PROPOSED REMEDIAL ACTION PLAN

Shulman's Salvage Yard
State Superfund Project
Elmira, Chemung County
Site No. 808013
February 2015

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

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 Department has issued this document in accordance with the requirements of 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 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Steele Memorial Library
101 East Church Street,
Elmira, NY 14901
Phone: (607) 733-9173

A public comment period has been set from:

3/01/2015 to 3/30/2015

A public meeting is scheduled for the following date:

3/24/2015 at 6:00 PM

Public meeting location:

Economic Opportunity Program - 650 Baldwin St, Elmira, NY 14901

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 3/30/2015 to:

David Lates – david.lates@dec.ny.gov
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The Shulman's Salvage Yard Site is located at One Shulman Plaza in a mixed residential and commercial area in the City of Elmira, Chemung County. The 7.34 acre property is located along

the intersection of Eastern Washington Avenue and Clemens Center Parkway.

The site is located approximately 1,200 feet northwest of the Former Diamond Cleaners Inactive Hazardous Waste Disposal Site (ID No. 808030) located at 717 Lake Street and directly adjacent to the Triple Cities Metal Finishing site (ID No. 808045) located at 926 Stowell St.

Site Features:
The property includes four permanent buildings along with a weigh station and a scale house trailer. The gated main entrance to the property is locked after business hours, and fencing surrounds much of the property. With the exception of an asphalt surface along the southern portion of the site, the majority of the site is unimproved and used for the storage and handling of salvage materials. A rail-spur on the northern end of the property connects to Norfolk Southern Railroad for shipment of materials by rail.

Current Zoning and Land Use:
The property is zoned commercial and used primarily for industrial and commercial metal recycling operations. These operations include weighing, processing, sorting, and shipping of scrap metal. Paper and NYS deposit cans and bottles are also received and processed on-site for recycling. The property is bordered immediately to the west and south by a combination of residential and commercial properties. Clemens Center Parkway borders the property immediately to the east and the Norfolk and Southern Railway borders the site to the north.

Past Use of the Site:
The property has operated as the Shulman's Salvage Yard for various metal salvaging operations since the late 1960's/early 1970's. Data collected during initial site characterization activities at the site in 1984 and 1987 indicate that metal salvaging operations had resulted in polychlorinated biphenyls (PCBs) and metals contamination in soil, groundwater, and surface water, as well as volatile organic compound (VOC) contamination (mainly trichloroethylene) in groundwater. The PCB contamination was suspected to be linked to a shipment of drained transformers processed on-site in 1982.

The 1984 and 1987 site characterizations were executed pursuant to orders on consent between the Department and Shulman and Son, Inc. Based on the initial findings of the 1984 investigation, the site was classified as a Class 2 inactive hazardous waste disposal site in 1986 and a remedial program for the site was prepared under the direction of the Department. This program was revised based on additional data received during the 1987 investigation. The remedial party challenged their requirement to conduct these additional activities, which conflicted with original remedial requirements specified in the consent order. The remedial party's challenge, which took years to reach resolution, was upheld and the remedial program was postponed. The remedial program was resumed under the State Superfund Program in 2012, and a remedial investigation was conducted in spring-fall 2013.

Site Geology and Hydrogeology:
The site geology is mapped as outwash sand and gravel and consists of fine to coarse sand and gravel with occasional silty clay lenses. Bedrock was not encountered on-site at depths up to 25 feet below ground surface. Groundwater occurs at a depth of approximately 2 to 8 feet beneath

the ground surface and flows in a northeast direction toward the Sullivan Street water supply wells and Newtown Creek. The Sullivan Street water supply wells, located approximately 4,000 feet northeast of the site, have not been used since the late 1990's and are not planned to be used in the foreseeable future according to the Elmira Water Board.

The nearest surface water body is a small pond located approximately 2,200 feet east of the site, identified as Weyer Pond. Newtown Creek is located approximately 500 feet further to the east of Weyer Pond and is located approximately 3,000 feet east of the Shulman's Salvage Yard site. Newtown Creek flows to the south and drains into the Chemung River. The majority of surface water runoff from the site is captured by a stormwater collection system that drains into the Chemung River. The site is located over a primary aquifer.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Shulman Company, Inc.

The PRP for the site declined to implement a remedial program when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

The Department has determined that Volatile Organic Compound (VOC) contamination found at the Shulman's Salvage Yard site is associated with an off-site source. The extent of on-site and off-site VOC contamination, as well as associated human exposure assessments and abatement actions, will be addressed separately by the Department as part of the remedial program for the Triple Cities site (Site No. 808045).

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- surface water
- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants

of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

PCB-AROCLOR 1254	ARSENIC
LEAD	CADMIUM
PCB-AROCLOR 1242	COPPER
PCB-AROCLOR 1260	MERCURY
PCB-AROCLOR 1016	TRICHLOROETHENE (TCE)
PCB-AROCLOR 1248	

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- surface water
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination

Based upon investigations conducted to date, the primary contaminants of concern (COCs) at the site include polychlorinated biphenyls (PCBs) present in site soil, metals lead, cadmium, arsenic, mercury and copper present in site soil, groundwater and catch basin water, and trichloroethylene present in groundwater. Several other volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were detected in groundwater and catch basin water, respectively, but not at levels warranting designation as COCs.

Soil:
PCBs and the metals lead, cadmium, arsenic, mercury, and copper have been detected in site soil above commercial use SCGs. The majority of the contamination was found in the main portion of

the scrapyard (the processing and rail transit areas) from zero to four feet below ground surface (bgs). At these depths, PCBs, lead and copper were also found above commercial SCGs at few locations in the outlying parcel. PCBs and copper were also found in surface soils above commercial SCGs at one location in the recycling area, on the east side of the main office building. PCBs and all metal COCs exceeded unrestricted SCGs at depth (up to 12 ft bgs), but only PCBs, copper, and arsenic were found above commercial SCGs. PCBs and metals contamination also extended off-site to the northwest onto to the Norfolk Southern Railroad property. Contamination above commercial SCGs was limited mainly to locations just beyond the property-line. No trichloroethylene (TCE) or other volatile organic compounds were detected in on-site or off-site soils.

Groundwater:
Volatile organic compounds (VOCs), primarily TCE, were detected in groundwater screening samples collected near and northwest of the office building, at a maximum concentration of 120 parts per billion (ppb). These VOCs, which include breakdown products of TCE, exceeded SCGs at three locations at depths ranging from 10 to 30 ft bgs. The highest concentrations appear between the office building and the northwest property line adjacent to the hill, at a depth of 10-14 ft bgs. Various metals were found at concentrations exceeding groundwater standards in most screening locations and at various depths, including COCs lead (5 locations) and arsenic (2 locations). Concentrations of metals and VOCs appear lower in hydraulically downgradient samples. Two SVOCs (phenol and benzo(a)pyrene) were also detected at levels slightly above groundwater standards. PCBs were not detected above standards in site groundwater.

The groundwater data suggests the metals and SVOC impacts to groundwater are due to contamination found in on-site soils. However, based on off-site investigations performed on the adjacent property hydraulically upgradient to the site, the suspected source of VOC groundwater contamination is from the Triple Cities Metal Finishing site (ID No. 808045). Further investigation of the extent of this VOC contamination and any subsequent remediation will be done under the Triple Cities site investigation.

Catch Basin Water:
Two water samples were collected from catch basins at the site which direct surface runoff into city sewers discharging to the Chemung River. Results show various metals and several semi-volatile organic compounds (SVOCs) above surface water standards, including COCs lead and copper. Although PCBs do not have a surface water standard, they were also detected in the catch basins. No TCE or other VOCs were detected in surface water.

Soil Vapor:
Attempts were made to evaluate soil vapor intrusion (SVI) in the on-site office building in January/February 2014 via sub-slab soil vapor sampling, but access for this was denied. The suspected source of the VOC contamination that could lead to VI was determined to be offsite on the adjacent Triple Cities property.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking contaminated groundwater because the area is served by a public water supply that is not affected by site-related contamination. The majority of the site is fenced, which restricts public access. However, persons who enter unfenced portions of the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. A potential exists for the inhalation of site contaminants due to soil vapor intrusion in the on-site buildings and in any buildings developed on-site in the future. Previous attempts were made to evaluate the potential for soil vapor intrusion to occur in the on-site office building, however, access to the building was denied and the evaluation was not completed. An evaluation is needed to determine whether soil vapor intrusion is a concern for any off-site buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Surface Water

RAOs for Environmental Protection

- Restore surface water to ambient water quality criteria for the contaminant of concern.

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

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 Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the FS 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 Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Excavation, Consolidation, Off-Site Disposal, and Site Cover remedy.

The estimated present worth cost to implement the remedy is $6,390,000. The cost to construct the remedy is estimated to be $6,317,000 and the estimated average annual cost is $14,600.

