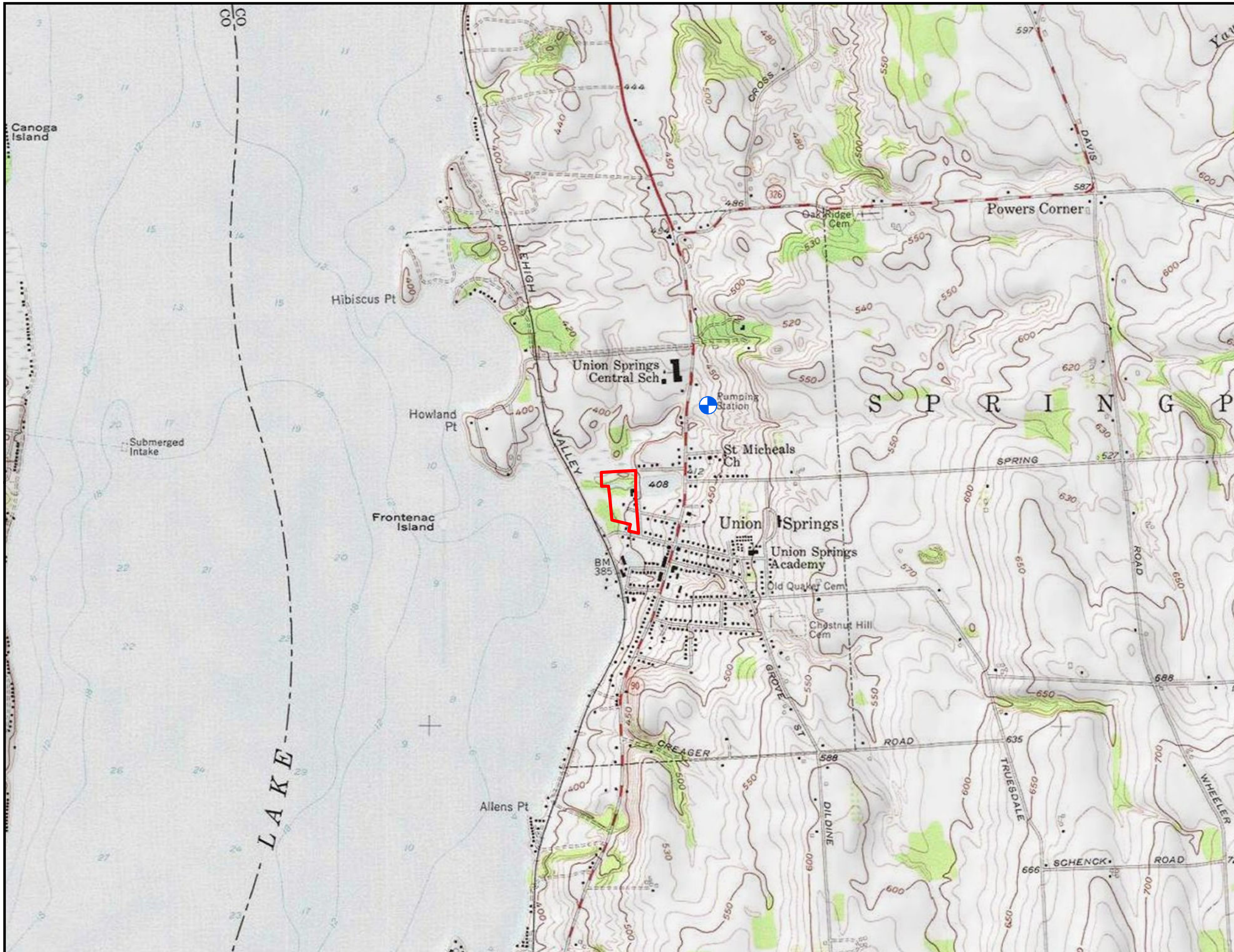
____. 2010. DER-10, Technical Guidance for Site Investigation and Remediation, Division of Environmental Remediation, Albany. May 2010.

____. 2016. New York State Standards and Specifications for Erosion and Sediment Controls, Albany. November 2016.

NYSDOH (New York State Department of Health). 2006. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. NYSDOH Center for Environmental Health Bureau of Environmental Exposure Investigation. October 2016.

____. 2017. Updates to Soil Vapor/ indoor Air Decision Matrices. NYSDOH Center for Environmental Health Bureau of Environmental Exposure Investigation. May 2017

FIGURES



Legend

- Village of Union Springs Water Supply
- Approximate Site Boundary

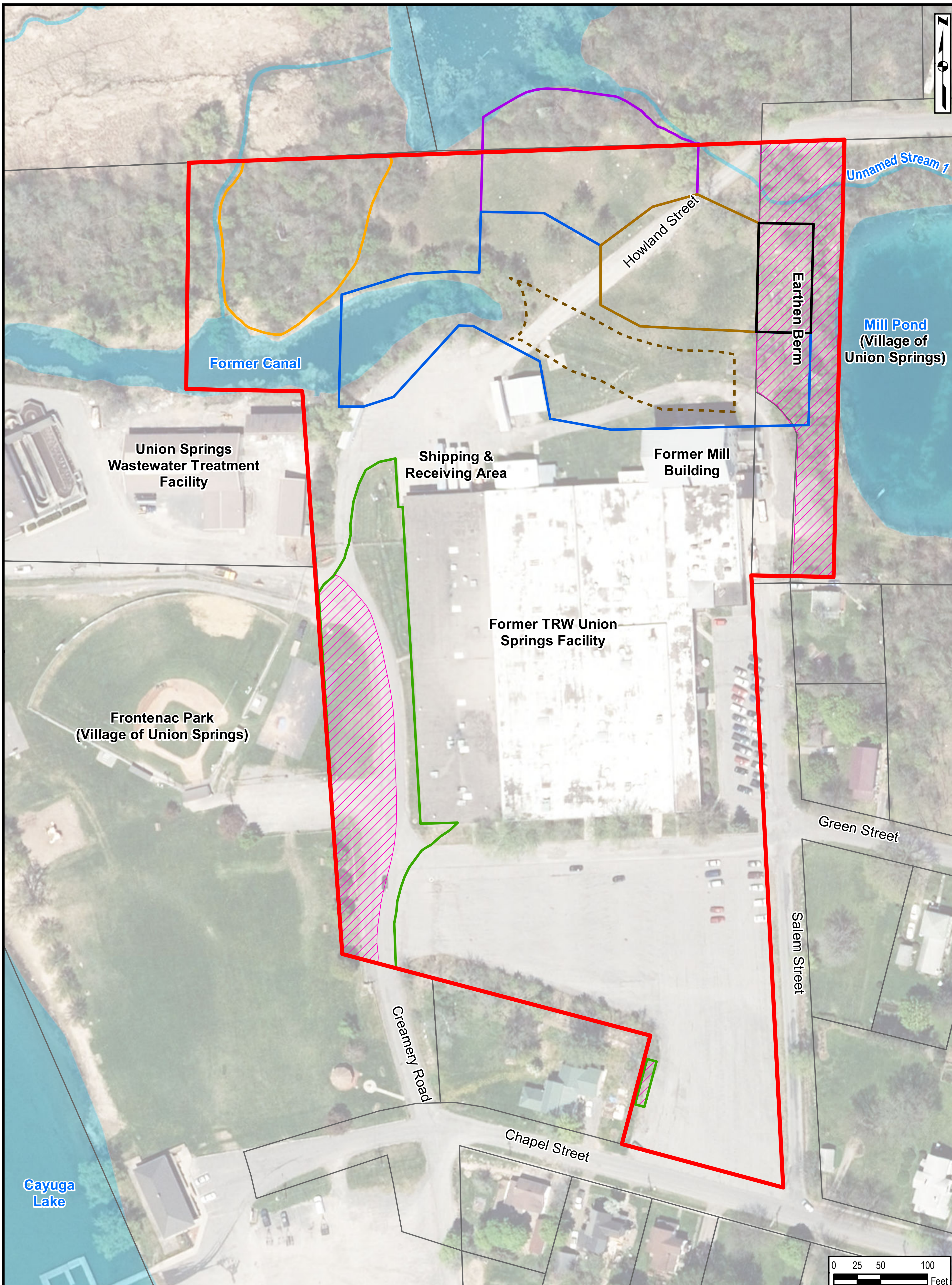
NOTES:
- Location of Former TRW Union Springs Facility was digitized using aerial photography. Locations are approximate.

N

0 1,000 2,000 3,000 4,000
Feet

Figure 1: Site Location Map
Former TRW Union Springs Facility
Union Springs, New York

ERM



Legend

- Restricted - Residential SCOs
- Buried Portion of Former Canal
- Approximate Site Boundary (Restricted - Commercial SCOs)
- Stream
- Surface Water
- Cayuga County Parcels

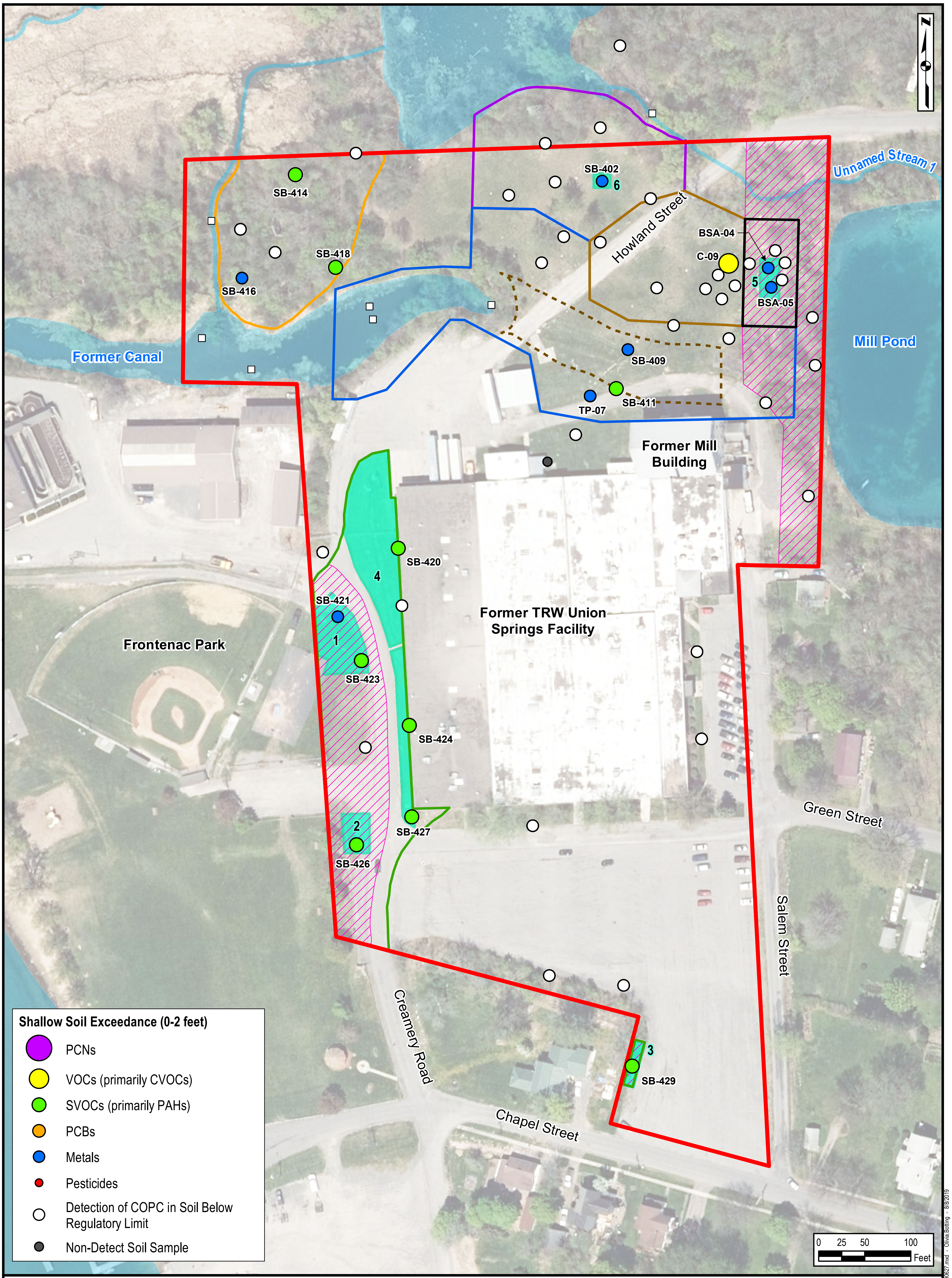
Areas of Concern

- Berm
- Former Canal
- North Field
- South Field
- Creamery Road
- Northwest Corner

NOTES:
- SCOs = Soil Cleanup Objectives.
- Soil samples containing one or more COC at a concentration exceeding applicable Soil Cleanup Objectives were defined using the Restricted-Residential or Restricted-Commercial action levels documented in 6NYCRR Part 375 and CP-51 Soil Cleanup Guidance documents.
- The buried portion of the former canal was digitized based on historical maps and photographs. Location is approximate.
- Approximate boundary of former canal based on normal high water conditions.
- Aerial imagery captured in 2015 from New York State.

Figure 2: Area of Concern Layout and Soil Cleanup Objectives
Former TRW Union Springs Facility
Union Springs, New York

ERM



Proposed Excavation and Capping IRM Areas

Restricted Residential

Buried Portion of Former

Approximate Site Boundary (Restricted – Commercial SCOs)

Stream

Surface Water

Areas of Concern

Berm

Former Canal

North Field

South Field

Creamery Road

Northwest Corner

NOTES:

- SCOs = Soil Cleanup Objectives.
- Soil samples containing one or more COC at a concentration exceeding applicable Soil Cleanup Objectives were defined using the Restricted-Residential or Restricted-Commercial action levels documented in 6NYCRR Part 375 and CP-51 Soil Cleanup Guidance documents.
- The buried portion of the former canal was digitized based on historical maps and photographs. Location is approximate.
- Approximate boundary of former canal based on normal high water conditions.
- Aerial imagery captured in 2015 from New York State.

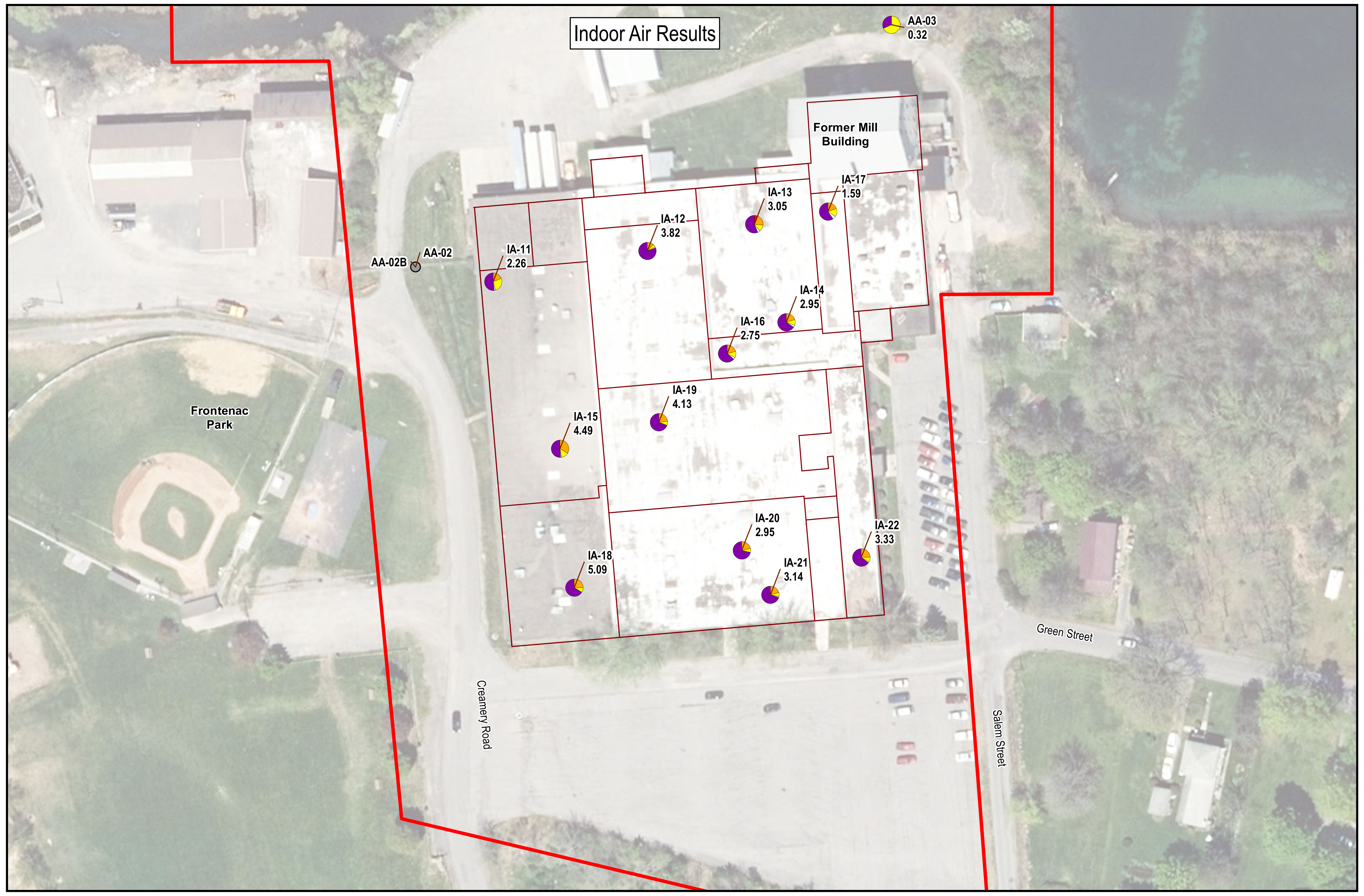
Definitions:

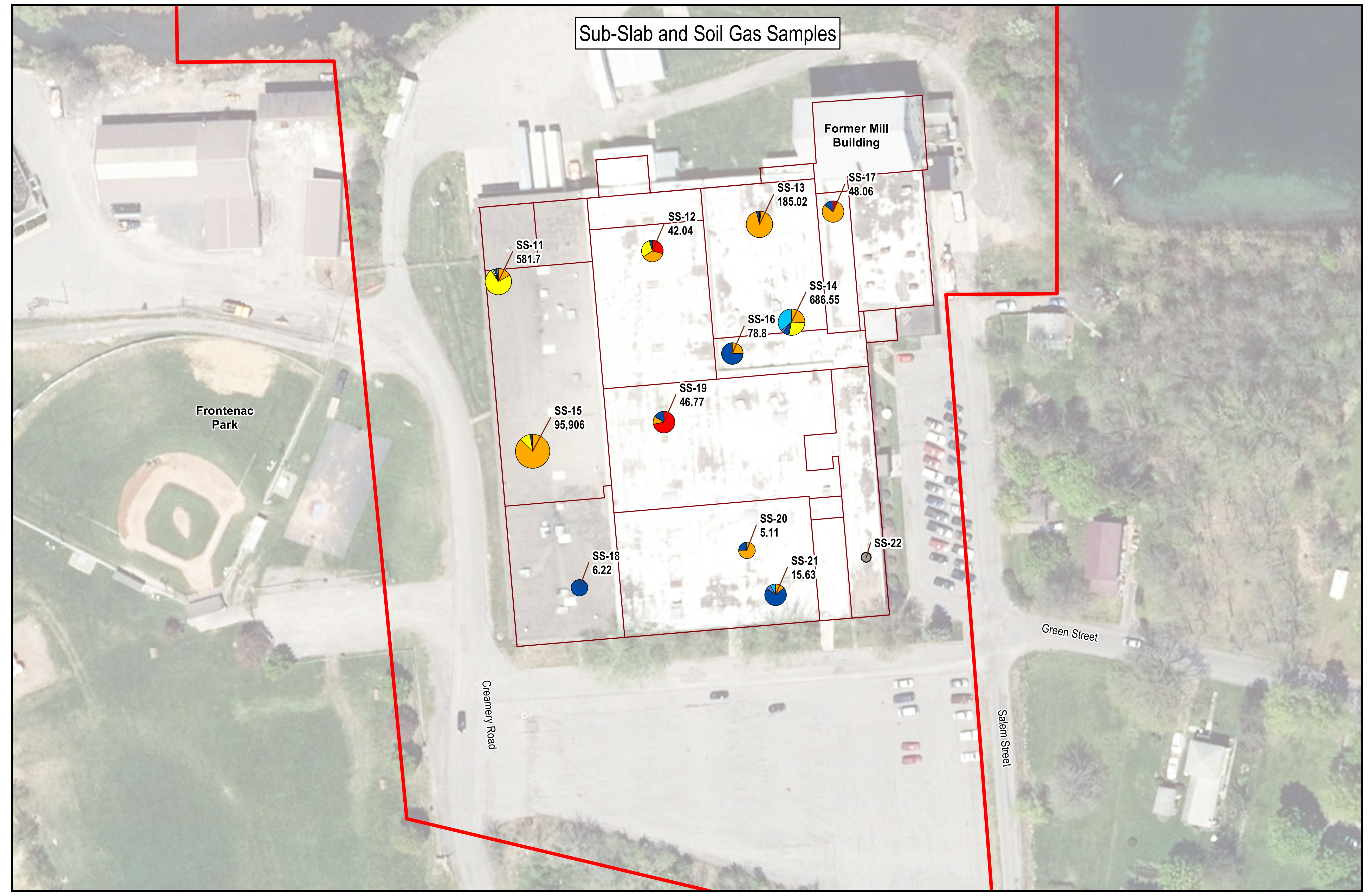
COC = contaminant of concern
VOC = volatile organic compound
CVOC = chlorinated volatile organic compound
SVOC = semi-volatile organic compound
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl

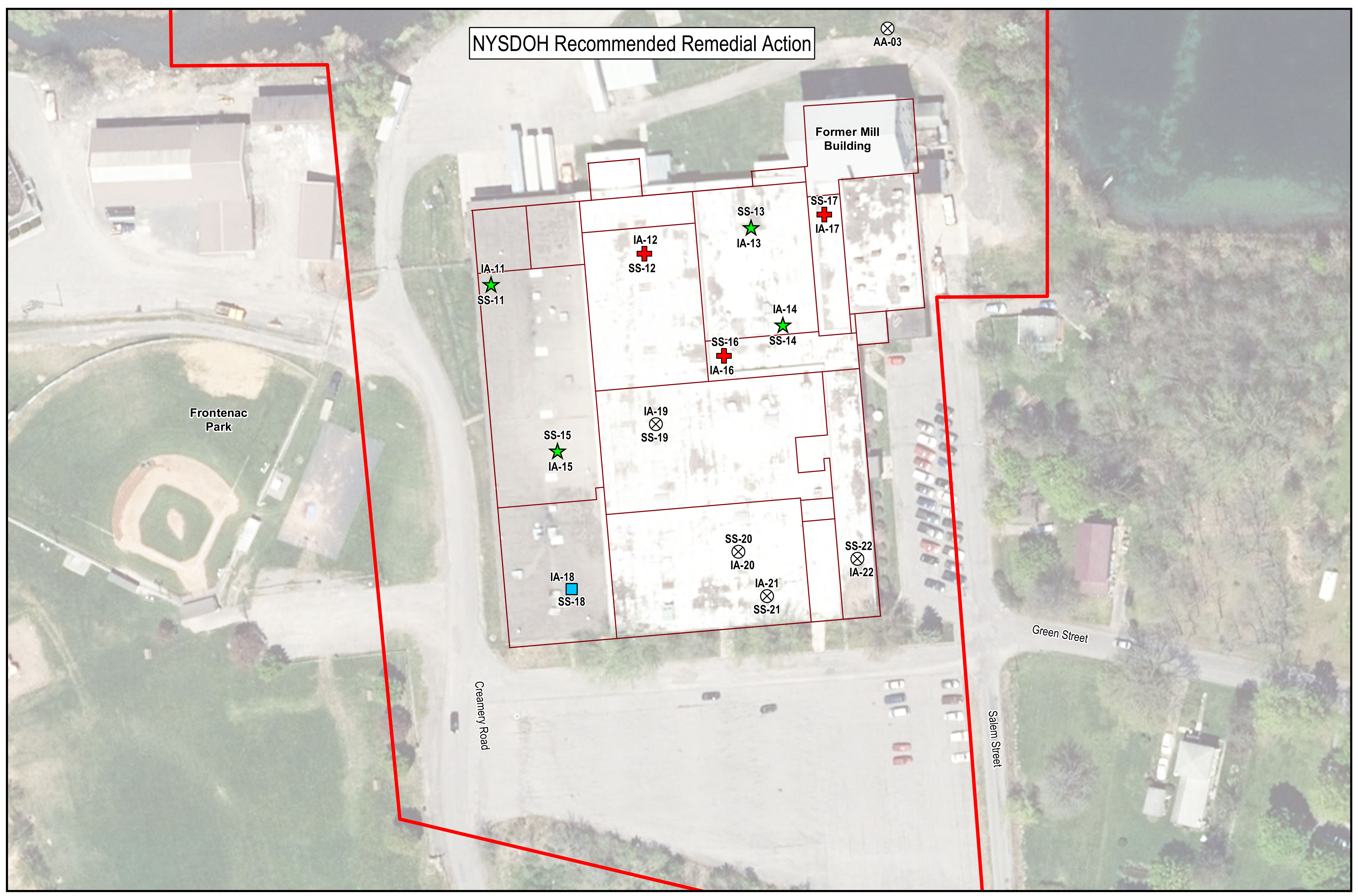
Figure 3: COC Distribution in Shallow Soil (0-2 feet) and IRM Layout

Former TRW Union Springs Facility
Union Springs, New York

ERM







Legend

CVOC Concentration (µg/m³)

ND 0.0 - 10 10 - 100 100 - 1,000 >1,000

- Tetrachloroethene
- Trichloroethene
- cis-1,2-Dichloroethene
- trans-1,2-Dichloroethene
- Vinyl chloride
- 1,1,1-Trichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethane
- 1,1-Dichloroethene
- Sample Not Analyzed
- Former TRW Building Outline (Approximate)
- Approximate Site Boundary

Recommended Remedial Action Explanation:

The updated matrices (2017) to the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion (2006) were used to evaluate the significance of detections of chlorinated volatile organic compounds (CVOCs) at collocated indoor air and sub-slab soil gas sampling locations. Using the matrices, ERM identified one of the following recommended remedial actions for the Site building.

- Take reasonable and practical actions to identify source(s) and resample or mitigate.
- Monitor on a recurring basis to evaluate changes in building conditions and potential fluctuations in indoor air concentrations.
- Mitigation required to minimize current or potential exposure.
- No further action required.

NOTES:

CVOC: Chlorinated volatile organic compound
AA or AMBIENT: Ambient air
IA: Indoor air
SG: Soil gas/Vapor
SS: Sub-slab soil gas/Vapor
ND: Non-detect
µg/m³: micrograms per cubic meter

- Location of Former TRW Union Springs Facility was digitized using aerial photography. Locations are approximate.
- Aerial Imagery captured in 2015 by New York State.

0 25 50 100 150 200
Feet

Figure 4: Sub-Slab Soil Gas, Soil Gas, and Indoor Air VOC Results (2019)
Former TRW Union Springs Facility
Union Springs, New York

ERM

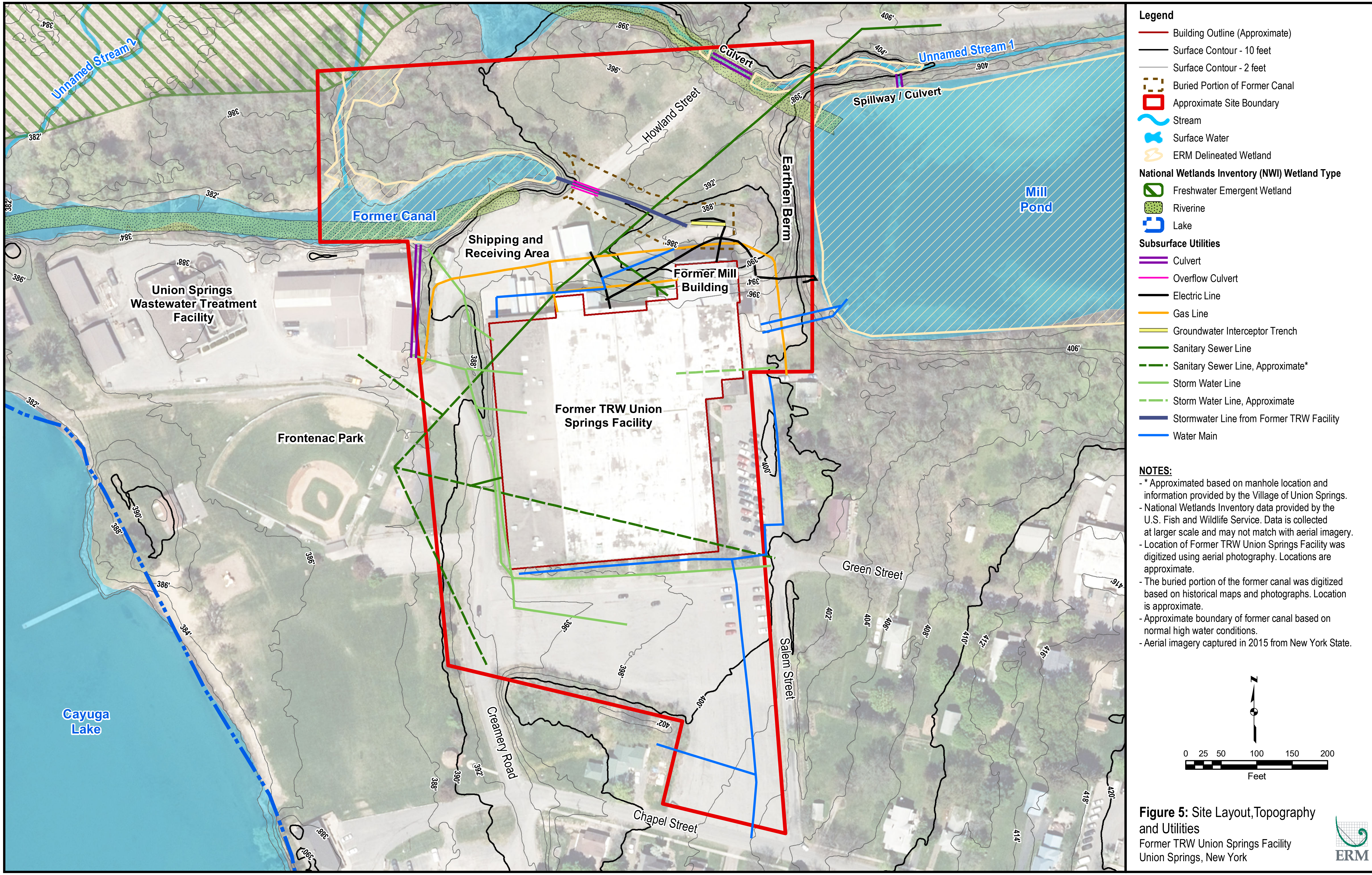


Figure 5: Site Layout,Topography and Utilities
Former TRW Union Springs Facility
Union Springs, New York

TABLES

Table 1
Summary of Soil Vapor, Ambient Air and Indoor Air Analytical Data
Former TRW Facility
Union Springs, New York
NYSDEC BCP Site Number C706019
ERM Project Number 0331722

Sample Location Designation / Date Sampled / Comment	NYSDOH Decision Matrix	IA-01 31-Jan-15	SS-01 31-Jan-15	IA-02 31-Jan-15	SS-02 31-Jan-15	IA-03 31-Jan-15	SS-03 31-Jan-15	IA-04 31-Jan-15	SS-04 31-Jan-15	IA-05 31-Jan-15	SS-05 31-Jan-15	IA-07 31-Jan-15
VOCs, µg/m3												
1,1,1-Trichloroethane	B	< 0.109	< 1.09	< 0.109	38.9	< 0.109	1,390	< 0.109	7.86	< 0.109	9.93	< 0.109
1,1-Dichloroethane		< 0.081	< 0.809	< 0.081	< 0.809	< 0.081	17.4	< 0.081	< 0.809	< 0.081	3.74	< 0.081
1,1-Dichloroethene	A	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	16.5	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079
1,2-Dichloroethane		1.94	< 0.809	2.09	< 0.809	1.14	< 8.09	1.02	< 0.809	1.81	< 0.809	1.97
cis-1,2-Dichloroethene	A	0.202	< 0.793	0.226	< 0.793	0.274	< 7.93	0.274	< 0.793	0.511	531	0.174
Tetrachloroethene	B	6.98	5.23	0.868	1.49	4.99	< 13.6	7.53	9.29	18.5	14.1	6.76
trans-1,2-Dichloroethene		< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 7.93	< 0.079	< 0.793	< 0.079	15.9	< 0.079
Trichloroethene	A	0.575	2.33	0.236	17.8	0.597	22.7	0.618	1.60	0.978	329	0.661
Vinyl chloride	C	< 0.051	< 0.511	0.102	< 0.511	0.077	< 5.11	< 0.051	< 0.511	< 0.051	< 0.511	< 0.051

Sample Location Designation / Date Sampled / Comment	SS-07 31-Jan-15	IA-08 31-Jan-15	SS-08 31-Jan-15	IA-09 31-Jan-15	SS-09 31-Jan-15	IA-10 31-Jan-15	IA-10 31-Jan-15 DUP	SS-10 31-Jan-15	IA-11 11-Feb-16	SS-11 11-Feb-16	IA-11 21-Feb-18	SS-11 21-Feb-18	IA-11 27-Feb-19	SS-11 27-Feb-19	IA-12 11-Feb-16	SS-12 11-Feb-16	IA-12 21-Feb-18
VOCs, µg/m3																	
1,1,1-Trichloroethane	< 1.09	< 0.109	3.90	< 0.109	320	0.115	0.115	459	< 0.109	26.2	< 0.109	3.84	< 0.109	15.6	< 0.109	< 5.46	<0.109
1,1-Dichloroethane	< 0.809	< 0.081	< 0.809	< 0.081	< 0.809	< 0.081	< 0.081	< 0.809	< 0.081	20	< 0.081	7.04	< 0.081	13.7	< 0.081	< 4.05	<0.081
1,1-Dichloroethene	< 0.793	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 0.079	1.95	< 0.079	< 7.93	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 3.96	<0.079
1,2-Dichloroethane	< 0.809	2.39	1.90	1.14	< 0.809	1.47	1.43	0.903	0.712	< 8.09	0.720	< 0.809	1.17	< 0.809	3.46	< 4.05	0.372
cis-1,2-Dichloroethene	< 0.793	0.345	< 0.793	0.230	< 0.793	0.139	0.115	< 0.793	0.622	678	0.258	310	0.595	432	0.127	5.51	0.143
Tetrachloroethene	4.55	18.8	13.8	4.01	4.21	4.16	4.12	5.21	7.39	< 13.6	1.24	< 1.36	< 0.136	< 1.36	1.59	< 6.78	0.420
trans-1,2-Dichloroethene	< 0.793	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 0.079	< 0.793	< 0.079	11.3	< 0.079	6.82	< 0.079	10.7	< 0.079	< 3.96	< 0.079
Trichloroethene	< 1.07	0.919	2.18	0.500	226	0.597	0.597	8.01	0.317	95.1	0.812	34.5	0.430	97.3	0.328	7.69	0.457
Vinyl chloride	< 0.511	< 0.051	< 0.511	0.069	< 0.511	< 0.051	< 0.051	< 0.511	< 0.051	< 5.11	< 0.051	7.06	0.061	12.4	< 0.051	< 2.56	0.059

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.
Units are in µg/m3 = micrograms per cubic meter
All analyses performed by Alpha Woods Hole Laboratories.
IA- precedes the designated number of an indoor air sample location
SS- precedes the designated number of a sub-slab/ soil gas sample location
AA- precedes the designated number of an ambient air sample location
DUP- duplicate sample
NA = No applicable screening level for this compound
U = Analyte detected at or below quantitation limits
1 = No associated subslab sample location due to equipment failure, concentration of indoor air exceeds 1, therefore recommended action is to identify source(s) and Resample or Mitigate

NYSDOH Soil Vapor/Indoor Air Decision Matrices A,B&C
The updated matrices (May 2017) to the NYSDOH Guidance for Evaluating Soil Vapor Intrusion (2006), were used to evaluate detections of CVOC at co-located indoor and sub-slab soil gas sampling locations. There are three (3) matrices (Matrices A, B & C) that are assigned to evaluate eight (8) VOCs. Blanks in the column next to chemicals names indicates this chemical was not assigned to one of these NYSDOH decision matrices. The matrices compare the ratio of co-located soil gas/sub-slab vapors and indoor air concentrations to recommend the appropriate action. ERM compared co-located samples in the matrices and colored the NYSDOH's recommend actions based on the rations.

Take reasonable and practical actions to identify source(s) and Resample or Mitigate.
Monitor - the type/frequency of monitoring determined on a building and site specific basis.
Mitigate required to minimize current or potential exposure
No further action required for cell with white background/ fill

Table 1
Summary of Soil Vapor, Ambient Air and Indoor Air Anal
Former TRW Facility
Union Springs, New York
NYSDEC BCP Site Number C706019
ERM Project Number 0331722

Sample Location Designation Date Sampled Comment	NYSDOH Decision Matrix	SS-12 21-Feb-18	IA-12 27-Feb-19	SS-12 27-Feb-19	IA-13 11-Feb-16	SS-13 11-Feb-16	SS-13 11-Feb-16 DUP	IA-13 21-Feb-18	SS-13 21-Feb-18	IA-13 27-Feb-19	IA-13 27-Feb-19 DUP	SS-13 27-Feb-19	IA-14 11-Feb-16	SS-14 11-Feb-16	IA-14 21-Feb-18
VOCs, µg/m3															
1,1,1-Trichloroethane	B	41.2	< 0.109	2.14	< 0.109	< 5.46	< 5.46	< 0.109	< 2.10	< 0.109	< 0.109	7.09	< 0.109	1,820	< 0.109
1,1-Dichloroethane		< 17.4	< 0.081	< 0.809	< 0.081	< 4.05	< 4.05	< 0.081	< 1.56	< 0.081	< 0.081	< 0.809	< 0.081	164	< 0.081
1,1-Dichloroethene	A	< 17.1	< 0.079	< 0.793	< 0.079	< 3.96	< 3.96	< 0.079	< 1.53	< 0.079	< 0.079	< 0.793	< 0.079	1,080	0.087
1,2-Dichloroethane		< 17.4	3.09	< 0.809	3.83	< 4.05	< 4.05	0.449	< 1.56	1.72	1.92	< 0.809	4.13	< 8.09	0.526
cis-1,2-Dichloroethene	A	155	0.214	12.2	0.135	< 3.96	< 3.96	0.202	1.79	0.369	0.289	< 0.793	0.143	138	0.274
Tetrachloroethene	B	366	< 0.136	12.1	1.07	< 6.78	< 6.78	0.298	< 2.61	0.156	< 0.136	3.93	1.34	< 13.6	0.312
trans-1,2-Dichloroethene		< 17.1	< 0.079	< 0.793	< 0.079	< 3.96	< 3.96	< 0.079	< 1.53	< 0.079	< 0.079	< 0.793	< 0.079	8.92	< 0.079
Trichloroethene	A	324	0.446	15.6	0.365	102	72	0.371	34.3	0.661	0.580	174	0.451	1,610	0.419
Vinyl chloride	C	16.7	0.072	< 0.511	< 0.051	< 2.56	< 2.56	0.097	1.67	0.146	0.123	< 0.511	< 0.051	< 5.11	0.042