The elements of the proposed remedy are as follows:

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. Excavation and Off-Site Disposal
All on-site and off-site areas where soil exceeds 1 ppm PCBs in the surface (top 1 foot of soil) and 10 ppm in the subsurface (deeper than one foot below ground surface), as defined by CP-51 Soil Cleanup Guidance, will be excavated and transported off-site for disposal at an appropriately permitted facility. All off-site areas where soil exceeds residential standards for PCBs as defined by 6 NYCRR Part 375-6.8(b), will also be excavated and transported off-site for disposal. Approximately 25,000 cubic yards of PCB contaminated soil is estimated to be removed from the on-site and off-site areas. On-site excavation areas will be backfilled with material meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use and off-site areas with material meeting the requirements of 6 NYCRR Part 375-6.7(d) for residential use. These areas will be re-graded to accommodate installation of a cover system as described in remedy element 4. Soil derived from the re-grading meeting commercial standards may be used to backfill the on-site excavation. Removal of contaminated surface soil will eliminate sources of surface water runoff contamination.

3. On-site Consolidation
On-site soils which marginally exceed commercial-use SCOs for metals but which do not exceed 10 ppm for PCBs will be excavated and consolidated among excavated areas in the sub-surface on-site above the water table. Off-site soils which exceed residential soil cleanup standards for metals will also be excavated and consolidated among excavated areas in the sub-surface on-site above the water table. Prior to consolidation, samples from remaining metals-contaminated soil will be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) to ensure that these soils do not pose a risk to groundwater due to leaching. Additional soils will be disposed off-site if risks to groundwater are identified. Approximately 22,000 cubic yards of soil are estimated to be excavated and consolidated on-site. On-site excavation areas will be backfilled with material meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use and off-site areas with material meeting the requirements of 6 NYCRR Part 375-6.7(d) for residential use.

4. Cover
A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

4. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- Requires a remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- Allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- Requires compliance with the Department approved Site Management Plan.

5. Site Management Plan
A Site Management Plan is required, which includes the following:

a.) Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

- Institutional Controls: The environmental easement discussed in Paragraph 5 above, periodic review reports, groundwater use restrictions.
- Engineering Controls: The soil cover discussed in Paragraph 4 above.

This Site Management Plan also includes, but may not be limited to:
o An Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
o Descriptions of the provisions of the environmental easement including any land use, or groundwater use restrictions;
o Maintaining site access controls and Department notification; and
o The steps necessary for the periodic reviews and certification of the institutional controls.

b.) A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- expansion of the groundwater monitoring network as necessary and monitoring of groundwater to assess the performance and effectiveness of the remedy;
- monitoring of soil cover to assure cover remains in place and effective; and
- a schedule of monitoring frequency of submittals to the Department;

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, the applicable restricted use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

During the Remedial Investigation (RI), seven groundwater screening points were installed in soil boring locations to collect groundwater samples from various depths on the subject site. Locations of these samples are depicted in Figure 2. Reports from previous investigations indicated five monitoring wells had been installed on the subject site, however none of these wells could be located. It is assumed these wells were buried or destroyed over time by salvage yard site operations.

Groundwater samples collected from on-site boring screens were analyzed for PCBs, metals, VOCs, and SVOCs. Screens were installed to depths ranging from 8-12 feet to 26-30 feet. A total of 13 groundwater screening samples were collected. Of these samples, 12 were analyzed for VOCs, eight for SVOCs, 11 for PCBs, and nine for metals. Six VOCs (notably trichloroethene and 1,1,1-trichloroethane), seven metals (notably lead and arsenic), and two SVOCs (benzo(a)pyrene and phenol) were detected at concentrations that exceed the groundwater SCGs for these compounds.

The following table (Table 1) presents the findings of the groundwater screening samples related to the Shulman's Salvage Yard site.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	**0.42**	**1**	**0/12**
1,1,1-Trichloroethane	**2.1 - 120**	**5**	**1/12**
1,1-Dichloroethane	**0.47 – 8.6**	**5**	**2/12**

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
1,1-Dichloroethene	**0.81 - 36**	**5**	**1/12**
1,1,2-Trichloroethane	**0.91**	**1**	**0/12**
Trichloroethene	**0.87 - 110**	**5**	**4/12**
Cyclohexane	**0.95 - 30**	**5**	**2/12**
cis-1,2-Dichloroethene	**0.91 - 13**	**5**	**1/12**
SVOCs			
Benzo(a)pyrene	**0.5**	**0**	**1/8**
Phenol	**1.3**	**1**	**1/8**
Bis(2-ethylhexyl)phthalate	**2.1 - 2.8**	**5**	**0/8**
Inorganics			
Arsenic	**0.0063 – 0.049**	**0.025**	**1/9**
Barium	**0.15 – 0.73**	**1**	**0/9**
Cadmium	**0.00081 – 0.0023**	**0.005**	**0/9**
Chromium	**0.0041 – 0.18**	**0.05**	**1/9**
Copper	**0.0077 – 0.16**	**0.2**	**0/9**
Iron	**7 – 154**	**0.3**	**9/9**
Lead	**0.004 – 0.19**	**0.025**	**7/9**
Manganese	**0.55 – 4.1**	**0.3**	**9/9**
Mercury	**0.0004**	**0.0007**	**0/9**
Nickel	**0.004 – 0.23**	**0.1**	**1/9**
Sodium	**13 – 254**	**20**	**8/9**
PCBs			
None			

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), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

The primary groundwater contaminants are trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), lead, and arsenic. As shown in Figure 2, low level metals contamination was found at most screening locations, and is attributed to years of scrap metal processing activities at the site. TCE and 1,1,1-TCA contamination were found mainly upgradient on the western edge of the property, consistent with historic groundwater data collected in 1987, and concentrations decrease quickly in downgradient samples. Concentrations of TCE have also decreased significantly (two orders of magnitude) compared to historic concentrations.

Groundwater data collected in August 2013 from the adjacent and upgradient property, Triple Cities Metal Finishing, suggests the source of the TCE and other VOC contamination at Shulman's Salvage Yard are from the Triple Cities site (Site No. 808045). The remedy for these VOC contaminants is being deferred to the Triple Cities Metal Finishing remedial program.

Based on the findings of the RI, the presence of SVOCs and metals has resulted in contamination of the groundwater. The primary contaminants of concern to be evaluated by the remedy selection process are: lead and arsenic.

Soil

Shallow soil (0 to 2 feet) and subsurface soil samples were collected in three phases during the RI on the subject site. Two phases were conducted onsite during the initial RI and a third was performed at the adjacent Norfolk Southern property as a supplemental investigation.

During the on-site investigation, a total of 130 surface soil samples were collected. 62 of these samples were collected at 0-1 feet and analyzed for PCBs only, while 68 of these samples were collected at 1-2 feet and analyzed for both PCBs and metals. A total of 111 subsurface soil samples were also collected on-site from soil borings at 2-4 feet, 4-8 feet, and 8-12 feet depth intervals (with exception of a refusal at 6 feet bgs in one location and three locations where depth was extended to 16 feet bgs to sample within the saturated zone). All of the samples were analyzed for PCBs and metals. 41 of these samples were also analyzed for VOCs and SVOCs. One soil sample was also collected from a catch basin on the property and analyzed for PCBs, metals, VOCs, and SVOCs.

The on-site soil investigation indicated widespread PCB and metals contamination across the Processing and Rail Transit areas of the site. Concentrations exceeding commercial use SCGs were mainly at depths of 0-4 feet bgs, with a limited number of samples exceeding SCGs at depths down to 12 ft bgs. PCB contamination consisted of mainly aroclors 1242, 1254, and 1260, with a limited number of samples detecting aroclors 1016 and 1248. The distribution of metals concentrations exceeding commercial use SCGs was largely consistent with that of PCBs. The catch basin soil sample indicated 2 VOCs and 4 SVOCs exceeding protection of groundwater SCGs.

In an additional phase of investigation, 84 soil samples were collected from the adjacent off-site Norfolk Southern property at 0-1 feet, 1-2 feet, and 2-4 feet intervals. Samples were analyzed for PCBs and metals.

The Norfolk Southern (NS) investigation indicated total PCBs exceeding 1 ppm SCGs in only one of 84 samples, located immediately adjacent to the Shulman site. Metals contamination at the NS property is more widespread, however concentrations above commercial use SCGs are generally limited to samples collected near the site property line. Metals that exceed unrestricted use SCGs are found across much of the rest of the NS property.

The following tables (Tables 2a, 2b, and 2c) present the findings of the soil investigation at the Shulman's Salvage Yard site.