Sample Location Designation Date Sampled Comment	NYSDOH Decision Matrix	SS-14 21-Feb-18	IA-14 21-Feb-18 DUP	SS-14 21-Feb-18 DUP	IA-14 27-Feb-19	SS-14 27-Feb-19	IA-15[1] 11-Feb-16	IA-15 21-Feb-18	SS-15 21-Feb-18	IA-15 27-Feb-19	SS-15 27-Feb-19	IA-16 11-Feb-16	SS-16 11-Feb-16	IA-16 21-Feb-18	SS-16 21-Feb-18
VOCs, µg/m3															
1,1,1-Trichloroethane	B	88.4	< 0.109	103	< 0.166	52.4	< 0.134	< 0.109	104	< 0.109	2,300	< 0.109	81.3	< 0.109	11.1
1,1-Dichloroethane		43.3	< 0.081	43.7	< 0.123	22.9	< 0.099	< 0.081	< 8.09	< 0.081	226	< 0.081	< 4.05	< 0.081	< 0.809
1,1-Dichloroethene	A	484	< 0.079	563	< 0.121	244	< 0.097	< 0.079	< 7.93	< 0.079	< 148	< 0.079	< 3.96	< 0.079	< 0.793
1,2-Dichloroethane		< 0.809	0.308	< 1.62	1.93	< 0.809	2.73	0.397	< 8.09	2.30	< 151	6.07	4.49	0.304	< 0.809
cis-1,2-Dichloroethene	A	199	0.258	222	0.320	189	0.753	0.119	< 7.93	0.603	9,910	0.135	< 3.96	0.159	< 0.793
Tetrachloroethene	B	< 1.36	0.183	< 2.71	< 0.207	< 1.36	5.31	0.922	< 13.6	< 0.136	< 253	1.53	< 6.78	0.210	< 1.36
trans-1,2-Dichloroethene		4.20	< 0.079	4.08	< 0.121	2.93	< 0.097	< 0.079	< 7.93	< 0.079	170	< 0.079	< 3.96	< 0.079	< 0.793
Trichloroethene	A	260	0.376	297	0.591	172	1.21	0.650	378	1.50	83,300	0.36	7.2	0.376	5.04
Vinyl chloride	C	1.41	0.141	1.48	0.113	3.32	< 0.063	< 0.051	< 5.11	0.084	< 95.3	< 0.051	< 2.56	0.059	< 0.511

Notes:
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Units are in µg/m3 = micrograms per cubic meter
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Take reasonable and practical actions to identify source(s) and Resample or
Monitor - the type/frequency of monitoring determined on a building and s
Mitigate required to minimize current or potential exposure
No further action required for cell with white background/ fill

Table 1
Summary of Soil Vapor, Ambient Air and Indoor Air Anal
Former TRW Facility
Union Springs, New York
NYSDEC BCP Site Number C706019
ERM Project Number 0331722

Sample Location Designation Date Sampled Comment	NYSDOH Decision Matrix	IA-16 27-Feb-19	SS-16 27-Feb-19	IA-17 11-Feb-16	SS-17 11-Feb-16	IA-17 21-Feb-18	SS-17 21-Feb-18	IA-17 27-Feb-19	SS-17 27-Feb-19	IA-18 11-Feb-16	SS-18 11-Feb-16
VOCs, µg/m3											
1,1,1-Trichloroethane	B	< 0.109	59.5	< 0.109	< 10.9	< 0.109	9.00	< 0.109	6.93	< 0.109	8.4
1,1-Dichloroethane		< 0.081	< 0.809	< 0.081	< 8.09	< 0.081	< 0.809	< 0.081	< 0.809	< 0.081	< 4.05
1,1-Dichloroethene	A	< 0.079	< 0.793	< 0.079	< 7.93	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 3.96
1,2-Dichloroethane		1.76	< 0.809	4	< 8.09	0.328	< 0.809	0.947	< 0.809	3.4	< 4.05
cis-1,2-Dichloroethene	A	0.305	< 0.793	0.163	< 7.93	0.147	1.40	0.238	< 0.793	0.492	< 3.96
Tetrachloroethene	B	< 0.136	< 1.36	1.78	< 13.6	0.163	< 1.36	< 0.136	2.53	3.99	< 6.78
trans-1,2-Dichloroethene		< 0.079	< 0.793	< 0.079	< 7.93	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 3.96
Trichloroethene	A	0.586	19.3	0.408	< 10.7	0.274	26.5	0.306	38.6	0.795	< 5.37
Vinyl chloride	C	0.102	< 0.511	< 0.051	< 5.11	0.112	1.18	0.095	< 0.511	< 0.051	< 2.56

Notes:
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Units are in µg/m3 = micrograms per cubic meter
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IA- precedes the designated number of an indoor air sample location
SS- precedes the designated number of a sub-slab/ soil gas sample location
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DUP- duplicate sample
NA = No applicable screening level for this compound
U = Analyte detected at or below quantitation limits
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NYSDOH Soil Vapor/Indoor Air Decision Matrices A,B&C
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Take reasonable and practical actions to identify source(s) and Resample or
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No further action required for cell with white background/ fill

Table 1
Summary of Soil Vapor, Ambient Air and Indoor Air Anal
Former TRW Facility
Union Springs, New York
NYSDEC BCP Site Number C706019
ERM Project Number 0331722

Sample Location Designation Date Sampled Comment	NYSDOH Decision Matrix	IA-18 21-Feb-18	SS-18 21-Feb-18	IA-18 27-Feb-19	SS-18 27-Feb-19	IA-19 11-Feb-16	SS-19 11-Feb-16	IA-19 21-Feb-18	SS-19 21-Feb-18	IA-19 27-Feb-19	SS-19 27-Feb-19	IA-20 11-Feb-16	SS-20 11-Feb-16
VOCs, µg/m3													
1,1,1-Trichloroethane	B	< 0.109	6.98	< 0.109	6.22	< 0.109	14	< 0.109	8.24	< 0.109	7.58	< 0.109	< 10.9
1,1-Dichloroethane		< 0.081	< 1.62	< 0.081	< 1.23	< 0.081	< 4.05	< 0.081	< 0.809	< 0.081	< 0.809	< 0.081	< 8.09
1,1-Dichloroethene	A	< 0.079	< 1.59	< 0.079	< 1.21	< 0.079	< 3.96	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 7.93
1,2-Dichloroethane		0.421	< 1.62	3.35	< 1.23	8.99	4.13	0.749	< 0.809	2.86	< 0.809	4.65	< 8.09
cis-1,2-Dichloroethene	A	0.083	< 1.59	0.428	< 1.21	0.167	< 3.96	0.119	< 0.793	0.301	< 0.793	0.488	< 7.93
Tetrachloroethene	B	2.66	< 2.71	< 0.136	< 2.07	1.84	20	0.454	36.1	< 0.136	33.6	1.82	< 13.6
trans-1,2-Dichloroethene		< 0.079	< 1.59	< 0.079	< 1.21	< 0.079	< 3.96	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 7.93
Trichloroethene	A	0.312	< 2.15	1.26	< 1.64	0.371	< 5.37	0.371	10.2	0.967	5.59	0.683	15.8
Vinyl chloride	C	< 0.051	< 1.02	0.051	< 0.780	< 0.051	< 2.56	< 0.051	0.698	< 0.051	< 0.511	< 0.051	< 5.11

Sample Location Designation Date Sampled Comment	IA-20 21-Feb-18	SS-20 21-Feb-18	IA-20 27-Feb-19	SS-20 27-Feb-19	IA-21 11-Feb-16	IA-21 11-Feb-16 DUP	SS-21 11-Feb-16	IA-21 21-Feb-18	SS-21 21-Feb-18	IA-21 27-Feb-19	SS-21 27-Feb-19	IA-22 11-Feb-16	SS-22 11-Feb-16	IA-22 21-Feb-18	SS-22 21-Feb-18	IA-22 27-Feb-19
VOCs, µg/m3																
1,1,1-Trichloroethane	< 0.109	1.57	< 0.109	1.27	< 0.109	< 0.109	30.4	< 0.109	30.4	< 0.109	11.1	< 0.109	< 5.46	< 0.109	< 1.09	< 0.109
1,1-Dichloroethane	< 0.081	< 0.809	< 0.081	< 0.809	< 0.081	< 0.081	< 8.09	< 0.081	3.91	< 0.081	1.12	< 0.081	< 4.05	< 0.081	< 0.793	< 0.081
1,1-Dichloroethene	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 0.079	< 7.93	< 0.079	4.96	< 0.079	1.21	< 0.079	< 3.96	< 0.079	< 0.793	< 0.079
1,2-Dichloroethane	7.37	< 0.809	2.10	< 0.809	4.53	4.57	< 8.09	0.267	< 0.809	2.21	< 0.809	9.11	4.21	0.433	< 0.809	2.16
cis-1,2-Dichloroethene	< 0.079	< 0.793	0.218	< 0.793	0.226	0.21	< 7.93	< 0.079	< 0.793	0.234	< 0.793	0.159	255	0.091	< 0.793	0.301
Tetrachloroethene	0.773	< 1.36	< 0.136	< 1.36	2.14	2.08	< 13.6	0.149	< 1.36	< 0.136	< 1.36	1.81	< 6.78	0.305	< 1.36	< 0.136
trans-1,2-Dichloroethene	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 0.079	< 7.93	< 0.079	< 0.793	< 0.079	< 0.793	< 0.079	< 3.96	< 0.079	< 0.793	< 0.079
Trichloroethene	0.215	3.60	0.634	3.84	0.484	0.478	113	0.145	90.3	0.645	2.20	0.365	86	0.231	< 1.07	0.806
Vinyl chloride	< 0.051	< 1.36	< 0.051	< 0.511	< 0.051	< 0.051	< 5.11	<0.051	1.10	0.051	< 0.511	< 0.051	< 2.56	< 0.051	0.523	0.061

Notes:
< = Compound not detected at concentrations above the laboratory reporting detection limit. The laboratory reporting detection limit is shown.
Units are in µg/m3 = micrograms per cubic meter
All analyses performed by Alpha Woods Hole Laboratories.
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Table 1
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Former TRW Facility
Union Springs, New York
NYSDEC BCP Site Number C706019
ERM Project Number 0331722

Sample Location Designation Date Sampled Comment	NYSDOH Decision Matrix	SS-22 27-Feb-19	AMBIENT 15-Oct-13	AA-01 31-Jan-15	AA-01 11-Feb-16	AA-02 11-Feb-16	AA-02 21-Feb-18	AA-02B 21-Feb-18	AA-03 27-Feb-19	IA-Carpet1 21-Feb-18	IA-Carpet2 21-Feb-18	IA-Packer1 21-Feb-18
VOCs, µg/m3												
1,1,1-Trichloroethane	B	< 1.09	< 1.1	< 0.109	< 0.109	< 0.109	< 0.109	< 0.107	< 0.109	< 0.109	< 0.109	< 0.109
1,1-Dichloroethane		< 0.809	< 0.81	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	0.146	< 0.081
1,1-Dichloroethene	A	< 0.793	< 0.79	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	0.194	< 0.079
1,2-Dichloroethane		< 0.809	< 0.81	< 0.081	< 0.081	< 0.081	< 0.081	< 0.081	0.101	0.445	0.793	0.344
cis-1,2-Dichloroethene	A	< 0.793	< 0.79	< 0.079	0.107	< 0.079	< 0.079	< 0.079	0.214	0.547	0.924	0.206
Tetrachloroethene	B	< 1.36	< 1.4	< 0.136	< 0.136	< 0.136	< 0.136	< 0.136	< 0.136	0.448	0.515	0.163
trans-1,2-Dichloroethene		< 0.793	< 0.79	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079	< 0.079
Trichloroethene	A	< 1.07	< 1.1	< 0.107	< 0.107	< 0.107	< 0.107	< 0.107	< 0.107	1.06	1.38	0.210
Vinyl chloride	C	< 0.511	< 0.51	< 0.051	< 0.051	< 0.051	< 0.136	< 0.051	< 0.051	< 0.051	2.00	0.136

Notes:
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TABLE 2
ESTIMATED PROJECT SCHEDULE
FORMER TRW FACILITY
UNION SPRINGS, NEW YORK
BCP ID: C706019
ERM PROJECT NUMBER: 0496229

Task No.	Milestone	Milestone Date
1	Submit IRM Work Plan for regulatory review	8/9/2019
2	NYSDEC approval of work Plan	9/9/2019
3	Mobilization for IRMs	10/28/2019
4	Completion of IRM	11/22/2019
5	Contruction Completion Report	4/30/2020

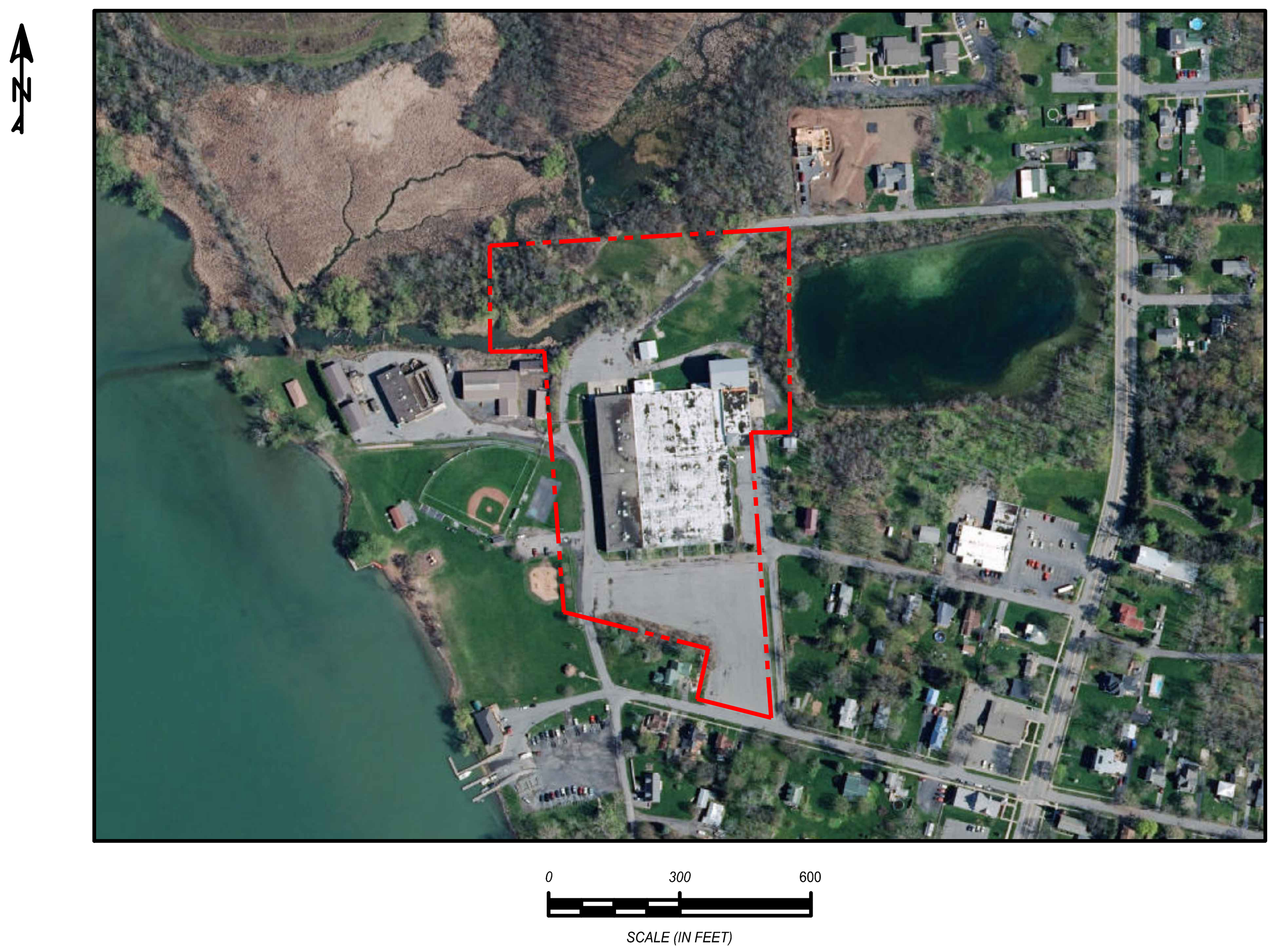
NOTES:
- all dates are subject to change based on review periods, contractor availability, and weather.

APPENDIX A IRM DESIGN DRAWINGS

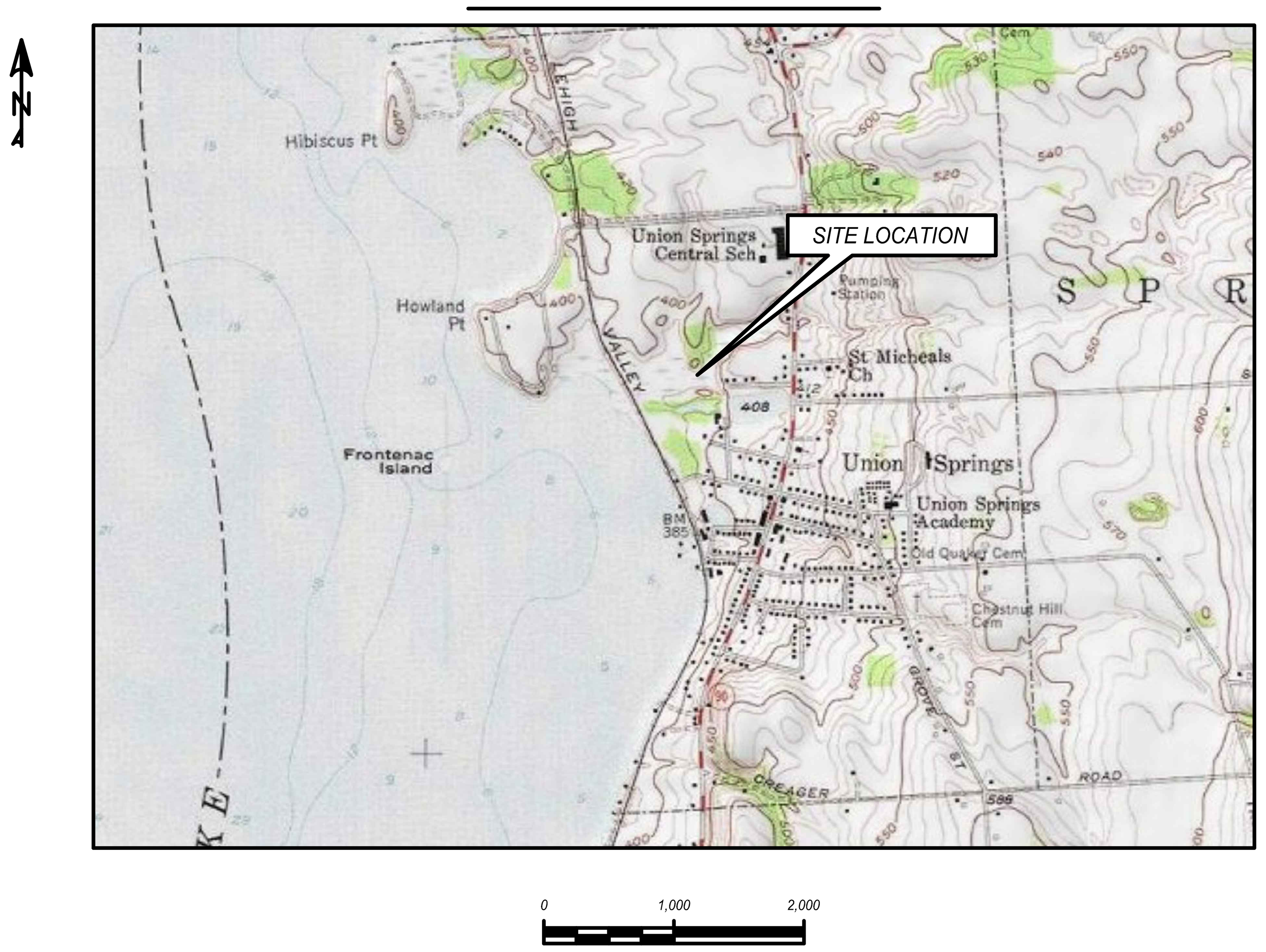
INTERIM REMEDIAL MEASURES WORK PLAN

FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

SITE VICINITY MAP



SITE LOCATION MAP



ISSUED FOR REVIEW

JULY 2019

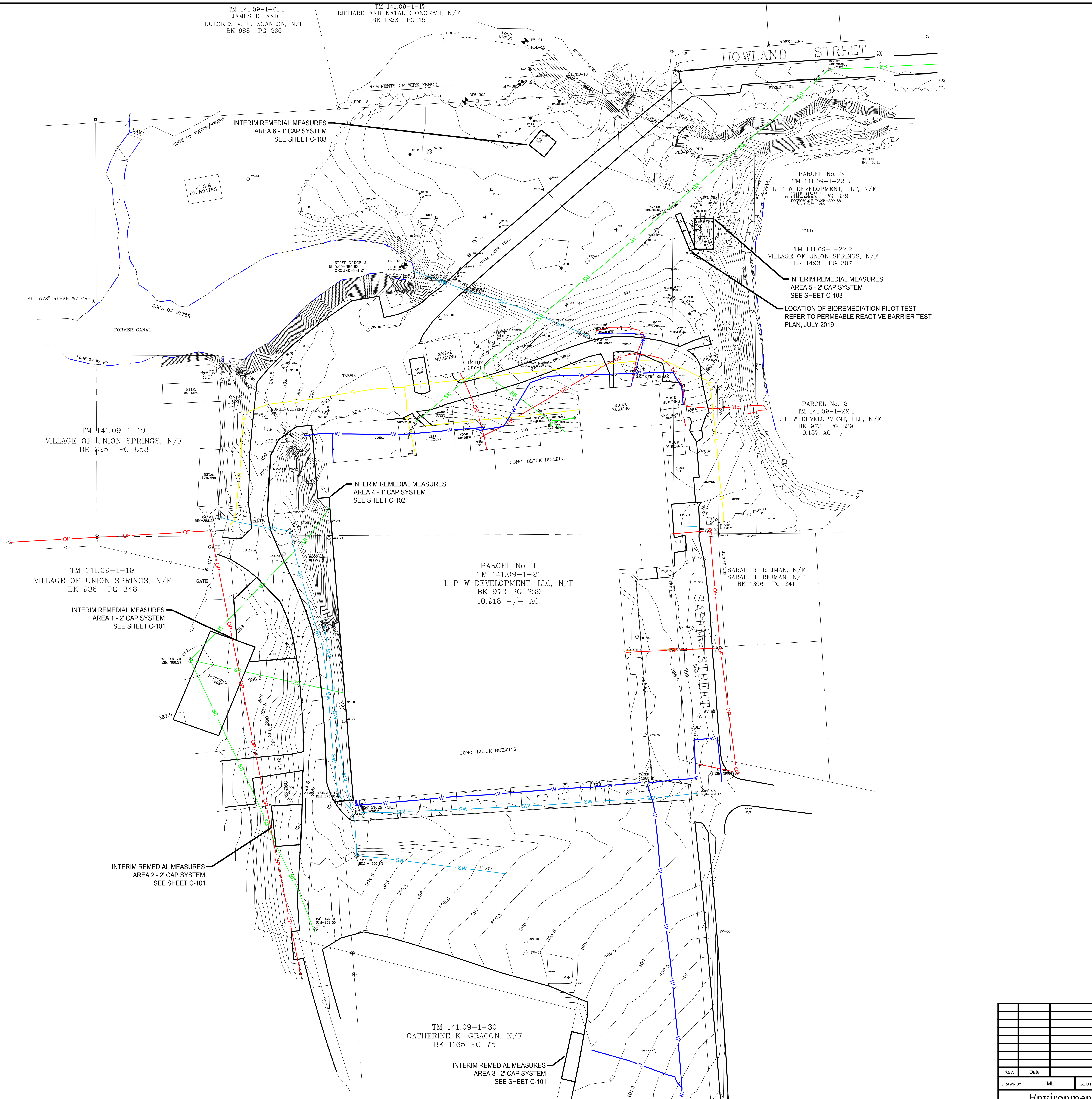
PREPARED FOR
TRW AUTOMOTIVE U.S. LLC

DRAWING INDEX

G-100	COVER SHEET
C-100	EXISTING CONDITIONS PLAN
C-101	EXCAVATION AND CAPPING AREA 1-3
C-102	EXCAVATION AND CAPPING AREA 4
C-103	EXCAVATION AND CAPPING AREA 5-6
C-104	CONSTRUCTION DETAILS

PREPARED BY

ERM
Environmental Resources Management
Syracuse Office 315-445-2534



GENERAL NOTES:

1. KNOW WHAT'S BELOW - CONTRACTOR TO CALL BEFORE YOU DIG! CALL NEW YORK ONE CALL AT 811 AT LEAST THREE FULL BUSINESS DAYS (NOT COUNTING WEEKENDS OR HOLIDAYS) PRIOR BEGINNING WORK. MAINTAIN CONFIRMATION IN PROJECT FILES. RESPECT MARKED-OUT UTILITIES.
2. PRIOR TO EXCAVATION OR ANY OTHER LAND DISTURBANCE ACTIVITIES, EXISTING SURFACE AND SUBSURFACE UTILITIES/STRUCTURES WITHIN THE PROJECT SITE (OR WHICH MAY BE AFFECTED BY OR INTERFERE WITH THE PROPOSED WORK), SHALL BE LOCATED BY CONTRACTOR.
3. ALL THE IMPORTED STONE OR OTHER CAP MATERIAL SHALL BE DEMONSTRATED TO BE CLEAN IN ACCORDANCE WITH THE LATEST VERSION OF THE NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYDEC) DIVISION OF ENVIRONMENTAL REMEDIATION TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION (DER-10; MAY 2010) OR SHOULD BE CERTIFIED VIRGIN CLEAN CRUSHED STONE.
4. ANY EXISTING SITE FEATURE THAT IS DAMAGED OR REMOVED DURING THE WORK SHALL BE REPAIRED OR REPLACED UNLESS OTHERWISE NOTED.
5. TOPOGRAPHY SURVEY PROVIDED BY: RICHARD M. RYBINSKI, L.S. (N.Y.S. LICENSE NO.49779), 8236 INDIAN HILL ROAD MANLIUS, NEW YORK 13104. PHONE & FAX (315) 682-4852,10069NAD UN511.DWG

LEGEND

- MONUMENT
- PIEZOMETER/WELL
- CATCH BASIN
- STORM SEWER MANHOLE
- WV WATER VALVE
- HYDRANT
- SANITARY SEWER MANHOLE
- UTILITY POLE
- TREE
- PROPERTY LINE
- CHAIN-LINK FENCE
- 400 EXISTING GROUND CONTOUR
- EDGE OF WATER
- BRUSH LINE
- G GAS LINE
- W WATER LINE
- UE UNDERGROUND ELECTRIC LINE
- OP OVERHEAD POWER LINE
- SW STORMWATER LINE
- SS SANITARY SEWER LINE
- FM FORCE MAIN

N

0 50 100
SCALE (IN FEET)

Rev.	Date	Description	By	Chk

DRAWN BY ML | CADD Review MB | CHECKED BY JR

ERM.

Environmental Resources Management

TRW AUTOMOTIVE U.S. LLC
INTERIM REMEDIAL MEASURES PLAN

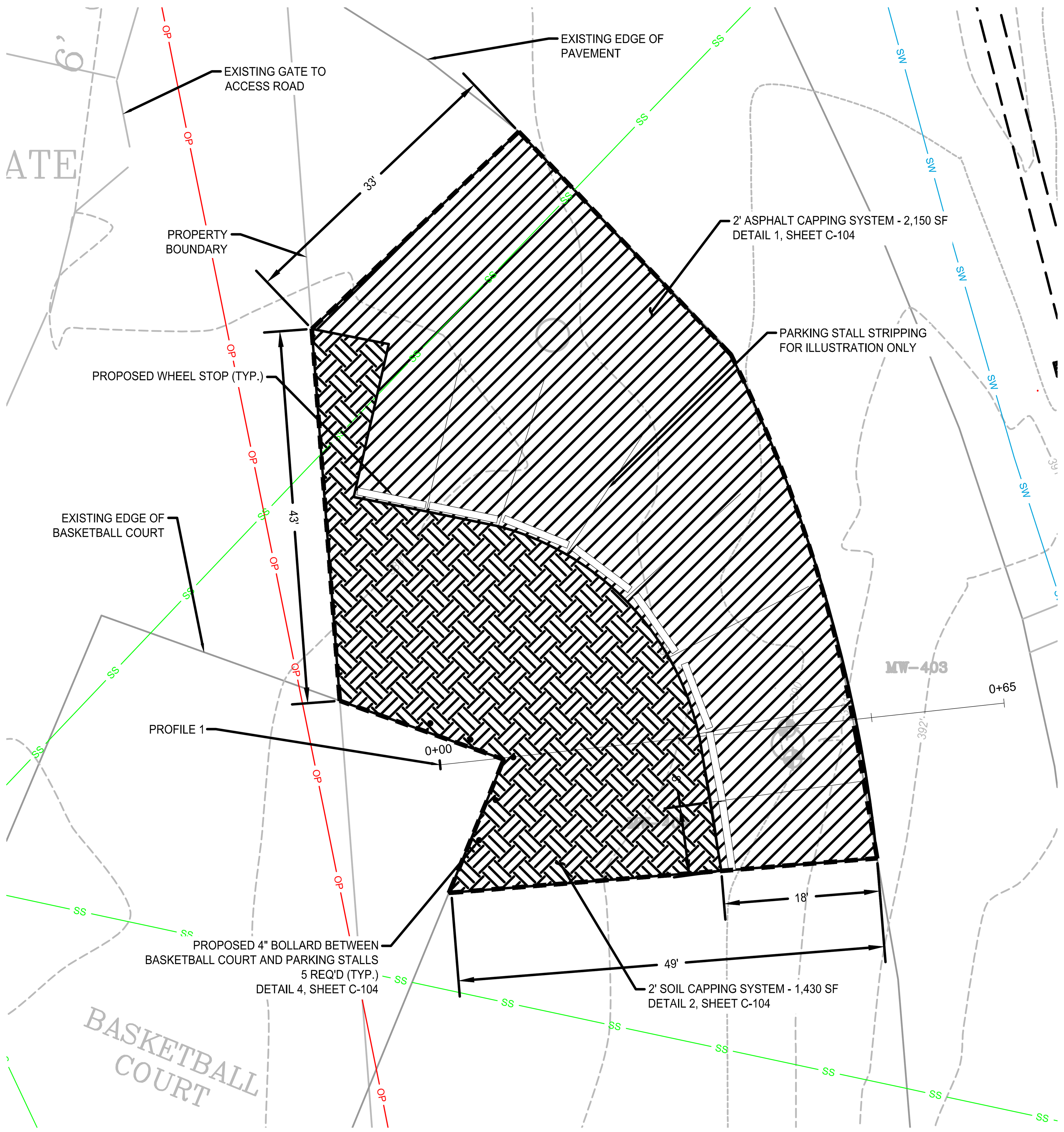
FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

EXISTING CONDITIONS PLAN

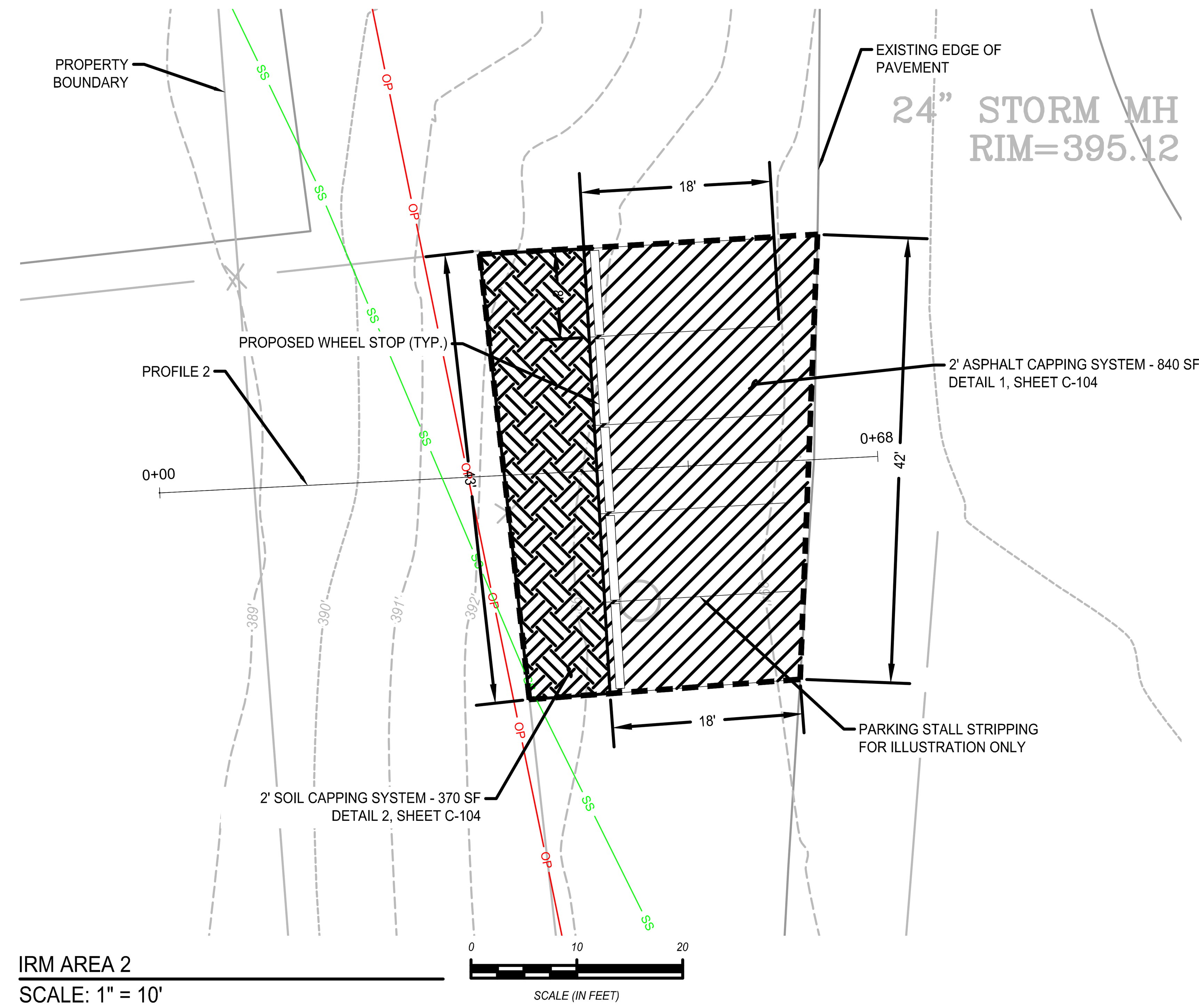
SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-100	-
DATE DRAWN JULY 2019			

\\sebdcfs01\Data\Syracuse\Projects\0496229 TRW Automotive Half 2019 OM&M and Misc RS\Job\30 Percent Design\IRM Plan Sheets\C-100_Existing Conditions_ALL.dwg

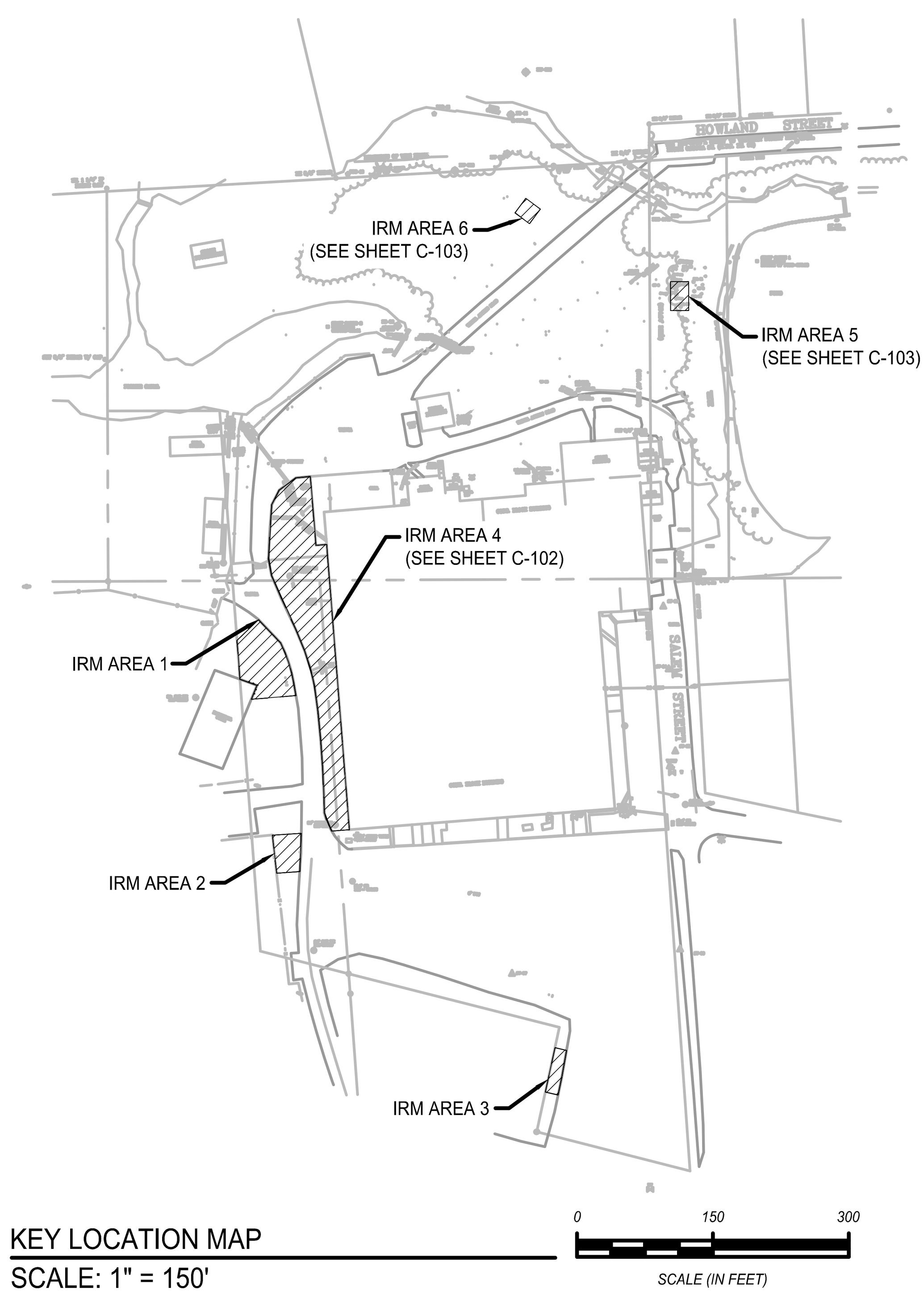
REVISIONS TO BE MADE ON THE CADD FILE ONLY