Table 2a – On-site 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					
Acetone	0.000055 – 1.9	0.05	21/41	500	0/41
1,1,1-Trichloroethane	0.016	0.68	0/41	500	0/41
Methylene Chloride	0.012	0.05	0/41	500	0/41
1,1-Dichloroethene	0.0059	0.33	0/41	500	0/41
2-Butanone (MEK)	0.0000068 – 0.48	0.12	10/41	500	0/41
Trichloroethene	0.0016 – 0.16	0.47	0/41	200	0/41
Toluene	0.00035 – 0.0018	0.7	0/41	500	0/41
Cis-1,2-Dichloroethene	0.0036	0.25	0/41	500	0/41
Methyl Tert-Butyl Ether	0.0011 – 0.012	0.93	0/41	500	0/41
SVOCs					
Benzo(a)pyrene	0.018 – 0.69	1	0/41	1	0/41
Dibenzo(a,h)anthracene	0.034 – 0.058	0.33	0/41	0.56	0/41
Benzo(a)anthracene	0.098 – 1.2	1	1/41	5.6	0/41
Acenaphthene	0.004 – 1	20	0/41	500	0/41
Phenanthrene	0.007 – 1.1	100	0/41	500	0/41
Fluorene	0.0082 – 0.58	30	0/41	500	0/41
Napthalene	0.0094 – 0.29	1.2	0/41	500	0/41
Detected Constituents	**Concentration Range Detected (ppm)[a]**	**Unrestricted SCG[b] (ppm)**	**Frequency Exceeding Unrestricted SCG**	**Restricted Use SCG[c] (ppm)**	**Frequency Exceeding Restricted SCG**
Anthracene	0.0061 – 0.34	100	0 of 41	500	0 of 41
Pyrene	0.0084 – 5.3	100	0 of 41	500	0 of 41

Dibenzofuran	**0.0037 – 0.31**	**7**	**0 of 41**	**350**	**0 of 41**
Benzo(g,h,i)perylene	**0.0089 – 0.26**	**100**	**0 of 41**	**500**	**0 of 41**
Indeno(1,2,3-cd)pyrene	**0.0075 – 0.36**	**0.5**	**0 of 41**	**5.6**	**0 of 41**
Benzo(b)fluoranthene	**0.0081 – 2.1**	**1**	**1 of 41**	**5.6**	**0 of 41**
Fluoranthene	**0.0081 – 5.7**	**100**	**0 of 40**	**500**	**0 of 40**
Benzo(k)fluoranthene	**0.012 – 2.8**	**0.8**	**1 of 40**	**56**	**0 of 40**
Acenaphthylene	**0.03 – 0.1**	**100**	**0 of 41**	**500**	**0 of 41**
1,2-Benzphenanthracene	**0.018 – 1.8**	**1**	**1 of 41**	**56**	**0 of 41**
Inorganics					
Arsenic	**1.5 - 179**	**13**	**92 of 179**	**16**	**62 of 179**
Barium	**19.5 - 1380**	**350**	**22 of 179**	**400**	**20 of 179**
Beryllium	**0.059 – 1.2**	**7.2**	**0 of 179**	**590**	**0 of 179**
Cadmium	**0.046 – 108**	**2.5**	**73 of 179**	**9.3**	**45 of 179**
Chromium	**3.5 – 1240**	**30**	**76 of 179**	**1500**	**0 of 179**
Chromium (Hexavalent Compounds)	**0.28 – 6.9**	**1**	**10 of 103**	**400**	**0 of 103**
Copper	**13.3 – 27300**	**50**	**105 of 179**	**270**	**70 of 179**
Lead	**2.4 – 18600**	**63**	**106 of 179**	**1000**	**49 of 179**
Manganese	**70.2 – 10100**	**1600**	**12 of 179**	**10000**	**1 of 179**
Mercury	**0.0086 – 116**	**0.18**	**79 of 179**	**2.8**	**22 of 179**
Nickel	**4.6 – 764**	**30**	**86 of 179**	**310**	**9 of 179**
Selenium	**0.45 – 80.7**	**3.9**	**16 of 179**	**1500**	**0 of 179**
Silver	**0.26 – 123**	**2**	**38 of 179**	**1500**	**0 of 179**
Zinc	**10.3 - 15300**	**109**	**110 of 179**	**10000**	**3 of 179**
Detected Constituents	**Concentration Range Detected (ppm)[a]**	**Unrestricted SCG[b] (ppm)**	**Frequency Exceeding Unrestricted SCG**	**Restricted Use SCG[d] (ppm)**	**Frequency Exceeding Restricted SCG**
PCBs					
Aroclor 1260	**0.11 - 14**	**0.1**	**113 of 241**	**1 / 10**	**17 of241**
Aroclor 1254	**0.14 – 59**	**0.1**	**133 of 241**	**1 / 10**	**43 of241**

Aroclor 1248	**1.3 – 6.7**	**0.1**	**4 of 241**	**1 / 10**	**1 of 241**
Aroclor 1016	**360 - 410**	**0.1**	**3 of 241**	**1 / 10**	**2 of 241**
Aroclor 1242	**0.069 - 180**	**0.1**	**116 of 241**	**1 / 10**	**33 of 241**
Total PCBs	**0.071 – 416.6**	**0.1**	**143 of 241**	**1 / 10**	**71 of 241**

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 Commercial Use, unless otherwise noted.
d – SCG: CP-51 Soil Cleanup Guidance for PCBs, 1 ppm in surface soils (0-1 ft bgs) and 10 ppm in subsurface soils (>1 ft bgs)

Table 2b – Catch Basin 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					
Acetone	**0.110**	**0.05**	**1 of 1**	**0.05**	**1 of 1**
2-Butanone (MEK)	**0.019**	**0.012**	**1 of 1**	**0.012**	**1 of 1**
SVOCs					
Benzo(a)pyrene	**5.8**	**1**	**1 of 1**	**22**	**0 of 1**
Benzo(a)anthracene	**6.4**	**1**	**1 of 1**	**1**	**1 of 1**
Phenanthrene	**4.5**	**100**	**0 of 1**	**1000**	**0 of 1**
Anthracene	**1.5**	**100**	**0 of 1**	**1000**	**0 of 1**
Pyrene	**7.8**	**100**	**0 of 1**	**1000**	**0 of 1**
Benzo(g,h,i)perylene	**1.9**	**100**	**0 of 1**	**1000**	**0 of 1**
Indeno(1,2,3-cd)pyrene	**1.9**	**0.5**	**1 of 1**	**8.2**	**1 of 1**
Benzo(b)fluoranthene	**8.8**	**1**	**1 of 1**	**1.7**	**1 of 1**
Fluoranthene	**10**	**100**	**0 of 1**	**1000**	**0 of 1**
1,2-Benzphenanthracene	**6.4**	**1**	**1 of 1**	**1**	**1 of 1**
Inorganics					
Arsenic	**11.8**	**13**	**0 of 1**	**16**	**0 of 1**

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Barium	**128**	**350**	**0 of 1**	**820**	**0 of 1**
Beryllium	**0.33**	**7.2**	**0 of 1**	**47**	**0 of 1**
Cadmium	**2.5**	**2.5**	**1 of 1**	**7.5**	**0 of 1**
Chromium	**97.4**	**30**	**1 of 1**	**NE**	**-**
Copper	**228**	**50**	**1 of 1**	**1720**	**0 of 1**
Lead	**306**	**63**	**1 of 1**	**450**	**0 of 1**
Manganese	**828**	**1600**	**0 of 1**	**2000**	**0 of 1**
Mercury	**0.15**	**0.18**	**0 of 1**	**0.73**	**0 of 1**
Nickel	**69.1**	**30**	**1 of 1**	**130**	**0 of 1**
Selenium	**1.2**	**3.9**	**0 of 1**	**4**	**0 of 1**
Zinc	**487**	**109**	**1 of 1**	**2480**	**0 of 1**
PCBs					
Aroclor 1260	**0.19**	**0.1**	**1 of 1**	**3.2**	**0 of 1**
Aroclor 1254	**0.44**	**0.1**	**1 of 1**	**3.2**	**0 of 1**
Aroclor 1242	**0.35**	**0.1**	**1 of 1**	**3.2**	**0 of 1**
Total PCBs	**0.98**	**0.1**	**1 of 1**	**3.2**	**0 of 1**

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 Groundwater.
NE - not established

Table 2c – Off-site Soil (Norfolk Southern Property)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG[c]
Inorganics					
Arsenic	**2.4 – 54.7**	**13**	**18 of 84**	**16**	**11 of 84**
Barium	**29.2 – 584**	**350**	**2 of 84**	**350**	**2 of 84**

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG[c]
Beryllium	**0.075 – 1**	**7.2**	**0 of 84**	**14**	**0 of 84**
Cadmium	**0.075 – 5.2**	**2.5**	**1 of 84**	**2.5**	**0 of 84**
Chromium	**4.9 – 179**	**30**	**14 of 84**	**36**	**10 of 84**
Copper	**9.5 - 472**	**50**	**36 of 84**	**270**	**2 of 84**
Lead	**9.2 – 851**	**63**	**40 of 84**	**400**	**3 of 84**
Manganese	**135 - 1940**	**1600**	**1 of 84**	**2000**	**0 of 84**
Mercury	**0.01 - 51**	**0.18**	**9 of 84**	**0.81**	**2 of 84**
Nickel	**7.5 – 62.3**	**30**	**8 of 84**	**140**	**0 of 84**
Selenium	**0.41 – 2.2**	**3.9**	**1 of 84**	**36**	**0 of 84**
Silver	**0.47**	**2**	**0 of 84**	**36**	**0 of 84**
Zinc	**11.4 - 1160**	**109**	**7 of 84**	**2200**	**0 of 84**
PCBs					
Aroclor 1260	**0.12 – 0.44**	**0.1**	**17 of 84**	**1**	**0 of 84**
Aroclor 1254	**0.11 – 0.78**	**0.1**	**9 of 84**	**1**	**0 of 84**
Total PCBs	**0.11 – 1.04**	**0.1**	**19 of 84**	**1**	**1 of 84**

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 Residential Use, unless otherwise noted.