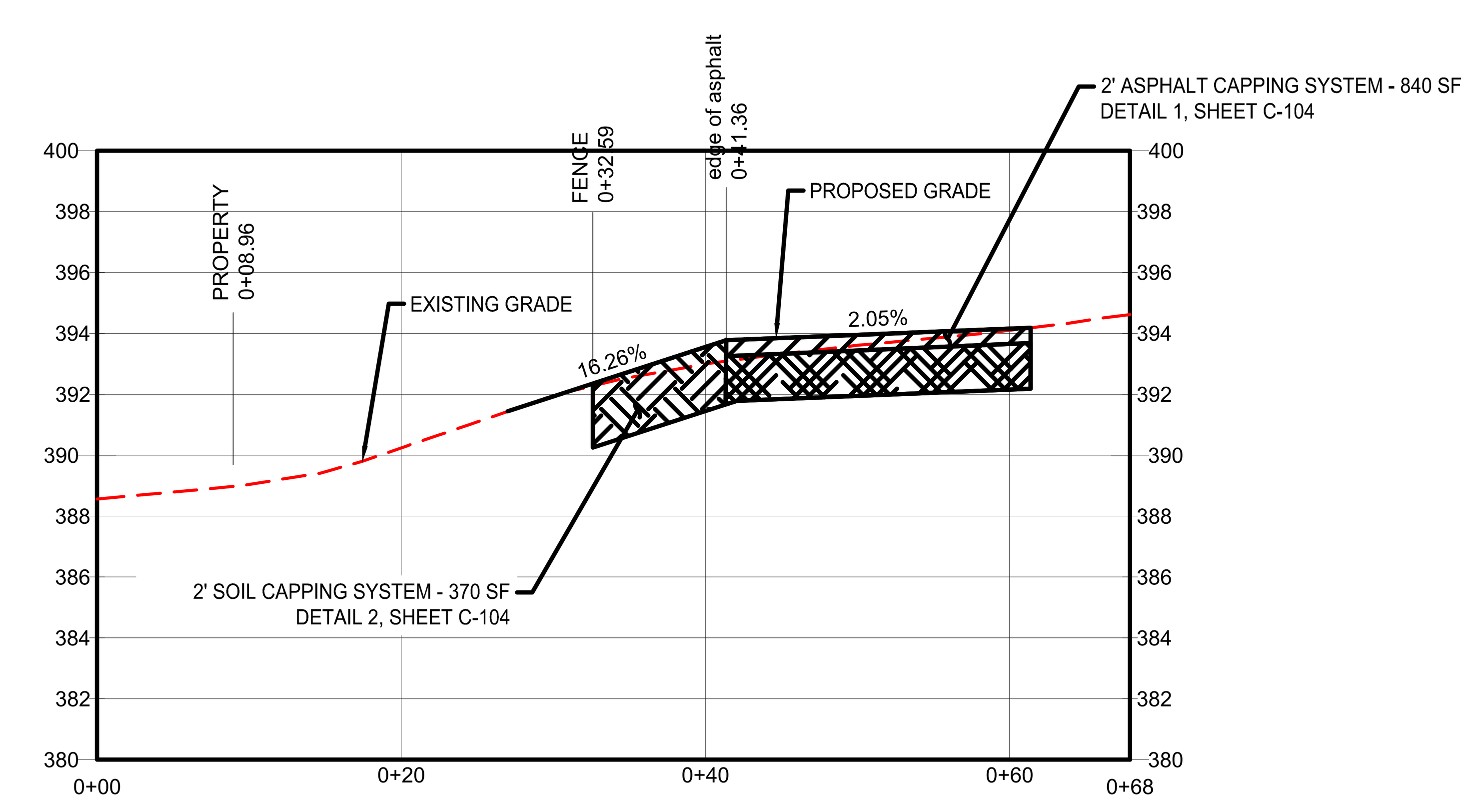
IRM AREA 1
SCALE: 1" = 10'



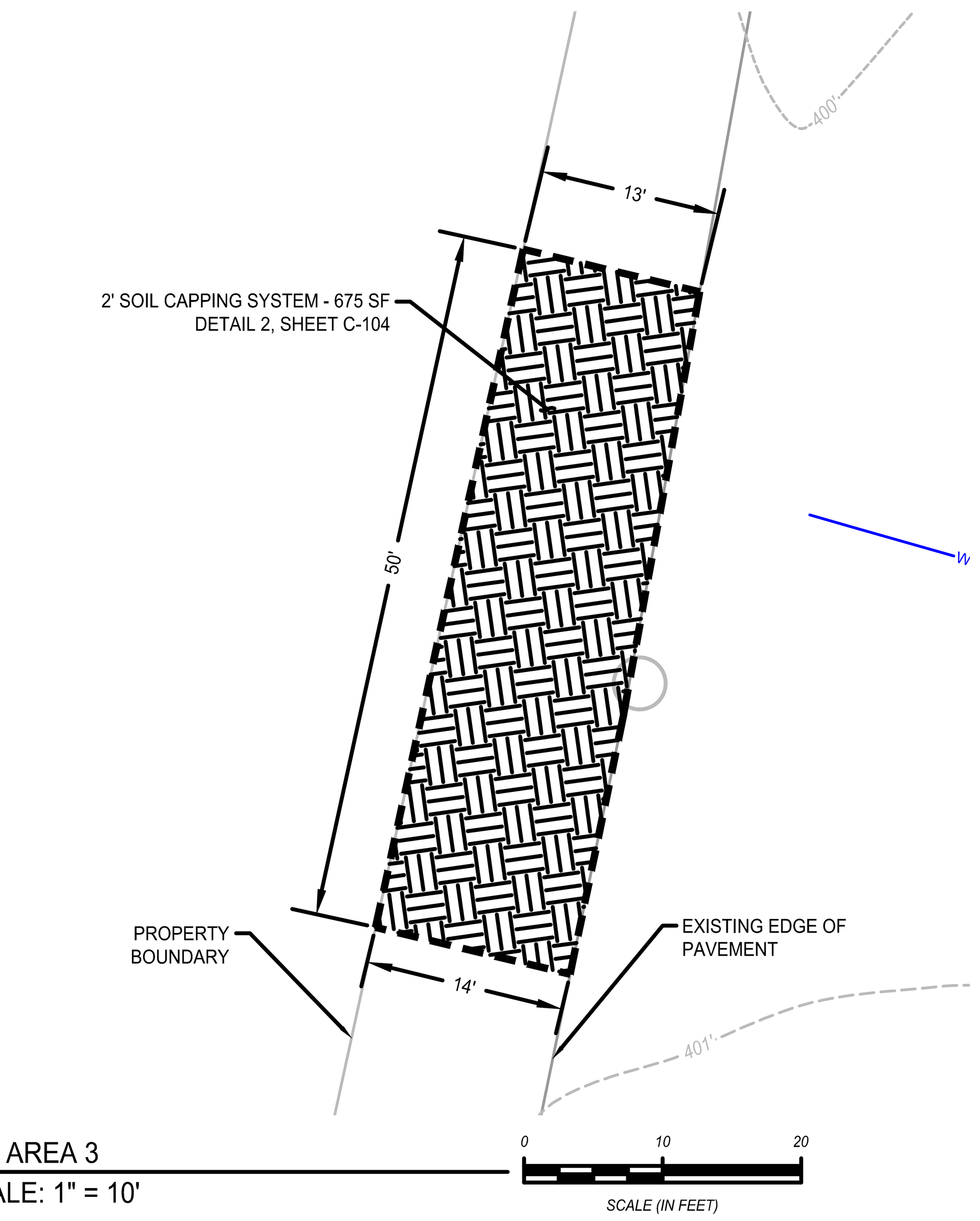
IRM AREA 2
SCALE: 1" = 10'



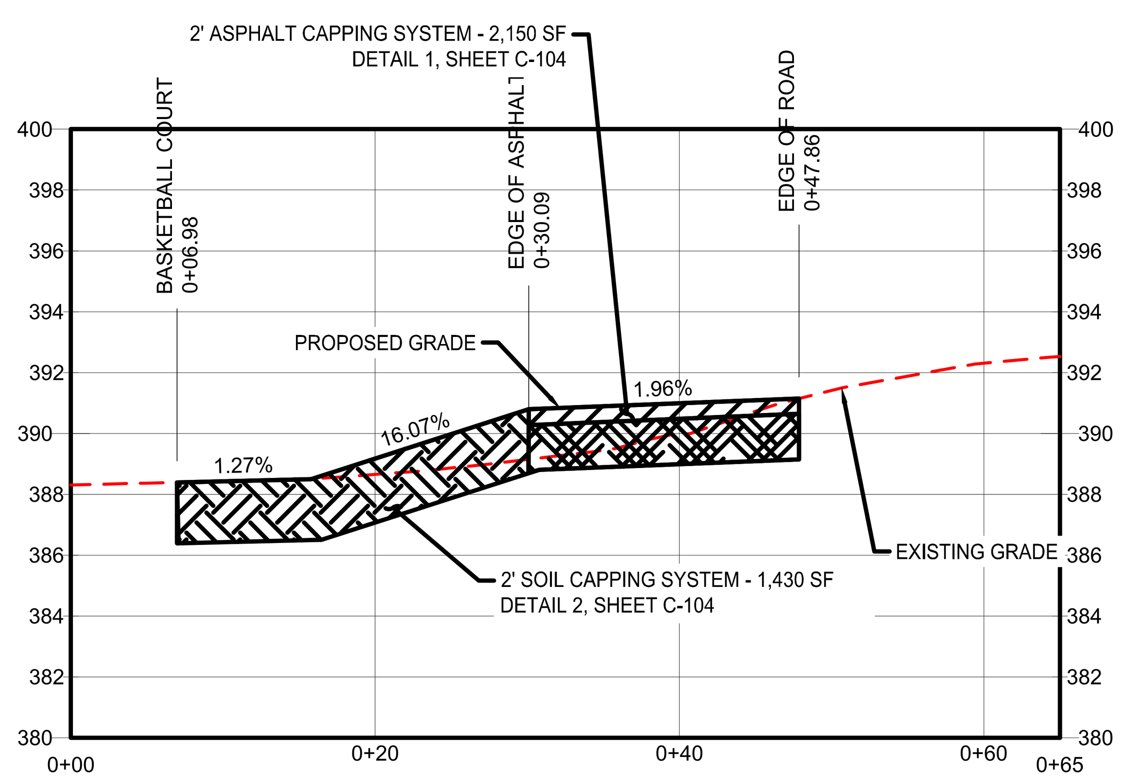
KEY LOCATION MAP
SCALE: 1" = 150'



AREA 2 - PROFILE 2
SCALE: HORIZONTAL1" = 10' / VERTICAL 1" = 5'



IRM AREA 3
SCALE: 1" = 10'



AREA 1 - PROFILE 1
SCALE: HORIZONTAL1" = 10' / VERTICAL 1" = 5'

N

Rev.	Date	Description	By	Chk

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Environmental Resources Management

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TRW AUTOMOTIVE U.S. LLC
INTERIM REMEDIAL MEASURES PLAN

FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

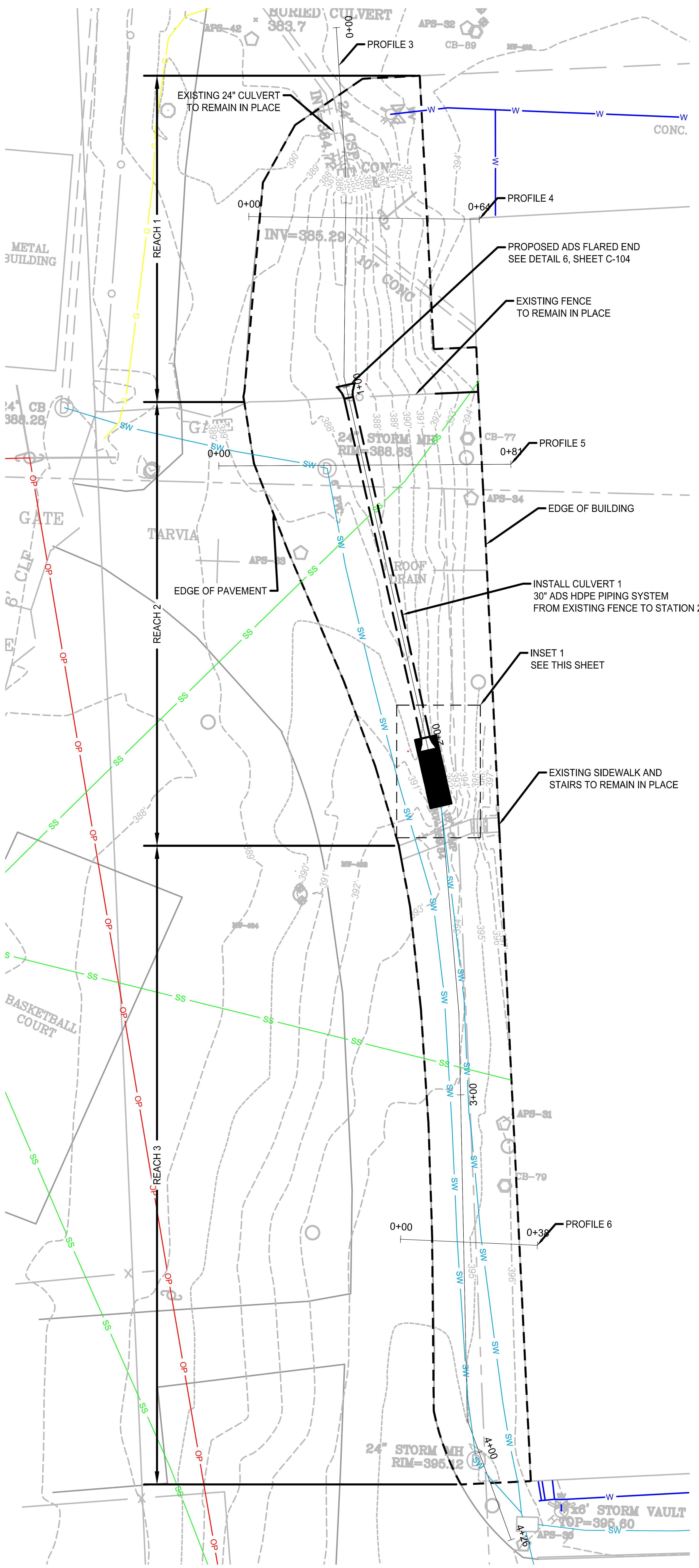
EXCAVATION AND CAPPING AREA 1, 2, AND 3

SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-101	-

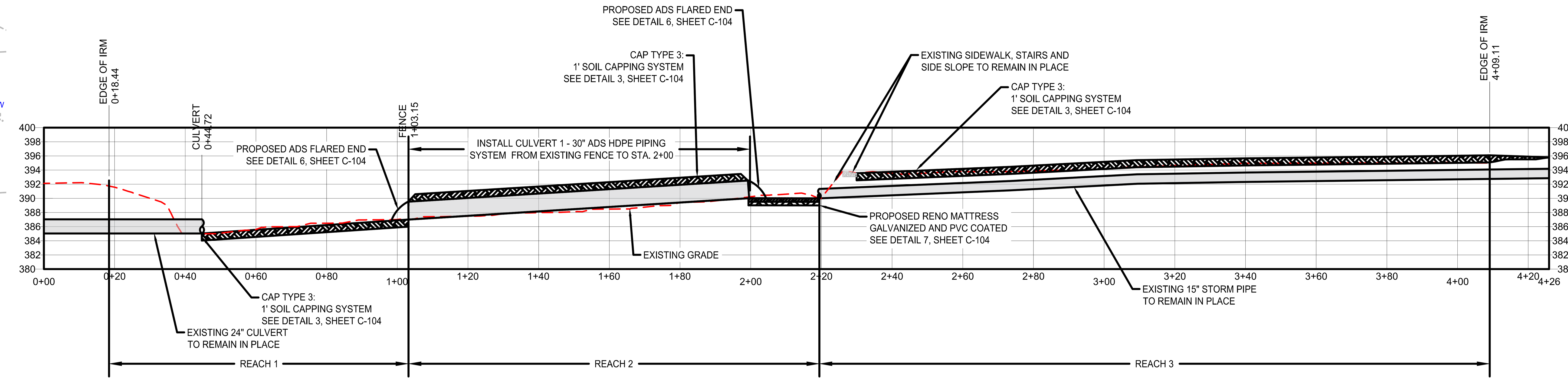
DATE DRAWN: JULY 2019

\\asbdcfs01\Data\Syracuse\Projects\0496229 TRW Automotive Half 2019 OM&M and Misc RS\Job\30 Percent Design\IRM Plan Sheets\C-102 & C-103_Proposed_IRM.dwg

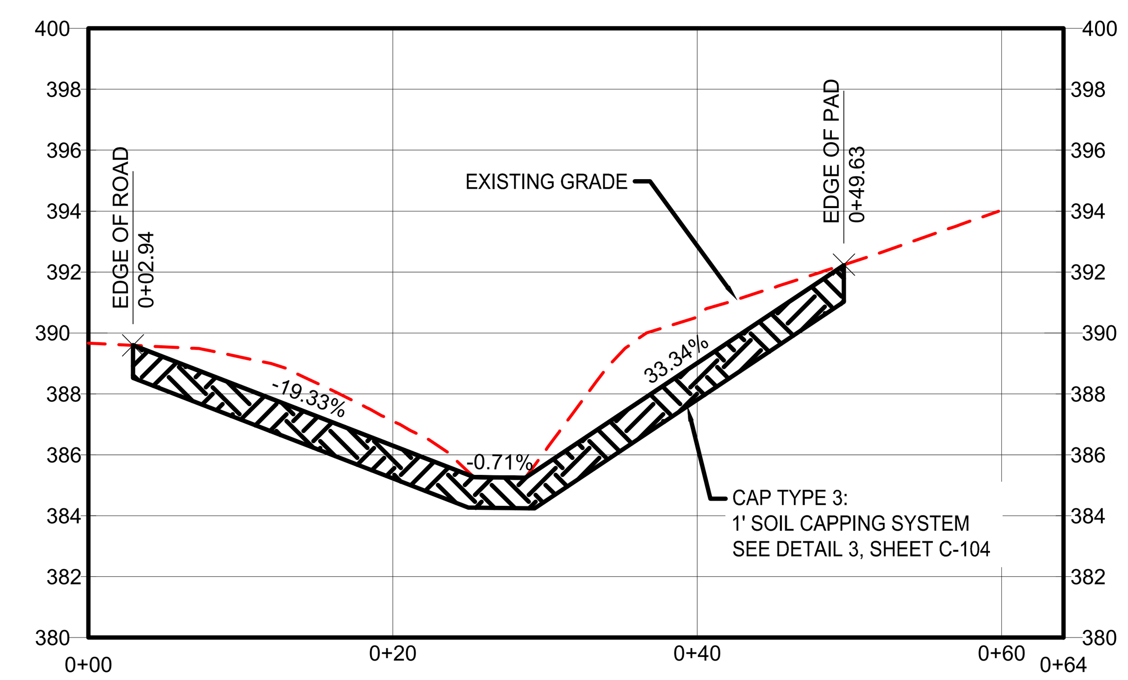
REVISIONS TO BE MADE ON THE CADD FILE ONLY



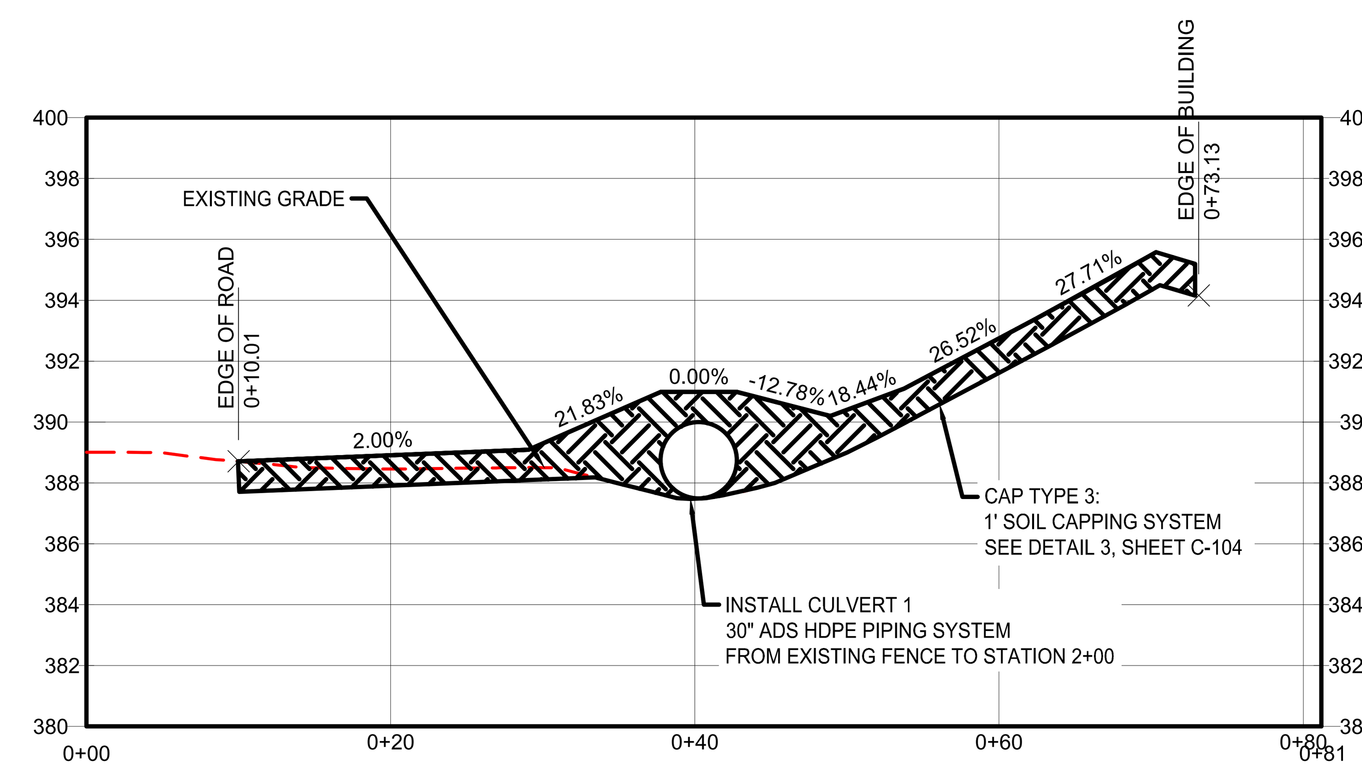
IRM AREA 4
SCALE: 1" = 20'



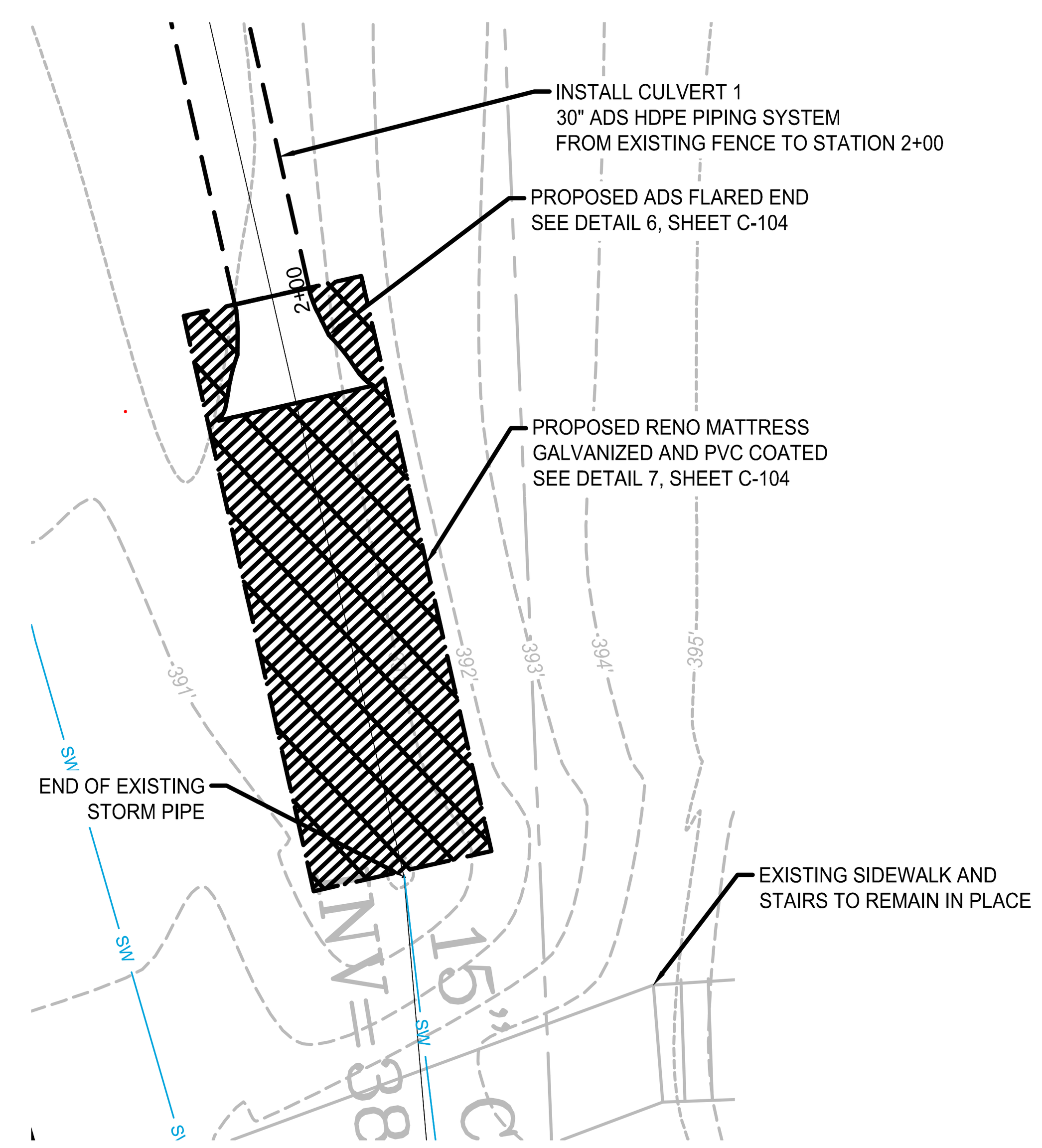
AREA 4 - PROFILE 3
SCALE: HORIZONTAL 1" = 20' / VERTICAL 1" = 10'



PROFILE 4 - REACH 1
SCALE: HORIZONTAL 1" = 10' / VERTICAL 1" = 5'



PROFILE 5 - REACH 2
SCALE: HORIZONTAL 1" = 10' / VERTICAL 1" = 5'



AREA 4 - INSET 1
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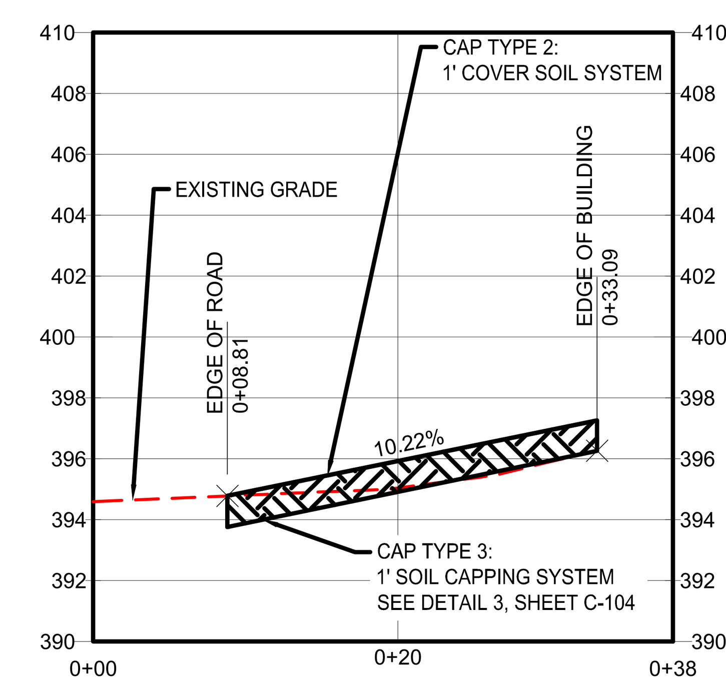
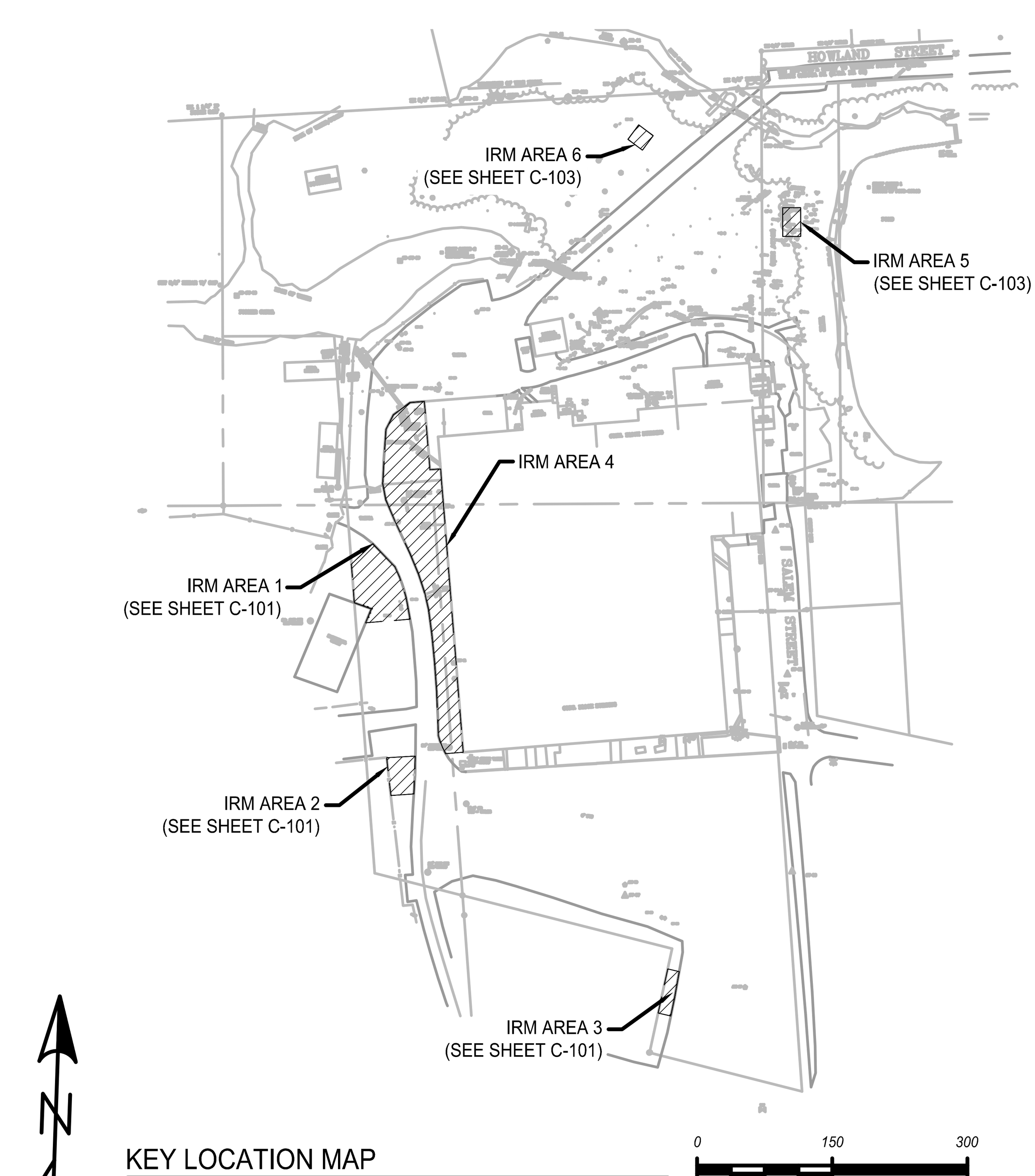


PROFILE 6 - REACH 3
SCALE: HORIZONTAL 1" = 10' / VERTICAL 1" = 5'



KEY LOCATION MAP
SCALE: 1" = 150'

Rev.	Date	Description	By	Chk

DRAWN BY ML | CADD Review MB | CHECKED BY JR

Environmental Resources Management

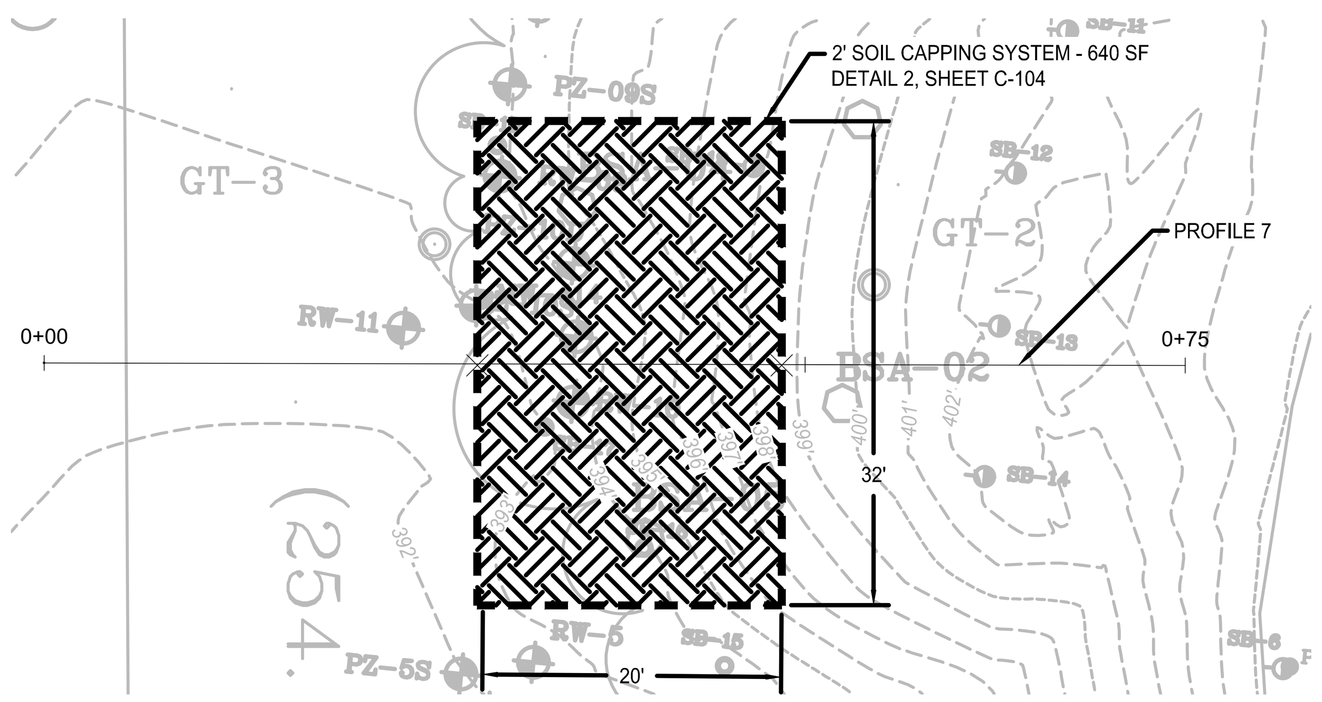
ERM

TRW AUTOMOTIVE U.S. LLC
INTERIM REMEDIAL MEASURES PLAN
FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

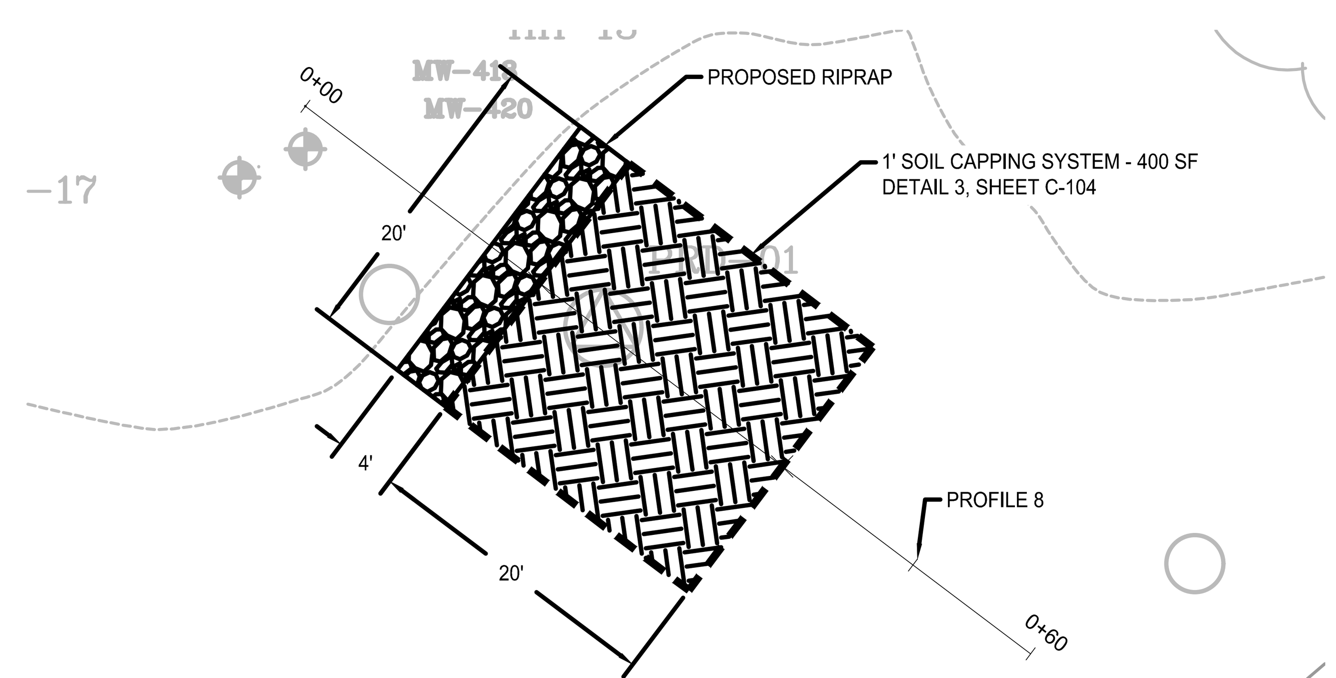
EXCAVATION AND CAPPING AREA 4

SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-102	-
DATE DRAWN: JULY 2019			

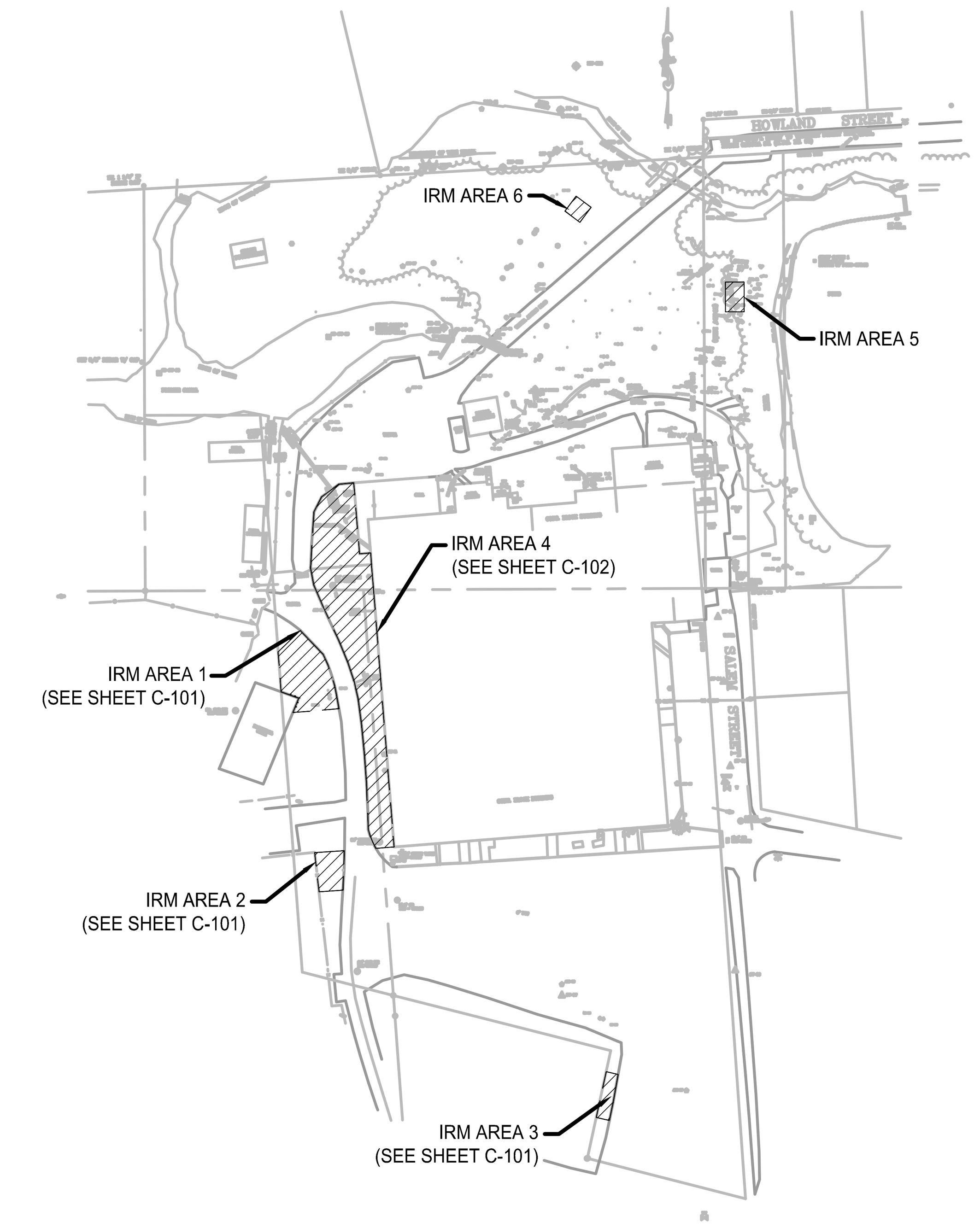
REVISIONS TO BE MADE ON THE CADD FILE ONLY