The primary soil contaminants are PCBs, lead, copper, cadmium, mercury, and arsenic. The primary soil contamination is believed to be associated with historic processing activities and operations at the site. The original source of PCB contamination is said to be from the crushing of transformers containing PCB oils in car crushers formerly used on-site. Figures 3 and 4 depict the extent of contamination of PCBs and metals. Note that Figure 4 depicts off-site contamination to commercial standards, however the goal will be to remediate off-site areas to residential SCOs.

Based on the findings of the Remedial Investigation, the presence of PCBs and metals has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are: PCBs, lead, copper, cadmium, mercury, and arsenic.

Catch Basin Water

Water samples were collected from catch basins on the subject site during the Remedial Investigation, in order to better understand the potential of the site's drainage network acting as a pathway for soil contamination. Catch basins at the site direct surface water runoff into storm sewers to the city sewer, which discharges to the Chemung River.

During the investigation, two surface water samples were collected from two catch basins on the site. Sample locations are shown in Figure 2. The samples were analyzed for VOCs, SVOCs, PCBs, and metals. The results of this analysis found four SVOCs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, 1,2-Benzphenanthracene) and seven metals (aluminum, copper, iron, lead, sodium, zinc) whose concentrations exceeded SCGs.

The following table (Table 3) presents the findings of the surface water investigation at the Shulman's Salvage Yard site.

Table 3 – Surface Water

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Carbon Tetrachloride	**14 - 16**	**50**	**0/2**
1,1-Dichloroethane	**0.51**	**0.7**	**0/2**
SVOCs			
Benzo(a)pyrene	**1.4**	**0.002**	**1/2**
Phenanthrene	**0.85**	**50**	**0/2**
Anthracene	**0.46**	**50**	**0/2**
Pyrene	**2.9**	**50**	**0/2**
Benzo(b)fluoranthene	**1.9**	**0.002**	**1/2**
Fluoranthene	**0.43-2.5**	**50**	**0/2**
Benzo(k)fluoranthene	**1.3**	**0.002**	**1/2**
1,2-Benzphenanthracene	**1.5**	**0.002**	**1/2**
PCBs			
Aroclor 1260	**1.1**	**NE**	**-**
Aroclor 1254	**0.4-2.3**	**NE**	**-**
Inorganics			
Aluminum	**500-2400**	**87**	**2/2**
Barium	**80-110**	**1000**	**0/2**

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Cadmium	**0.92-1.3**	**3**	**0/2**
Chromium	**2.9-13**	**122**	**0/2**
Cobalt	**0.97-2**	**5**	**0/2**
Copper	**46-130**	**15**	**2/2**
Iron	**1700-5200**	**300**	**2/2**
Lead	**28-96**	**7**	**2/2**
Magnesium	**7800-9100**	**35000**	**0/2**
Nickel	**16-25**	**87**	**0/2**
Sodium	**45800-54400**	**20000**	**2/2**
Vanadium	**4.9**	**14**	**0/2**
Zinc	**120-300**	**196**	**1/2**

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards.
NE – not established

The primary surface water contaminants are lead and copper. The metals concentrations found in the catch basins were similar to concentrations found in site groundwater. The four SVOCs detected in the catch basins are not considered contaminants of concern, as they were not elevated in site groundwater and only detected in a limited number of soil samples.

Based on the findings of the Remedial Investigation, the presence of metals has resulted in the contamination of surface water. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of surface water to be addressed by the remedy selection process are: lead and copper.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It does not include any institutional controls or monitoring, and leaves the site in its present, unremediated condition. This alternative does not provide any additional protection to public health and the environment.

Alternative 2: Excavation and Off-Site Disposal

Alternative 2 achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A, and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative would include excavation of approximately 131,100 cubic yards of contaminated soils exceeding unrestricted use soil cleanup objectives (SCOs) from onsite and offsite impacted areas, backfilling and restoration of excavated areas, and transportation of debris and contaminated soils to an off-site treatment and/or disposal facility. A pre-design investigation would be conducted prior to implementation to refine the extent of contaminated soil to be addressed by this alternative. Site preparation activities would also be performed to demolish and/or remove existing site structures (e.g. railroad tracks) and debris piles on the surface that would prevent excavation. Confirmation sampling for PCBs and metals would be conducted during excavation activities, with analytical results verifying attainment of remediation goals. An interim groundwater use restriction would be put in place until appropriate groundwater use standards at the site are achieved. Following contaminated soil removal, excavated areas would be backfilled with clean fill, and structures removed during site preparation activities would be restored. Excavated soil would be sampled for characterization prior to transportation for off-site treatment and/or disposal. Implementation of this alternative would take approximately seven to nine months.

Present Worth: *$23,971,000*

Capital Cost: *$23,971,000*

Alternative 3: Excavation, Off-Site Disposal, On-Site Consolidation, and Site Cover

Alternative 3 includes excavation and off-site disposal of PCB contaminated soils and on-site consolidation of remaining metals contaminated soils above SCOs. All on-site areas where soil exceeds 1 ppm PCBs in the surface (top 1 foot of soil) and 10 ppm in the subsurface (deeper than one foot below ground surface), as defined by CP-51 Soil Cleanup Guidance, will be excavated and transported off-site for disposal at an appropriately permitted facility. All off-site areas where soil exceeds residential standards for PCBs, as defined by 6 NYCRR Part 375-6.8(b), will also be excavated and transported off-site for disposal. Approximately 25,000 cubic yards of PCB contaminated soil will be removed from the site. On-site soils which exceed commercial-use SCOs for metals but which do not exceed commercial-use SCOs for PCBs will be excavated and consolidated among excavated areas in the sub-surface on-site above the water table. Off-site soils which exceed residential soil cleanup standards for metals will also be excavated and consolidated among excavated areas in the sub-surface on-site above the water table. Approximately 22,000 cubic yards of soil will be excavated and consolidated on-site along with approximately 25,000 cubic yards

of clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d), which will be brought in to replace excavated soil and complete the backfilling of the excavation to establish the designed grades at the site.

A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

Alternative 3 will protect human health and the environment by removing impacted soils on-site and off-site to eliminate pathways to exposure. This alternative assumes that through the removal of the bulk of metals contaminants in soil, the remaining minimally impacted soils will not pose an undue risk to groundwater due to leaching. Prior to consolidation, samples from remaining metals-contaminated soil will be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) to ensure that these soils do not pose a risk to groundwater due to leaching. Additional soils will be disposed off-site if risks to groundwater are identified. Post-remediation, the groundwater monitoring network will be expanded as necessary to monitor the effectiveness of the remedy and ensure no off-site impacts. In addition to excavation, off-site disposal, consolidation, and soil cover installation, costs for this alternative include a pre-design investigation, site preparation and restoration activities, post excavation sampling, groundwater quality monitoring, and design of institutional controls for groundwater use, site cover maintenance, and unexcavated areas that exceed unrestricted use SCOs.

Present Worth: *$6,317,000*

Capital Cost: *$6,390,000*

Annual Costs: *$73,000*

Alternative 4: In-Situ Solidification and Stabilization

Alternative 4 would include in-situ solidification and stabilization of soils exceeding commercial-use SCOs. This alternative includes the treatment of approximately 44,100 cubic yards of contaminated soil.

In-situ solidification/stabilization (ISS) will be implemented on all on-site areas with contaminated soils exceeding commercial cleanup standards for metals and PCBs, and on all off-site areas with contaminated soils exceeding residential cleanup standards for metals and PCBs ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

Prior to implementation, treatability studies will be performed to determine an appropriate treatment agent for the soil. This alternative assumes that these studies can find a mixture appropriate for site use requirements. Costs associated with this alternative include a pre-design investigation, treatability studies, site preparation and restoration activities, in situ stabilization/solidification of contaminated soils, cover

system, and design of institutional controls for restricting groundwater use and use of site for untreated areas that exceed unrestricted use SCOs.