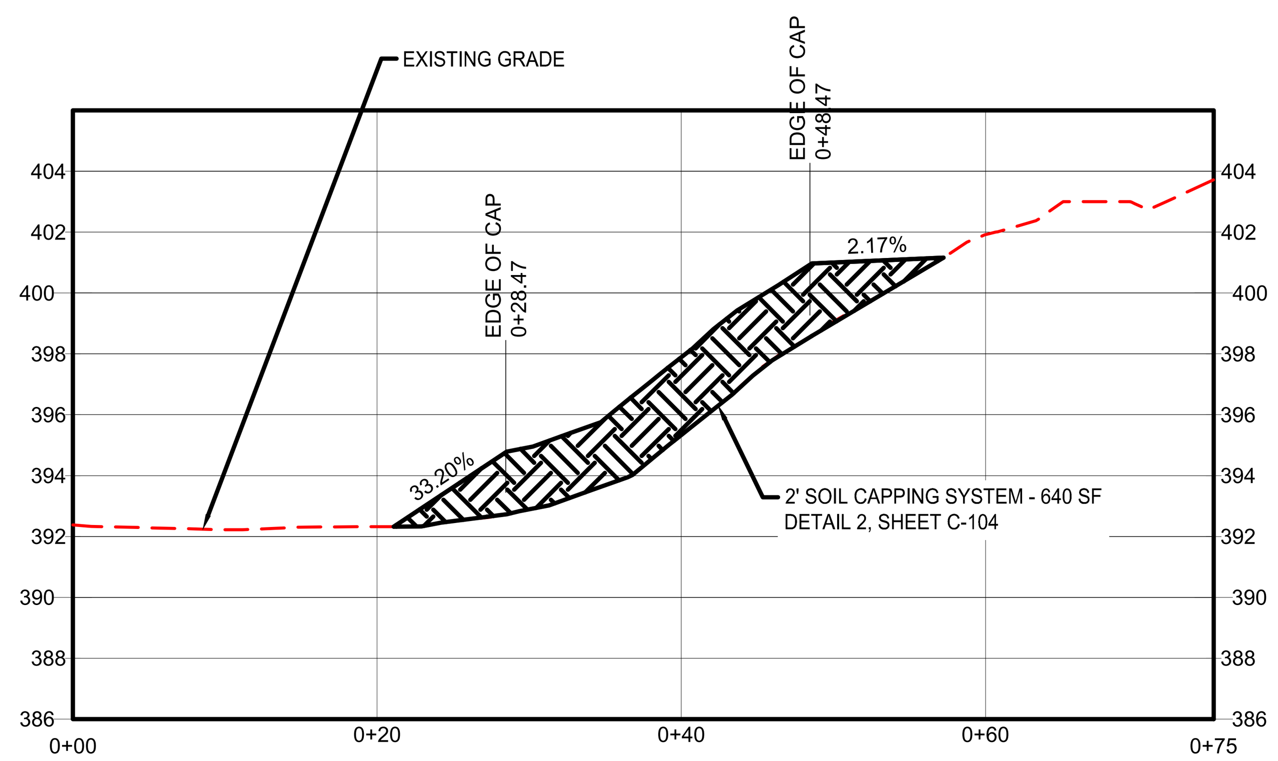
IRM AREA 5
SCALE: 1" = 10'



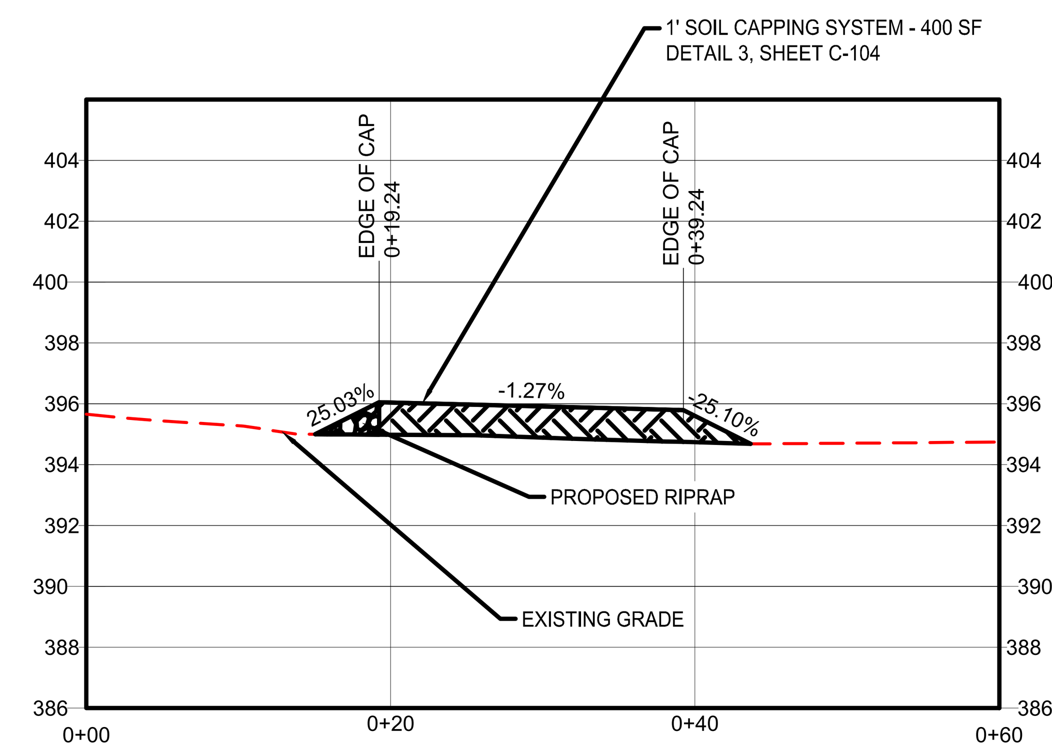
IRM AREA 6
SCALE: 1" = 10'



KEY LOCATION MAP
SCALE: 1" = 150'



AREA 5 - PROFILE 7
SCALE: HORIZONTAL 1" = 10'/VERTICAL 1" = 5'



AREA 6 - PROFILE 8
SCALE: HORIZONTAL 1" = 10'/VERTICAL 1" = 5'

N

Rev.	Date	Description	By	Chk

DRAWN BY: ML | CADD Review: MB | CHECKED BY: JR

ERM.

Environmental Resources Management

TRW AUTOMOTIVE U.S. LLC
INTERIM REMEDIAL MEASURES PLAN
FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

EXCAVATION AND CAPPING AREA 5 AND 6

SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-103	-
DATE DRAWN: JULY 2019			

REVISIONS TO BE MADE ON THE CADD FILE ONLY

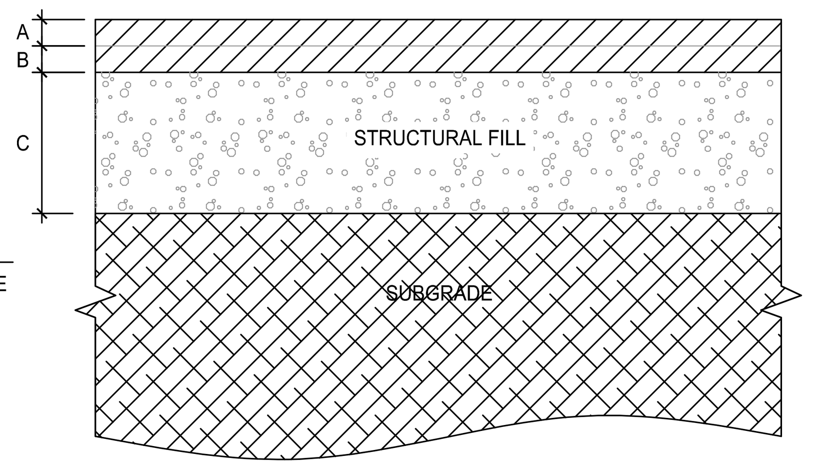
FULL DEPTH SECTION

STANDARD DUTY PAVING

A = 2" ASPHALT CONCRETE - SURFACE COURSE
B = 4" ASPHALT CONCRETE - BASE COURSE
C = STRUCTURAL FILL - SUBBASE COURSE

STRUCTURAL FILL BASE COURSE

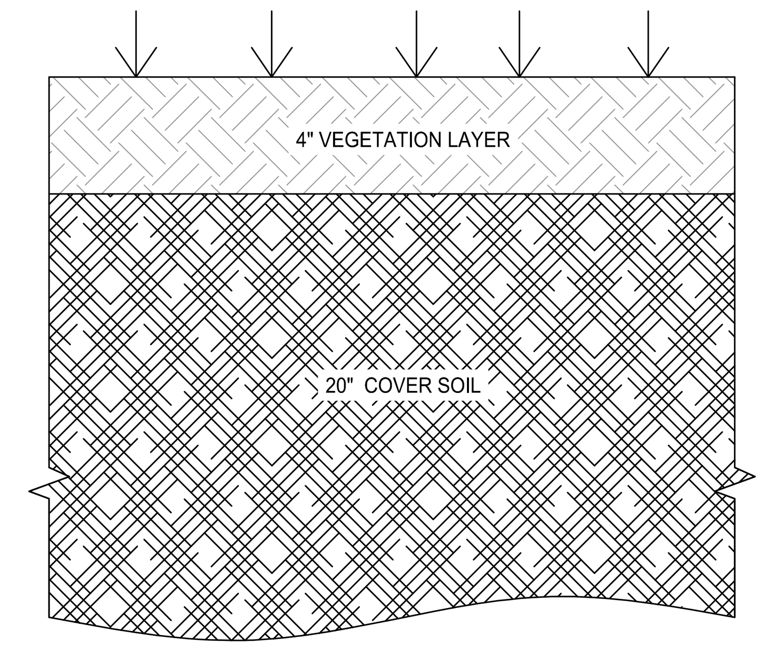
GRADATION ASTM D-422	PERCENT PASSING	SIEVE SIZE
	100%	2 in.
	80-100%	3/4 in.
	60-80%	3/8 in.
	24-70%	No. 4
	10-40%	No. 16
	0-10%	No. 200



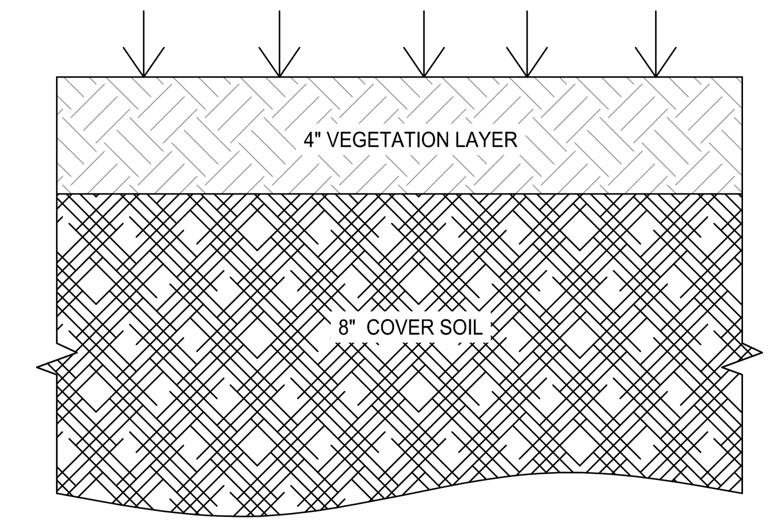
ASPHALT PAVING NOTES

A. SUBGRADE COMPACTION: (PER SPECIFICATIONS)
B. STRUCTURAL FILL TO CONFORM TO NEW YORK DOT STANDARDS FOR SUBBASE COURSE COMPACTED TO 95% OF THE STANDARD PROCTOR (ASTM D-1557) MAXIMUM DRY DENSITY
C. ALL SUBGRADE AND PAVEMENT OPERATIONS AND MATERIALS SHALL MEET THE MINIMUM REQUIREMENTS OF THE CURRENT (NEW YORK DOT STANDARDS AND SPECIFICATIONS MANUAL)
D. PROVIDE TACK COAT BETWEEN BASE COURSE AND SURFACE COURSE IF NEW YORK DOT SPECIFICATIONS REQUIRE OR CONDITIONS WARRANT.
E. WHEN MEETING AN EXISTING PAVEMENT, ADD A 12"W X 2"D KEY BE MILLED IN EXISTING SURFACE AND A 24"W LAYER OF PETROMAT BE INSTALLED BETWEEN BASE AND SURFACE COURSES TO PREVENT CRACKS FROM REFLECTING THROUGH PAVEMENT.

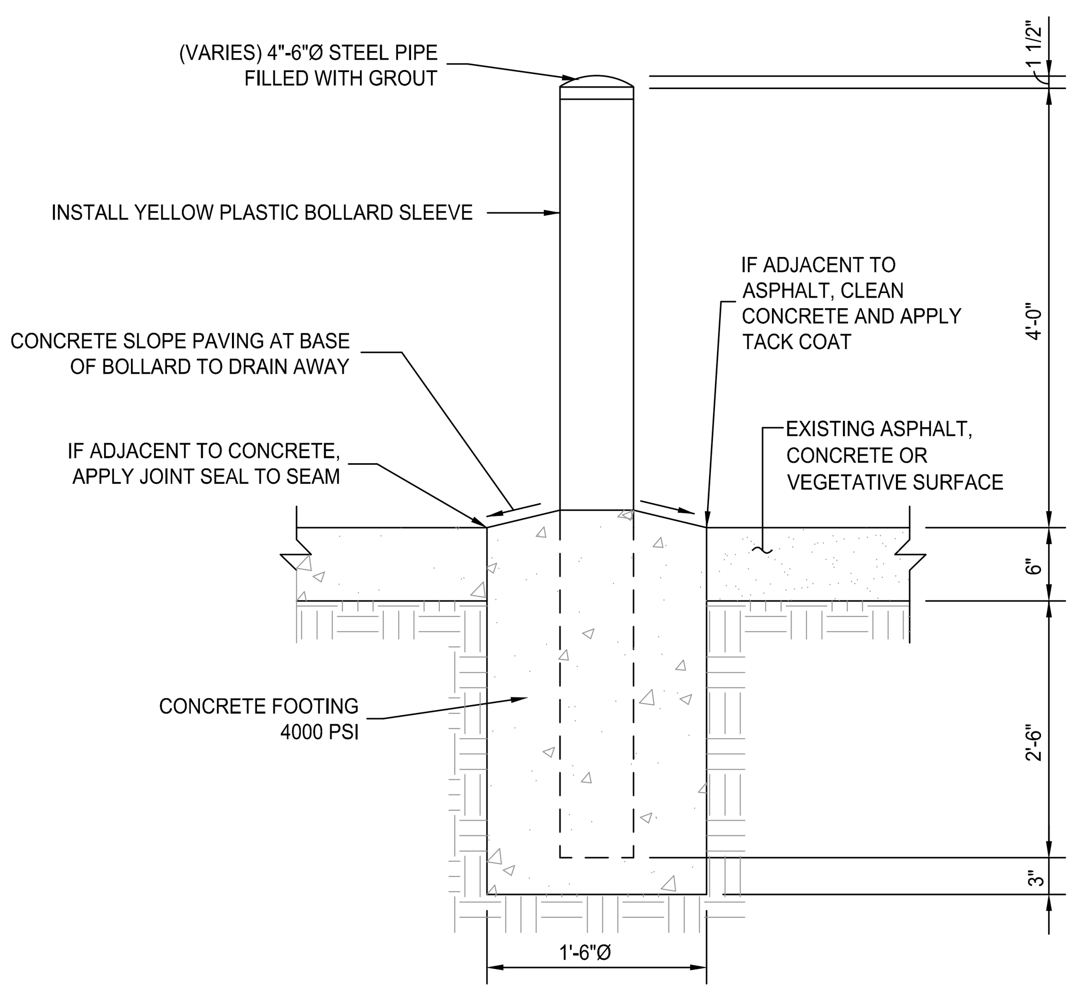
1 CAP TYPE 1 - 2' ASPHALT CAPPING SYSTEM
N.T.S.



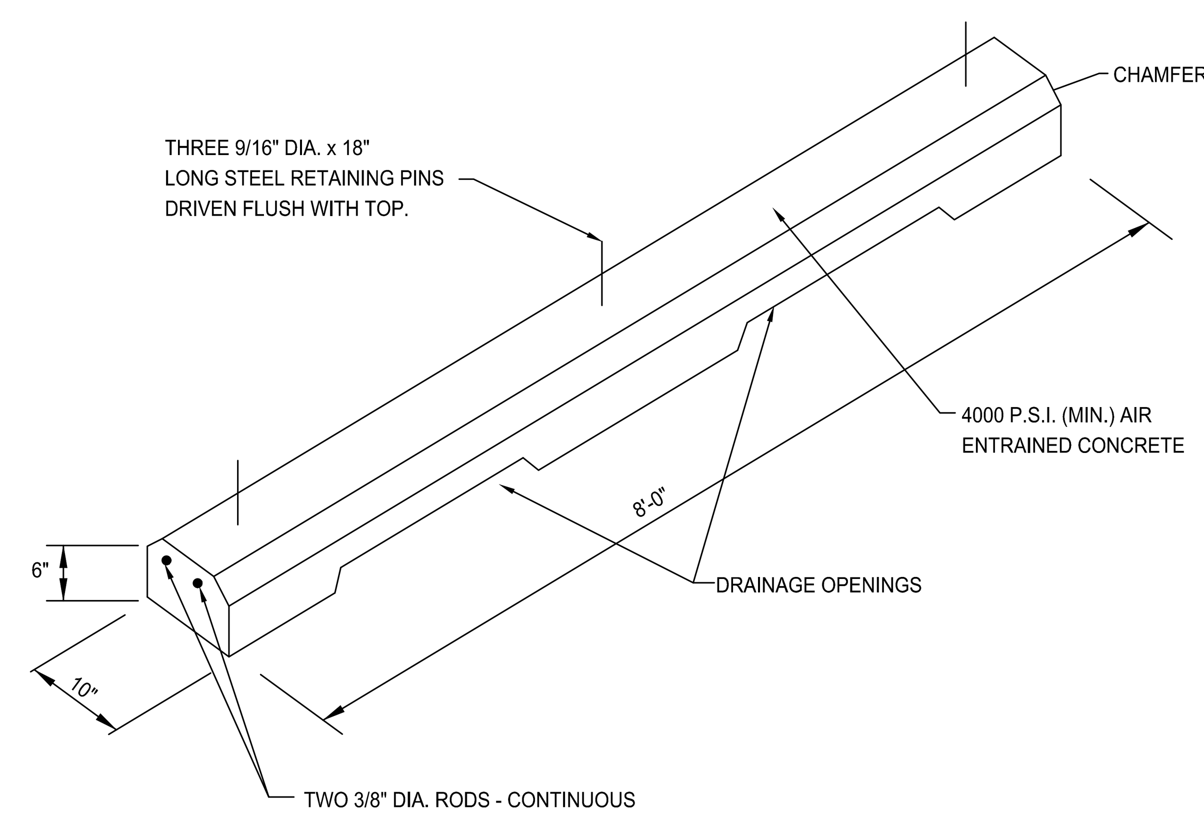
2 CAP TYPE 2- 2' SOIL CAPPING SYSTEM
N.T.S.