Present Worth: *$7,027,000*

Capital Cost: *$7,095,000*

Annual Costs: *$73,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Excavation and Off-Site Disposal	23,971,000	0	23,971,000
Excavation, Off-Site Disposal, On-Site Consolidation, and Site Cover	6,317,000	73,000	6,390,000
In-Situ Solidification and Stabilization	7,027,000	73,000	7,095,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Excavation, Off-Site Disposal, On-Site Consolidation, and Site Cover as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by excavating and consolidating contaminated soils to eliminate exposure routes and remove sources of groundwater contamination. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5. Note that Figure 5 currently depicts off-site cleanup to commercial SCOs, but the goal will be to remediate off-site areas to residential standards.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy Alternative 3 satisfies this criterion by removing the PCB contaminated soils along with the bulk of metals contaminated soils which are hazardous to human health and the environmental. Surface exposure to any contaminated soils left onsite will be eliminated by consolidating soils in the subsurface underneath clean fill. Soils will be tested to ensure no threat to groundwater remains. Soils in off-site areas will be remediated to residential standards, with metals contaminated soils being consolidated on-site in the subsurface and PCBs being transported off-site for disposal. Alternative 4 satisfies this criterion by solidifying and stabilizing the impacted soils to eliminate exposure pathways in the soil and in leaching to groundwater. Institutional controls will ensure proper use of the site to prevent exposure at the surface of the solidified mass. Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2, by removing all soil contaminated above the unrestricted soil cleanup objective, meets the threshold criteria, assuming groundwater maximum contaminant levels (MCLs) are achieved after soil contamination is removed. Alternatives 3 and 4 rely on a commercial use restriction of the site and a restriction of groundwater use to protect human health, whereas Alternative 2 provides for unrestricted use of the site. Alternative 2 may require a short-term restriction on groundwater use until groundwater meets appropriate use standards.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Both Alternatives 3 and 4 comply with SCGs to the extent practicable. Alternative 3 will meet commercial use SCOs and groundwater standards on-site, and residential standards off-site, through the removal and off-site disposal or consolidation of contaminated soils above commercial standards. Alternative 4 will meet the same soil and groundwater objectives by rendering contaminants immobile in treated soils, and reducing leachability on contact with water. Alternative 2 complies with this criterion to a greater extent by meeting the unrestricted use soil cleanup objectives and eliminating all sources of possible groundwater contamination. Because Alternatives 2, 3, and 4 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 2 is considered the most permanent solution, as it provides for the removal of all on-site contaminated soils. Alternative 3 similarly provides for permanent removal of the bulk of contaminated soils through excavation. Due to the nature of the site as a scrap yard, the remaining low-level metals impacted soils are most effectively addressed over the long-term via on-site consolidation. Alternative 4 is considered an effective long-term solution, but leaves contamination in place rather than removing it permanently from the site. Alternative 4 may require additional controls unfavorable to current site operations to prevent degradation or damage to the treated area. Alternatives 3 and 4 would require groundwater use restrictions, as well as property use restrictions due to the remaining contaminated soils left on site that exceed unrestricted standards.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 2 and 3 would reduce the toxicity, mobility, and volume of on-site waste by transferring the material to an approved off-site facility. However, depending on the disposal facility, the volume of the material would not be reduced. The mobility of low-level metals impacts consolidated on-site under Alternative 3 would likely be unchanged but acceptable given site use and conditions. Alternative 4 would not destroy contaminants, but would significantly reduce the mobility and surface area of exposure of PCBs and metals contaminants through encapsulation. The volume and toxicity of metals contaminants may also be reduced to varying degrees based on the composition of the mixing agents used. However, the volume and toxicity of PCBs would not be reduced under Alternative 4.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 2, 3, and 4 would all have significant on-site impacts due to activities performed on-site during implementation. However, the time to achieve remedial goals is shortest for Alternative 3. Alternative 4 would have the least possible impact to the community due to all activities being performed on-site, whereas Alternatives 2 and 3 would increase traffic on and near the site due to the need for off-site disposal of contaminated soils. Alternative 3 would involve less disturbances outside the site than Alternative 2 due to the lower volumes of soil be removed from the site. Short term impacts will be readily mitigated through the use of engineering controls.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives 2 and 3 are favorable in that they are readily implementable. Alternative 4 is also implementable, although specialized equipment and careful planning and oversight would be required to ensure effective mixing of the S/S agent with contaminated soils. Ease of implementation and feasibility under Alternative 4 are also dependent on the nature of the soils and the ability to find an effective mixture

of treatment agents through bench-scale studies. The presence of scrap metal in the subsurface soils could also further complicate this factor. Alternatives 3 and 4 would require an administrative mechanism to implement institutional controls to maintain the status of the Site.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

Alternatives 3 and 4 have comparable costs, with Alternative 4 being 11% more costly than Alternative 3. However, the present worth costs for Alternative 4 assume a standard mix for the S/S. The actual material costs may vary significantly depending on the outcome of the treatability studies, meaning there is significant uncertainty in the actual cost for Alternative 4. In the event the leachability tests under Alternative 3 present concerns for consolidation of low-level metals impacted soils, additional excavation costs could increase up to 9.62 million, or up to 37% higher than Alternative 4. However, additional excavation is not likely given the low concentrations of contaminated soils that will remain on site. Alternative 2 provides for a more extensive cleanup than Alternatives 3 and 4, but has a much higher present worth cost (about four times as much as Alternative 3).

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

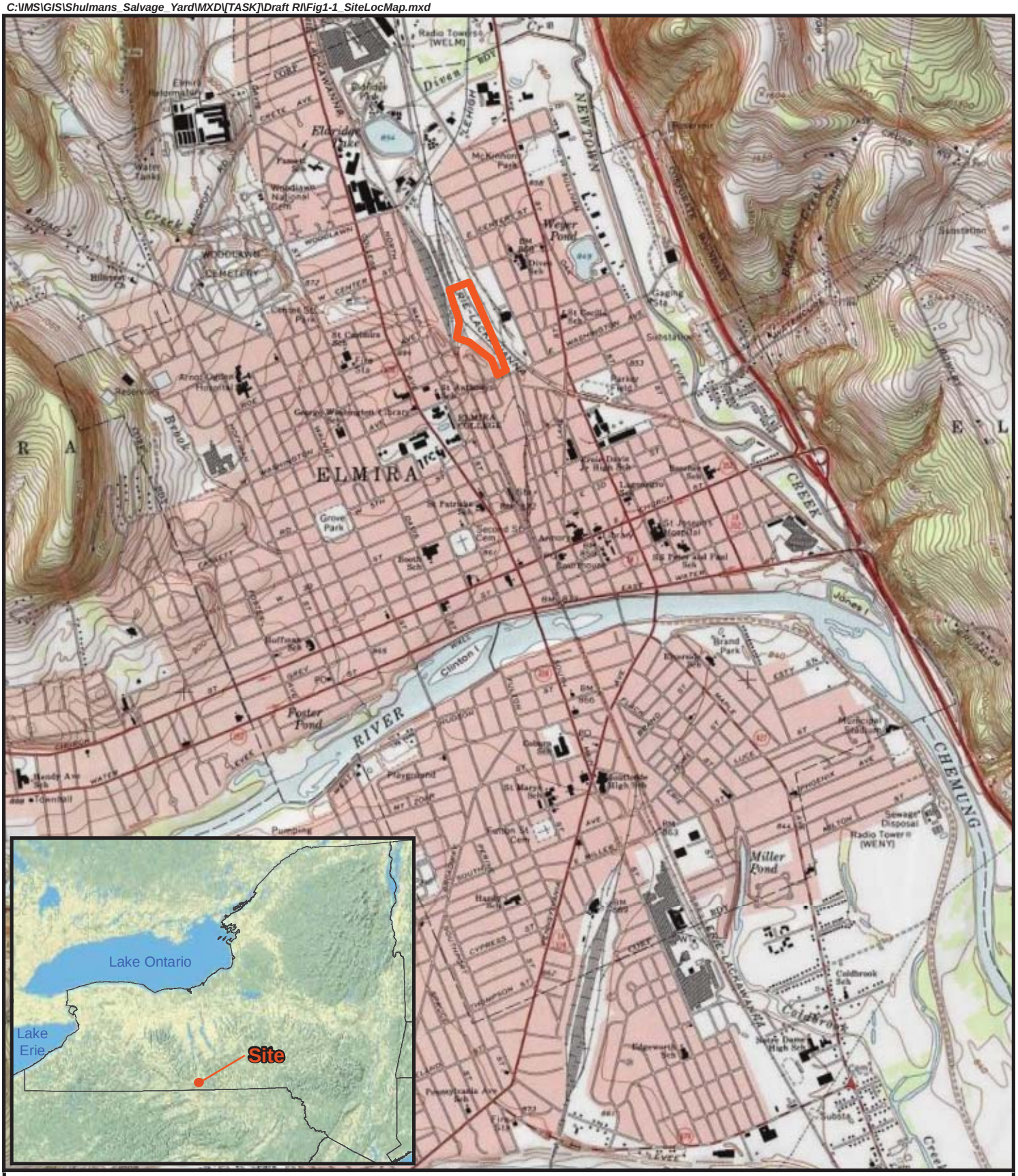
Since the anticipated use of the Shulman's Salvage Yard site is commercial, Alternatives 2, 3, and 4 would all address the contaminated soil to appropriate cleanup objectives. However, the residual contamination with Alternatives 3 and 4 would need to be controlled with the implementation of a Site Management Plan. Under Alternative 2, all of the contaminated soil would be removed and restrictions on the site use would not be necessary. In addition, off-site areas would also meet unrestricted use under Alternative 2, while Alternatives 3 and 4 would address the off-site contamination to residential standards.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

C:\IMS\GIS\Shulmans_Salvage_Yard\MXD\[TASK]\Draft RI\Fig1-1_SiteLocMap.mxd



Site Boundary

N

0 0.25 0.5 1 Miles

Figure 1
Site Location Map
Shulman's Salvage Yard
Elmira, New York

CDM Smith

CATCH BASIN - SURFACE WATER	
Chemical Name	Site Specific Surface Water Criteria
Semi Volatile Organic Compounds (µg/l)	
1,2-Benzphenanthracene	0.002
Benzo(a)pyrene	0.002
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Metals (mg/l)	
Aluminum	0.087
Copper	0.015
Iron	0.3
Lead	0.007
Manganese	0.3
Sodium	20
Zinc	0.196

GROUNDWATER	
Chemical Name	New York State Class GA Criteria
Volatile Organic Compounds (µg/l)	
1,1,1-Trichloroethane	5
1,1-Dichloroethene	5
1,1-Dichloroethane	5
Trichloroethene	5
cis-1,2-Dichloroethene	5
Semi-Volatile Organic Compounds (µg/l)	
Benzo(a)pyrene	0
Phenol	1
Metals (mg/l)	
Arsenic	0.025
Chromium	0.05
Iron	0.3
Lead	0.025
Manganese	0.3
Nickel	0.1
Sodium	20

GWS-50-15-19	
4/2/2013	
15-19 ft bgs	
Metals (mg/l)	
Iron	14.5
Manganese	0.59

GWS-50-26-30	
4/1/2013	
26-30 ft bgs	
Metals (mg/l)	
Iron	25.1
Lead	0.035
Manganese	1.9
Sodium	37.4

GWS-09-8-12
4/4/2013
8-12 ft bgs
No Exceedances

GWS-09-24-28	
4/3/2013	
24-28 ft bgs	
Volatile Organic Compounds (µg/l)	
1,1-Dichloroethane	5.9
Trichloroethene	6.9
Metals (mg/l)	
Iron	18.5 J
Lead	0.033
Manganese	0.89
Sodium	165

GWS-4-7-11	
3/28/2013	
7-11 ft bgs	
Semi Volatile Organic Compounds (µg/l)	
Phenol	1.3 J
Metals (mg/l)	
Iron	8.8
Lead	0.028
Manganese	1.7
Sodium	45.2

GWS-4-16-20	
3/28/2013	
16-20 ft bgs	
Metals (mg/l)	
Iron	17.6
Lead	0.044
Manganese	0.68
Sodium	88.6

BASIN-3-20130408	
4/8/2013	
0-0.5 ft bgs	
Metals (mg/l)	
Aluminum	0.5
Copper	0.046
Iron	1.7 J
Lead	0.028
Manganese	0.32 J
Sodium	54.4

GWS-3-7-11	
3/27/2013	
7-11 ft bgs	
Semi Volatile Organic Compounds (µg/l)	
Benzo(a)pyrene	0.5 J
Metals (mg/l)	
Iron	54
Lead	0.19
Manganese	0.62
Sodium	44.6

GWS-3-17-21	
3/27/2013	
17-21 ft bgs	
Metals (mg/l)	
Iron	44.1 J
Lead	0.078
Manganese	1.7
Sodium	103

GWS-903-17-21	
Duplicate of GWS-3-17-21	
3/27/2013	
17-21 ft bgs	
Metals (mg/l)	
Arsenic	0.045 J
Chromium	0.087 J
Iron	83.4 J
Lead	0.14
Manganese	1.9
Sodium	98.4

BASIN-4-WS-20130408	
4/8/2013	
0-0.5 ft bgs	
Semi Volatile Organic Compounds (µg/l)	
1,2-Benzphenanthracene	1.5 J
Benzo(a)pyrene	1.4 J
Benzo(b)fluoranthene	1.9 J
Benzo(k)fluoranthene	1.3 J
Metals (mg/l)	
Aluminum	2.4
Copper	0.13
Iron	5.2 J
Lead	0.096
Manganese	0.47 J
Sodium	45.8
Zinc	0.3

GWS-2-20-24	
03/26/2013	
20-24 ft bgs	
Volatile Organic Compounds (µg/l)	
Trichloroethene	69
Metals (mg/l)	
Arsenic	0.049
Chromium	0.18
Iron	154
Lead	0.19
Manganese	4.1
Nickel	0.23
Sodium	254

GWS-2-26-30	
03/26/2013	
26-30 ft bgs	
Volatile Organic Compounds (µg/l)	
Trichloroethene	25

GWS-1-10-14	
03/26/2013	
10-14 ft bgs	
Volatile Organic Compounds (µg/l)	
1,1,1-Trichloroethane	120
1,1-Dichloroethene	36
1,1-Dichloroethane	8.6
Trichloroethene	110
cis-1,2-Dichloroethene	13

GWS-08-8-12
4/3/2013
8-12 ft bgs
No Exceedances

GWS-08-26-30	
4/3/2013	
26-30 ft bgs	
Metals (mg/l)	
Iron	7 J
Manganese	0.55
Sodium	166

OUTLYING PARCEL
NORFOLK SOUTHERN PROPERTY
RAIL TRANSIT AREA
PROCESSING AREA
RIGHT OF WAY
RECYCLING AREA
GRAVEL DRIVE
RAILROAD SIDINGS
DEBRIS PILES
CRUSHER #2
BUILDING #3
TIRE PILE
STOCKPILE AREA
CRUSHER #1
SWALE
OFFICE BUILDING
SCALE
TRAILER
MAINTENANCE BUILDING
RECYCLING
LOT
100
GWS-50
GWS-04
GWS-03
GWS-09
GWS-08
GWS-02
GWS-01
MW-3S
MW-4S
MW-1D
MW-1S
MW-2S
BASIN-4
BASIN-3

Site Boundary
Norfolk Southern Property
Site Areas (as defined for RI discussion)
Historic Structures
Catch Basin
Manhole
Former Wells
Debris Piles
Fenceline

RI Sample Locations
Groundwater Screening Soil Boring
Surface Water/ Sediment Location

Notes:
1. Results that are highlighted yellow exceed the screening criteria.
2. Organic results are presented in ug/l or ug/kg.
3. Inorganic results are presented in mg/l or mg/kg.

Figure 2
Groundwater Screening and Catch Basin Water Exceedances
Shulman's Salvage Yard
Elmira, New York

N
0 62.5 125 250 Feet

CDM Smith

SOIL SAMPLES COLLECTED BETWEEN 0 AND 2 FEET BGS

SOIL SAMPLES COLLECTED BETWEEN 2 AND 4 FEET BGS

SOIL SAMPLES COLLECTED BETWEEN 4 AND 8 FEET BGS

SOIL SAMPLES COLLECTED GREATER THAN 8 FEET BGS

Site Boundary
Norfolk Southern Property
Site Areas (as defined for RI discussion)
Historic Structures
Catch Basin
Manhole
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Fenceline

Total PCBs in Soil Samples

- <1,000 ug/kg
- 1,000 - 10,000 ug/kg
- 10,000 - 100,000 ug/kg
- > 100,000 ug/kg

Total PCB Isocontours

- 1,000 - 10,000 ug/kg
- 10,000 - 100,000 ug/kg
- >100,000 ug/kg

N

0 75 150 300 Feet

Notes:
1. Results for total PCBs are presented in micrograms per kilogram (µg/kg).
2. Each plot presents the concentration of the specified contaminant in soil samples and interpolated isocontours meant to represent an approximate extent of contamination based on the current data.