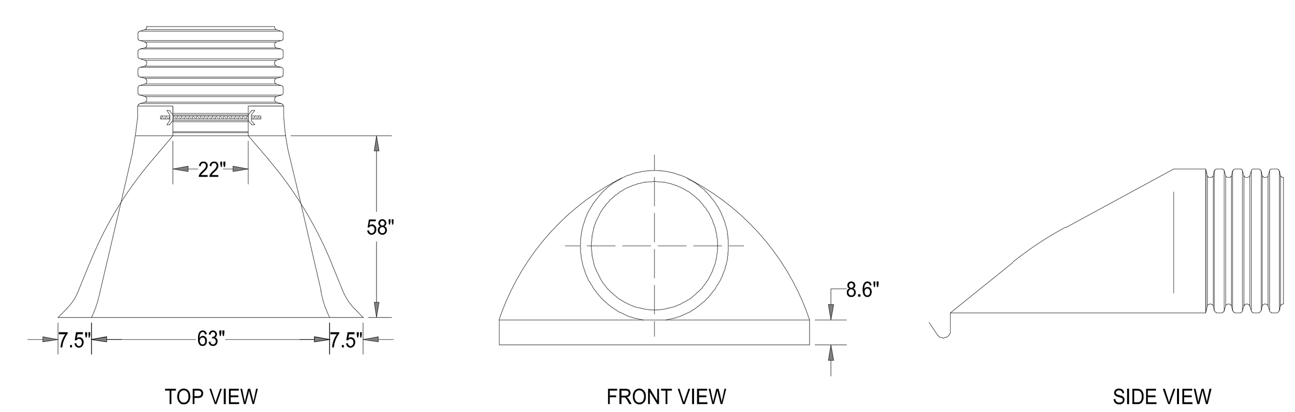
3 CAP TYPE 3 - 1' SOIL CAPPING SYSTEM
N.T.S.



4 BOLLARD DETAIL
N.T.S.



5 WHEEL STOP
N.T.S.



ADS FLARED END SECTION SPECIFICATION

Requirements
The ADS Flared End Section shall be high density polyethylene meeting ASTM D3350 minimum cell classification 213320C; contact manufacturer for additional cell classification information. When provided, the metal threaded fastening rod shall be stainless steel.

Installation
Installation shall be in accordance with ADS installation instructions and with those issued by state or local authorities. Contact your local ADS representative or visit www.ads-pipe.com for the latest installation instructions.

6 ADS FLARED END SECTION FOR 30" ADS HDPE PIPING SYSTEM
N.T.S.

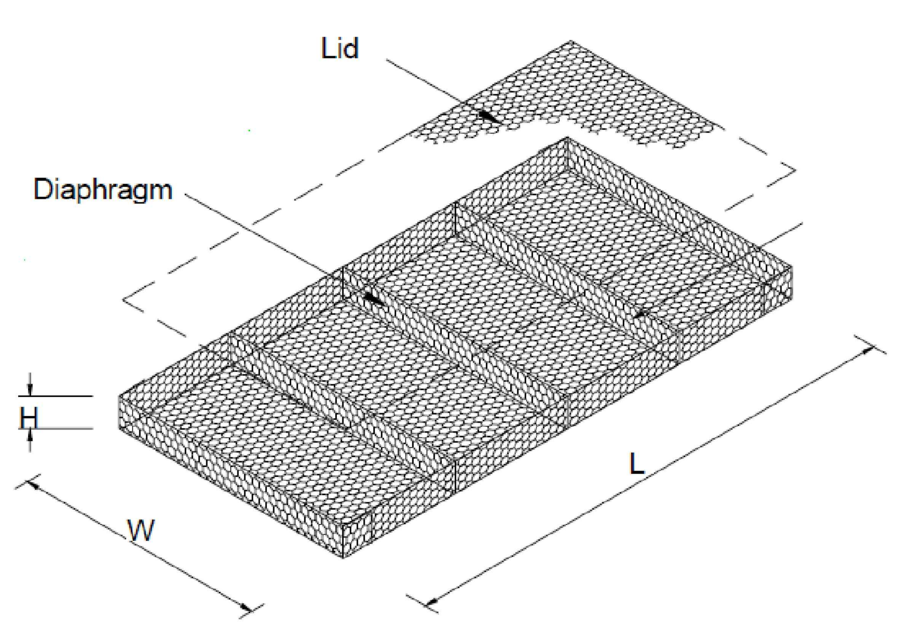


Table of sizes for Reno mattresses

L=Length ft (m)	W=Width ft (m)	H=Height in (mm)	# of cells
9 (2.7)	6 (1.8)	6 (150)	3
12 (3.6)	6 (1.8)	6 (150)	4
9 (2.7)	6 (1.8)	9 (230)	3
12 (3.6)	6 (1.8)	9 (230)	4
12 (3.6)	6 (1.8)	12 (300)	4

NOTE:
1. REFER TO GEOSOLUTIONS INC. FOR ADDITIONAL SPECIFICATIONS:
https://www.geosolutionsinc.com/products/pdfs/2005-PSS-Reno-mattress-galvanized-PVC.pdf

7 RENO MATTRESS GALVANIZED AND PVC COATED
N.T.S.

Rev.	Date	Description	By	Chk

DRAWN BY ML | CADD Review MB | CHECKED BY JR

Environmental Resources Management

ERM

TRW AUTOMOTIVE U.S. LLC
INTERIM REMEDIAL MEASURES PLAN

FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

CONSTRUCTION DETAILS

SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-104	-
DATE DRAWN JULY 2019			

REVISIONS TO BE MADE ON THE CADD FILE ONLY

\\usbdcfs01\Data\Syracuse\Projects\0496229 TRW Automotive Half 2019 OM&M and Misc RS\Job\30 Percent Design\IRM Plan Sheets\C-104_Construction Details_IRM.dwg

APPENDIX B LPW DEVELOPMENT LLC AND VILLAGE OF UNION SPRINGS ACKNOWLEDGMENT AND APPROVALS

ERM

5784 Widewaters Parkway
Suite 200
Dewitt, New York
13214

Telephone: +1 315 445 2554
Fax: +1 315 445 2543

www.erm.com

24 July 2019

Mr. Shattuck
The Village of Union Springs New York
26 Chapel Street
Union Springs, New York 13160-009

Subject: Proposed Interim Remedial Measure Acknowledgement
Former TRW Automotive Facility
Parcel Number: 141.09-1-22.2

Dear Mr. Shattuck

ERM Consulting & Engineering, Inc. (ERM), on behalf of TRW Automotive U.S. LLC (TRW) is planning to implement the proposed interim remedial measures (Project) on the referenced property as discussed in detail during our meeting on 17 June 2019. During the meeting, the details of the Project were discussed as outlined below:

- ERM will place and compact 2-feet of New York State Department of Environmental Conservation (NYSDEC) approved imported soil in the area identified as Area 5 on the attached figure. The area will be graded to match the grade of the current ground surface north of the earthen dam. The soil cap and disturbed areas will be restored with grass following construction.
- ERM will excavate 2 feet of soil in the areas identified as areas 1, 2, and 3 on the attached figure on LPW Development, LLC (LPW) owned parcel 141.09-1-21, which abuts the Village of Union Springs Frontenac Park. This work will be completed on LPW property; however, construction will temporarily disrupt access to the Frontenac Park along Creamery Road west of the former TRW Union Springs facility near Areas 4A and 4B (Figure B1). Soil will be transported and disposed of offsite. These areas will be restored with soil and/ or asphalt. Asphalt areas will finish flush to match current grades to accommodate parking of vehicles. Areas finished in soil will be compacted to meet the current grade and restored with grass.

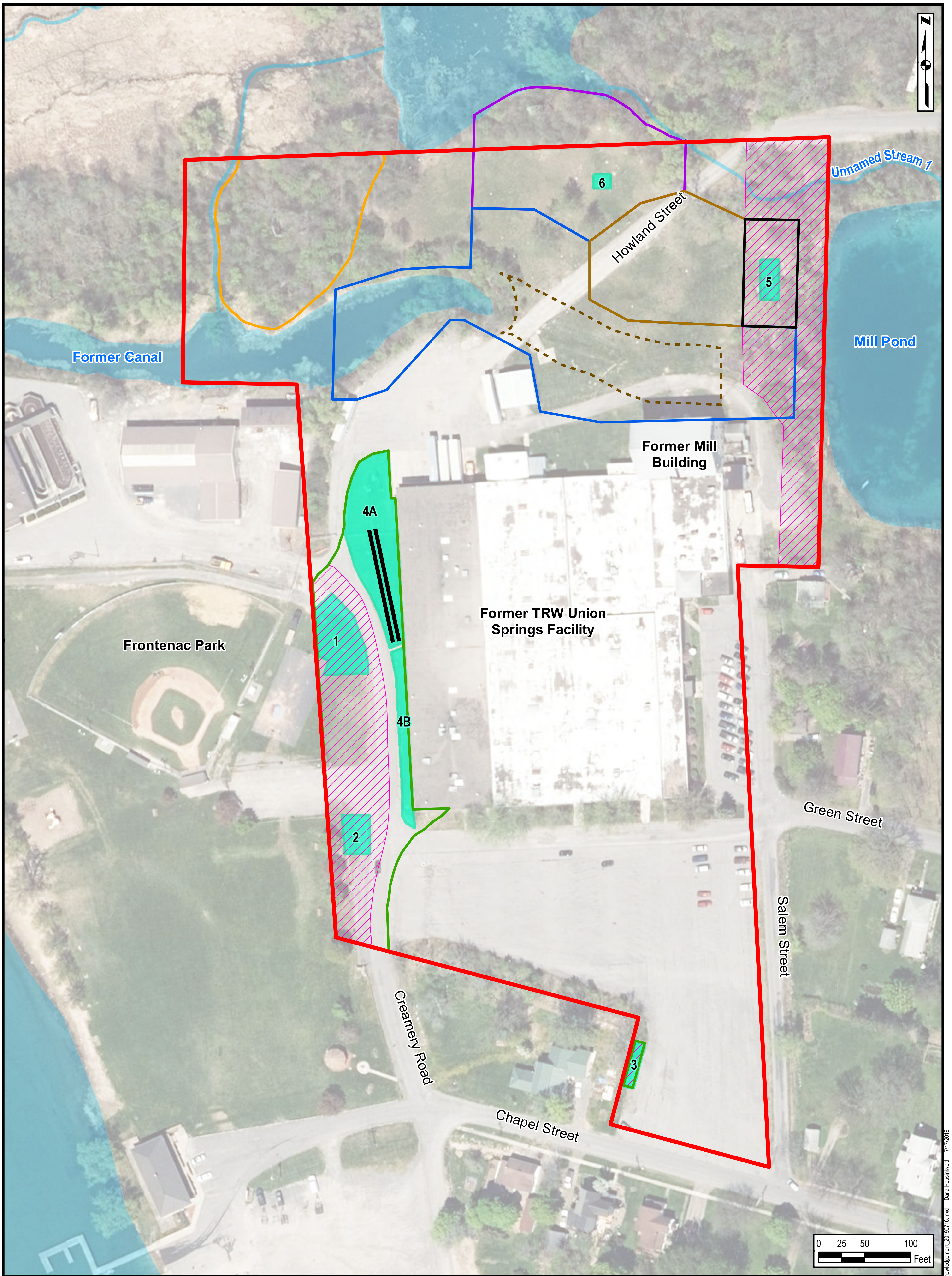
This work is planned for October 2019. We will keep the Village informed on the schedule through the planning and approval process.

This signed letter serves as documentation of the 17 June meeting and the Village of Union Springs New York's acknowledgement and approval for the Project.

Yours sincerely

Robert Sents

Rob Sents
ERM Project Manager



Legend

- New Culvert
- Proposed Excavation and Capping IRM Areas
- Restricted Residential SCOs
- Buried Portion of Former Canal
- Approximate Site Boundary (Restricted – Commercial SCOs)
- Stream
- Surface Water

Areas of Concern

- Berm
- Former Canal
- North Field
- South Field
- Creamery Road
- Northwest Corner

Figure B1: IRM Layout
Former TRW Union Springs Facility
Union Springs, New York

NOTES:
- The buried portion of the former canal was digitized based on historical maps and photographs. Location is approximate.
- Approximate boundary of former canal based on normal high water conditions.
- Aerial imagery captured in 2015 from New York State.

ERM

ERM

5784 Widewaters Parkway
Suite 200
Dewitt, New York
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Fax: +1 315 445 2543

www.erm.com

ERM

24 July 2019

Mr. Marshall
LPW Development LLC,
15 Garfield Street
Auburn, New York 13021-009

Subject: Proposed Interim Remedial Measure Approval/ Acknowledgement

Former TRW Automotive Facility

107 Salem St, Village of Union Springs, New York

Dear Mr. Marshall

ERM Consulting & Engineering, Inc. (ERM), on behalf of TRW Automotive U.S. LLC (TRW) is planning to implement the proposed interim remedial measures (Project) on the referenced property as discussed in detail during our meeting with you on 17 June 2019. During the meeting, the details of the Project were discussed as outlined below:

- ERM will import, place and compact 1-foot of soil (New York State Department of Environmental Conservation (NYSDEC) approved) north of Howland Street in the area identified as Area 6 on the attached figure. The soil cap and disturbed areas will be restored with grass following construction.

- ERM will excavate 2 feet of soil in the areas identified as Areas 1, 2, and 3 on the attached figure. Soil will be transported and disposed of offsite. These areas will be restored with NYSDEC approved soil and/ or asphalt. Asphalt areas will be finished flush to current grades of the road and/or parking lots. Areas finished with soil will be compacted to meet the current grade and restored with grass.

- Area 4A and 4B will be excavated up to the edge of the current sidewalk, parking lot, and roads to allow ERM to install 1-foot of imported soil. The swale in Area 4A will be partially completed with a new culvert pipe as shown on the attached figure. Roof drains have been taken into consideration and will be incorporated into the new drainage design. The grade in the center of Area 4B along the building will be changed. The grade will be mounded to allow for the installation of 1-foot cover of imported soil. This mounded area will be graded to meet the current grades along the edge of the road and sidewalk.

This signed letter serves as documentation of the 17 June meeting and LPW's acknowledgement and approval for the Project.

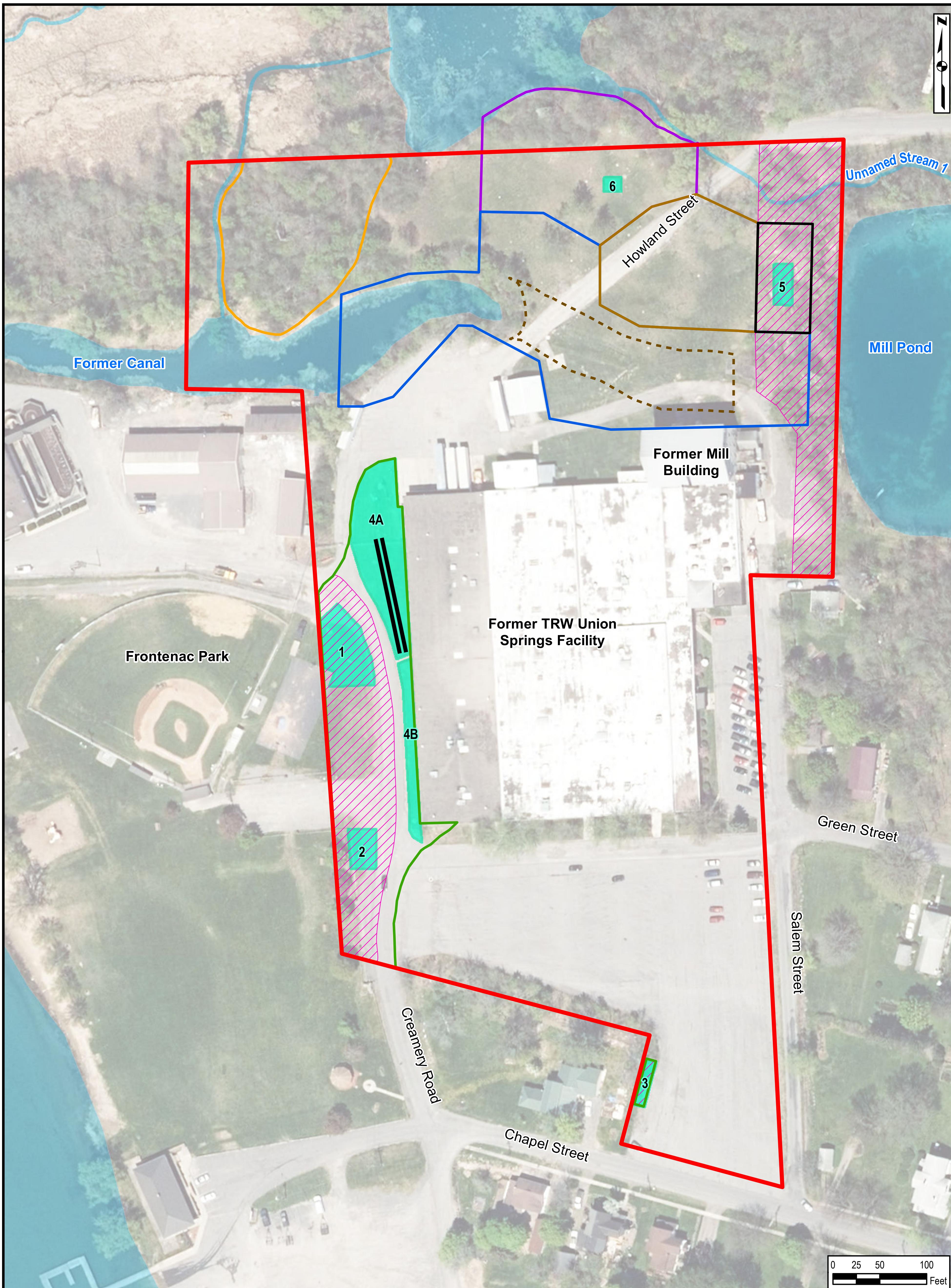
Yours sincerely

Rob Sents
ERM Project Manager

Name: Peter Mills

Title: Member

Date: 7-25-19



Legend

- New Culvert
- Proposed Excavation and Capping IRM Areas
- Restricted Residential SCOs
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Figure B1: IRM Layout
Former TRW Union Springs Facility
Union Springs, New York

NOTES:
- The buried portion of the former canal was digitized based on historical maps and photographs. Location is approximate.
- Approximate boundary of former canal based on normal high water conditions.
- Aerial imagery captured in 2015 from New York State.

ERM

APPENDIX C MANUFACTURE INFORMATION SHEETS

RadonAway®
The world's leading radon fan manufacturer

RADON PRO HYBRID SEALANT

EXCLUSIVELY FROM RADONAWAY®

RadonAway® Radon Pro Hybrid Sealant (P/N 28523) meets most basement and crawlspace needs. Use our hybrid sealant for sealing expansion and control joints (i.e., wall joints, copings, window and door perimeters, etc.). This easy-to-use, professional grade sealant is long-lasting, self-leveling, non-sag and moisture curing. It contains little to no solvent and is virtually odor free.

FEATURES

- Professional grade polyurethane*
- Non-yellowing limestone color
- Moisture-curing
- Elastomeric (non-sag)
- Allows ±50% joint movement
- Long-lasting seal
- Low VOC content
- Meets radon standards

*silicone/urethane hybrid

Available in Single Tubes or 12-Pack Contractor Box

RECOMMENDED ACCESSORIES

Dripless® Caulking Gun
P/N 74003

HarcoPaint® MiracleWipes
P/N 68110

Caulk Saver
P/N 68085

SEALANT COMPARISON TABLE

SEALANT TYPE	CONCRETE ADHESION	SHRINKAGE	MAX. ALLOWABLE JOINT MOVEMENT
Polyurethane (Pro Sealant)	Excellent	<10%	High
Butyl	Excellent	Up to 20%	Low
Silicone	Good	<10%	Moderate
Elastomeric Copolymer	Good	<10%	Moderate
Elastomeric Acrylic	Moderate	Up to 30%	Low