Figure 3

Soil Sampling Results - April 2013 Data Total PCB Isocontours

Shulman's Salvage Yard
Elmira, New York

CDM Smith

0 to 1 feet
below ground surface

1 to 4 feet
below ground surface

4 to 8 feet
below ground surface

>8 feet
below ground surface

OUTLYING PARCEL
NORFOLK SOUTHERN PROPERTY
RAIL TRANSIT AREA
PROCESSING AREA
RECYCLING AREA
RIGHT OF WAY
GRAVEL DRIVE
RAILROAD SIDINGS
DEBRIS PILES
TIRE PILE
STOCKPILE AREA
OFFICE BUILDING
CARDBOARD/METAL RECYCLING
SCALE
TRAILER
GRAVEL PARKING LOT

Site Boundary
Norfolk Southern Property
Site Areas (as defined for RI discussion)
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Fenceline

Sample Results

- Samples below Unrestricted Use Standards
- Samples above Unrestricted Use Standards
- Samples above Commercial Standards

Contaminated Areas

- Areas above Unrestricted Use Standards
- Areas above Commercial Standards

Notes:

1. The indicated areas include site areas that are impacted by both PCBs and metals.
2. Areas that exceed unrestricted use standards would be addressed under presumptive remedy; other remedies would address areas that exceed commercial standards but would have to be combined with institutional control measures for areas that are below commercial standards but still exceed the unrestricted use standards.

N

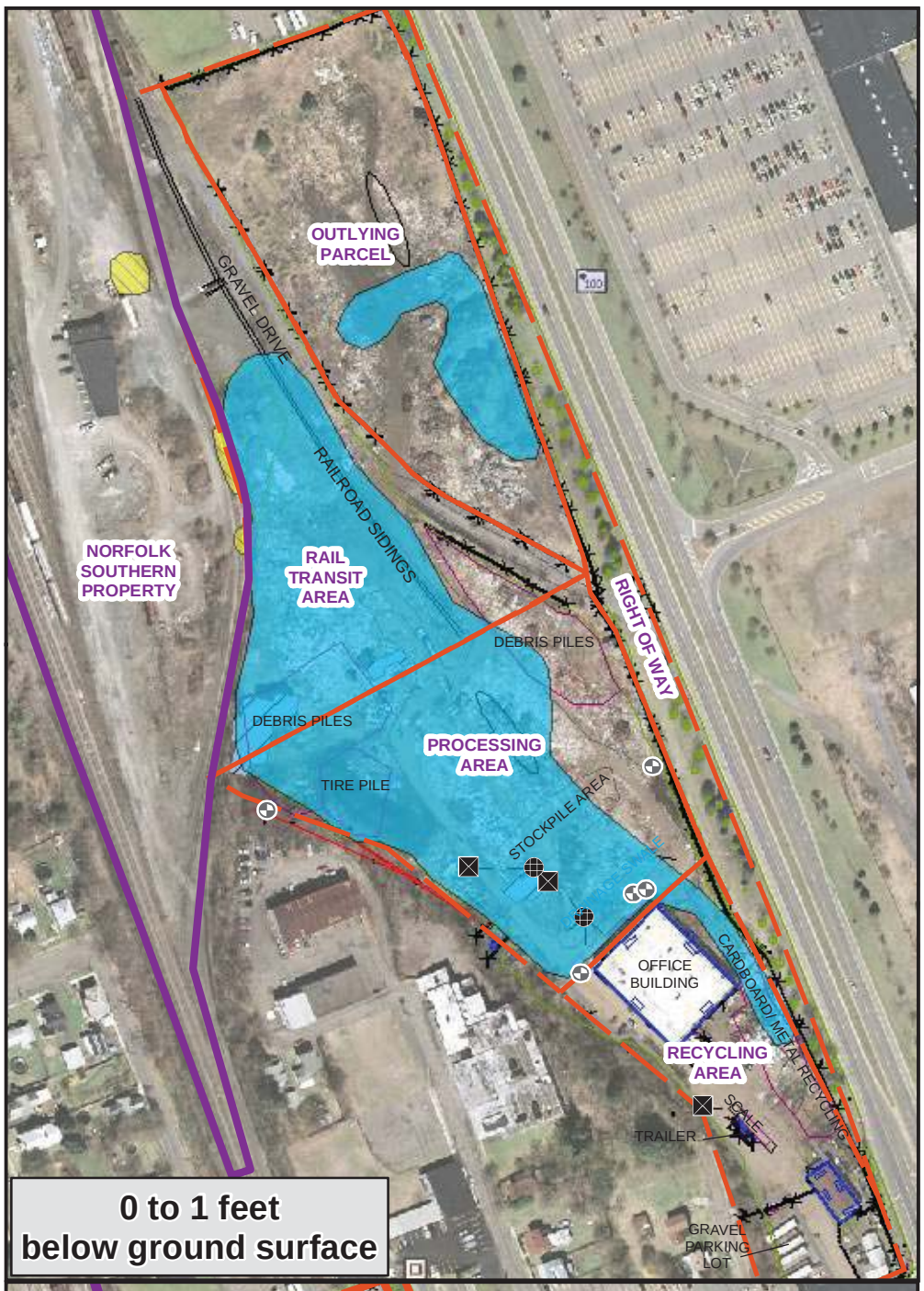
0 125 250 500 Feet

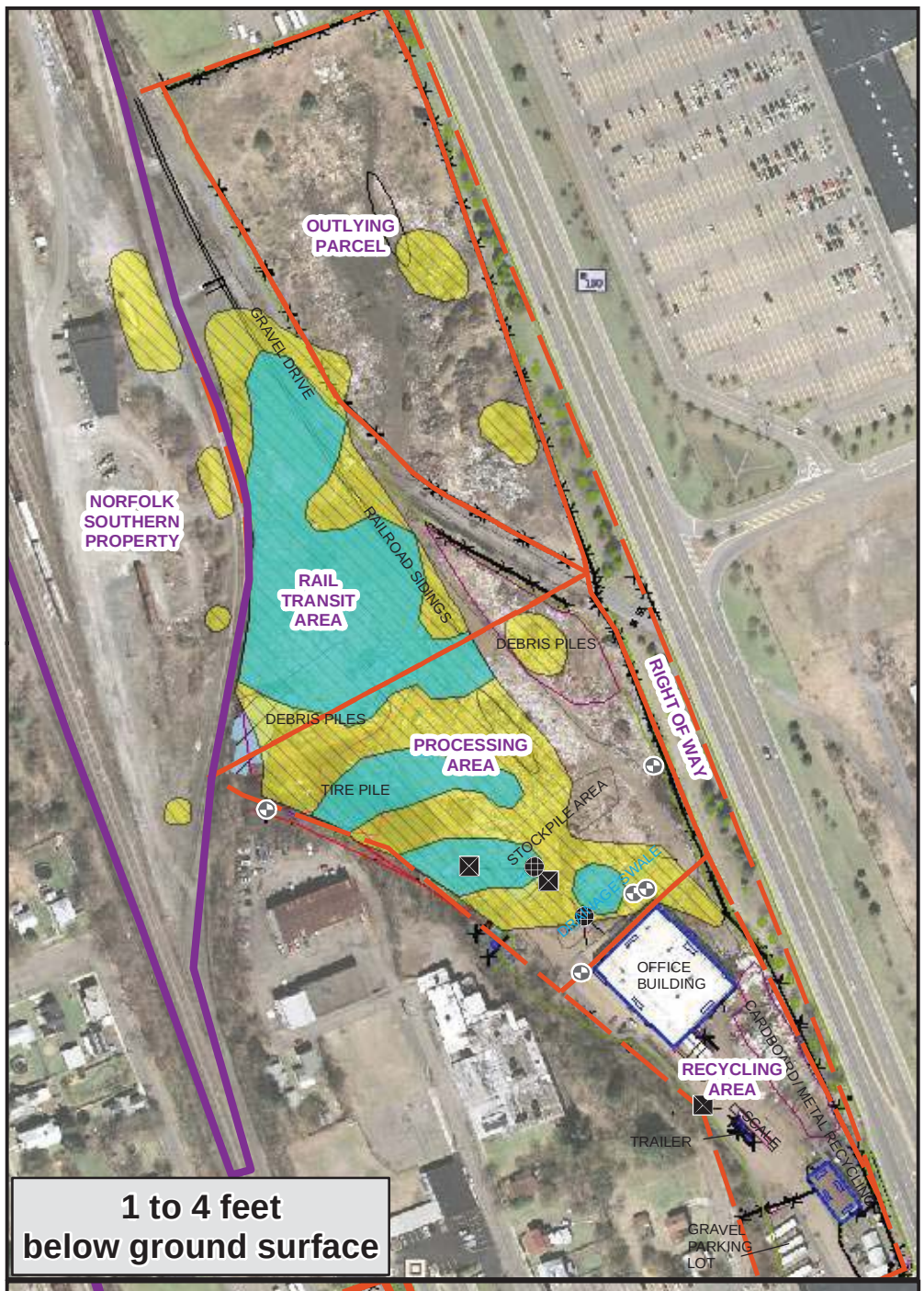
Figure 4

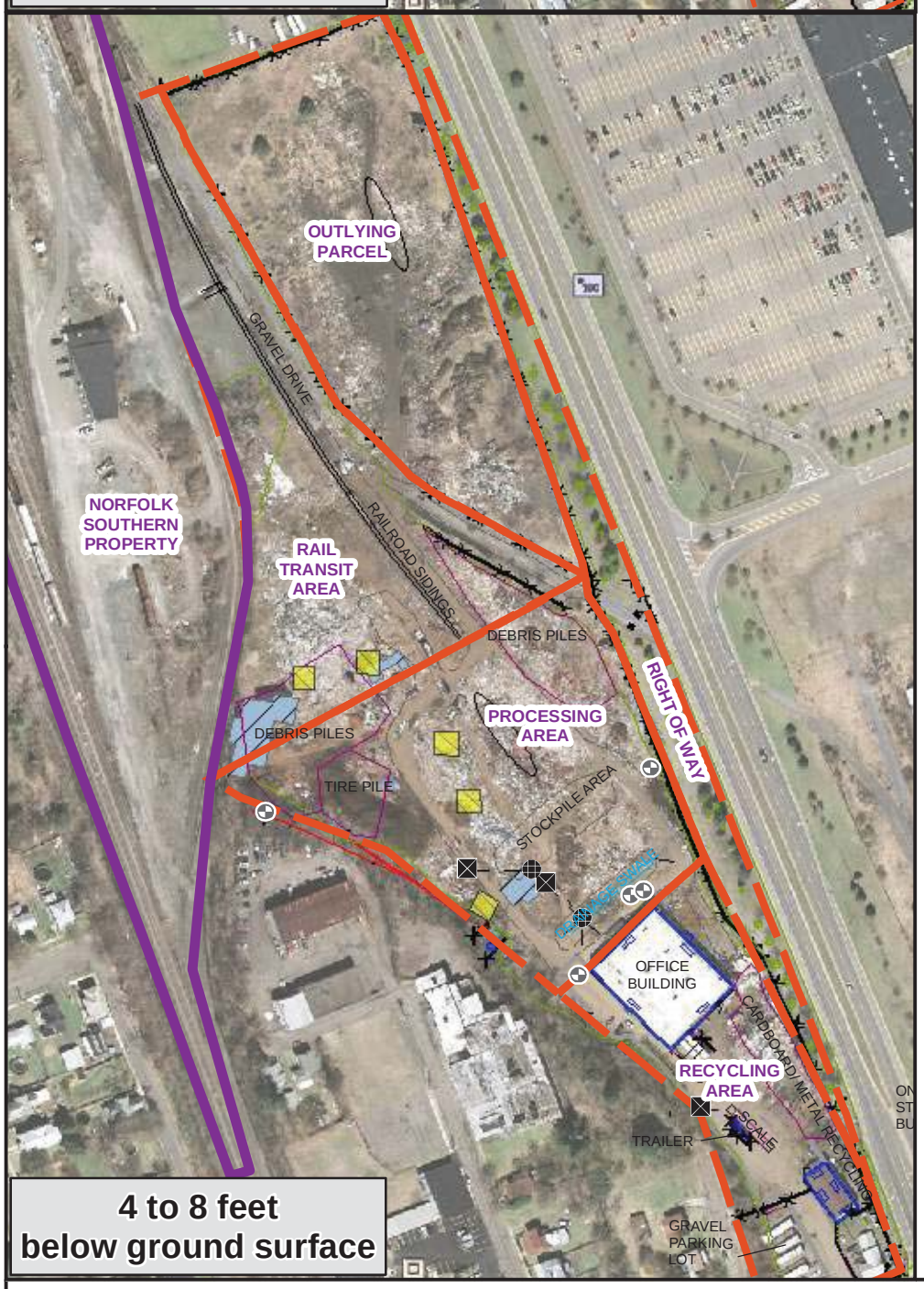
Soil Sampling Results - April 2013 Data
PCBs and Metals Contamination

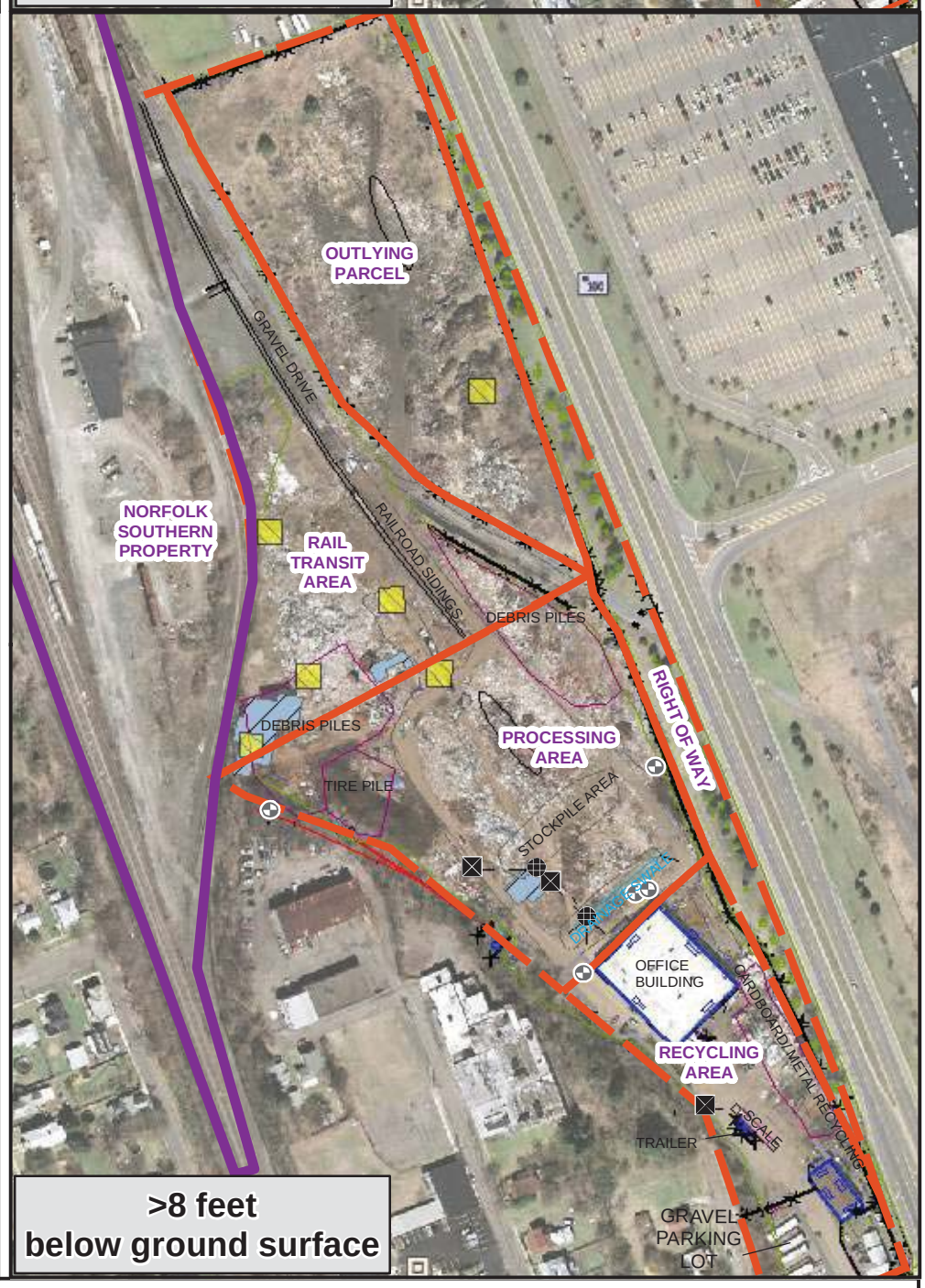
Shulman's Salvage Yard
Elmira, New York

CDM Smith









Site Boundary
Norfolk Southern Property
Site Areas (as defined for RI discussion)
Historical Structures
Former Wells
Catch Basin
Debris Piles
Manhole
Fenceline

N

0 125 250 500 Feet

Remediation Areas

PCB-Impacted Areas

Metals-Impacted Areas

Notes:

1.Alternative 3 would address all soils that exceed commercial standards for metals, that exceed 1 ppm PCBs at 0 to 1 feet depth, and that exceed 10 ppm PCBs at >1 feet depth
2. All PCB-impacted soils (shown in blue-colored areas) would be excavated and disposed of off-site.
3. All metals-impacted soils (shown in yellow-colored areas) outside of the PCB-impacted areas would be excavated, consolidated along with clean fill and backfilled in all area impacted by PCBs and metals.
4. Prior to consolidation, leachate testing would be performed to ensure that there are no risks to groundwater due to the metals-impacted soils that are consolidated on-site. If leachate testing indicates that on-site consolidation would pose risks to groundwater, then the metals-impacted soils would also be disposed of off-site.

Figure 5
Conceptual Design for Alternative 3
Excavation, Consolidation
Off-Site Disposal and Soil Cover

Shulman's Salvage Yard
Elmira, New York

CDM Smith