PROPOSED REMEDIAL ACTION PLAN

Collins Property
Environmental Restoration Project
Oswegatchie, St Lawrence County
Site No. E645045
February 2013

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 contaminants 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 contaminants at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. 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 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

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:

Ogdensburg Public Library

Attn: Ogdensurg Public Library Repository
312 Washington Street
Ogdensburg, NY 13669
Phone: 315-393-4325

A public comment period has been set from:

2/8/2013 to 3/25/2013

A public meeting is scheduled for the following date:

3/6/2013 at 7:00 PM

Public meeting location:

Town of Oswegatchie Town Hall, 51 State Street, Heuvelton, NY 13654

At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) 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 3/25/2013 to:

Peter Ouderkirk
NYS Department of Environmental Conservation
Division of Environmental Remediation
317 Washington St
Watertown, NY 13601-3787
psouderk@gw.dec.state.ny.us

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 Former Collins Property Site is located at 7610 State Highway 68 (also known as 520 Riverside Drive) in the Town of Oswegatchie, St. Lawrence County, New York. The site is situated northwest of State Highway 68 and southeast of the St. Lawrence River. The City of Ogdensburg's drinking water intake and the Former Diamond International Paper Mill Site are located to the west.

Site Features: The site is vacant and is covered with mixed vegetation, including grass and small shrubs. The site is relatively flat with a gentle slope toward the St. Lawrence River. The 5.4-acre parcel is bisected by the Former New York Central Railroad right-of-way which runs east to west. The right-of-way is 80 feet wide and separates the site into what is referred to as the lower or Riverside parcel, and upper or South Side Parcel. The Collins-Hammond Electrical Contractors property is located immediately adjacent the southeast corner of the site and was part of the original major oil storage facility site.

Current Zoning/Use(s): The site is zoned commercial. Land use in the area is mixed, including residential and commercial properties. The nearest residence is approximately 250 feet west of the site.

Past Use of the Site: The site was historically used as a petroleum bulk storage facility and was owned by several petroleum companies since the late 1930s including Atlantic Fuels, Ultramar Petroleum, Inc., Augsbury Corporation, Gulf Oil Corporation, and Esso Standard Oil Company. Gasoline, fuel oil and kerosene were stored in tanks ranging in size from 353,000 to 3,300,000 gallons during its operation. These above-ground storage tanks were reportedly removed in the 1980s.

An initial site assessment was performed in 1986 and the report documented the size of the tanks and the original layout of the facility. In 1988, the New York State Department of Environmental Conservation assigned Spill No. 88-07224 to the site. The spill was closed in November 1990. In 2004 a subsurface investigation revealed the presence of additional petroleum contamination on the Riverside Parcel, the South Side Parcel, and contamination that appeared to be emanating from the Collins-Hammond Electrical Contractors property. A second Spill No. 03-12434 was assigned to the site on February 9, 2004 due to contamination found in soil borings.

Geology and Hydrogeology: Site soils consist of gravelly, sandy loam. Groundwater is found at an elevation between 4 and 7 feet below grade. Groundwater flow is to the northwest toward the St. Lawrence River. Bedrock was encountered between 8.5 and 17 feet below grade.

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 restricted-residential use (which allows for commercial use and 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.

No PRPs have been documented to date.

The site was historically used as a petroleum bulk storage facility and was owned by several petroleum companies since the late 1930s including Atlantic Fuels, Ultramar Petroleum, Inc., Augsbury Corporation, Gulf Oil Corporation, and Esso Standard Oil Company.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. Town of Oswegatchie will assist the state in its efforts by providing all information to the state which identifies PRPs. Town of Oswegatchie will also not enter into any agreement regarding response costs without the approval of the Department.

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
- soil
- sediment
- soil vapor

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 contaminant 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:

BENZO(A)PYRENE	1,3,5-TRIOXANE, 2,4,6-TRIMETHYL-
BENZO(B)FLUORANTHENE	ETHYLBENZENE
BENZO[K]FLUORANTHENE	XYLENE (MIXED)
Chrysene	BIS(2-ETHYLHEXYL)PHTHALATE
indeno(1,2,3-cd)pyrene	CADMIUM
CHROMIUM	BENZENE
1,2,4-TRIMETHYLBENZENE	TOLUENE

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

- groundwater
- 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.

Based upon investigation conducted to date, the primary contaminants of concern are volatile organic compounds, semi-volatile organic compounds and metals. Soil and groundwater contamination exists above standards as the result of spills of petroleum at the facility. The majority of subsurface soil contamination is present in a smear zone from 4 to 8 feet below grade beneath both the site and the adjacent off-site property to the southwest. Visual and olfactory evidence of petroleum was found to be widespread across the site at this depth. Aged and weathered petroleum products retain strong visual and olfactory evidence of contamination. Several VOCs were detected as part of the soil vapor investigation, including benzene, tolune, ethylbenzene and xylene (BTEX) compounds and non-petroleum contaminants such as tetrachloroethene and acetone.

Two sediment samples were collected during the RI from the bank of the St. Lawrence River to assess the potential for impacts to river sediment from the site. The sample results did not exceed the Department's Technical Guidance for Screening Contaminated Sediments.

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*.

Access to the site is unrestricted. People will not contact contaminated soil or groundwater unless they dig below the ground surface. Groundwater at the site is not currently used for drinking or other purposes. Sampling of off-site potable drinking water wells indicates the wells are not affected by site contaminants. 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. Currently, there are no occupied buildings on the site. However, the potential may exist for the inhalation of site contaminants due to soil vapor intrusion for any future on-site building development and occupancy.

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.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

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 AA 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 Soil Excavation and Bioremediation remedy.

The estimated present worth cost to implement the remedy is $1,918,000. The cost to construct the remedy is estimated to be $1,918,000 and the estimated average annual cost is $0.

The elements of the proposed remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, 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 gas 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. On-site petroleum impacted soil will be excavated and staged followed by mechanical aeration to promote bioremediation. Clean overburden soils will be removed in order to access the petroleum impacted soils that are present at depths ranging from 4 to 8 feet below grade. Approximately 16,300 cubic yards of petroleum impacted soils are estimated to require treatment. The mechanical soil turning will continue until there is no visual, olfactory or photo-ionization detector readings. Confirmatory soil sampling will be conducted on both mechanically turned soils and for unexcavated sidewall and bottom areas to verify that the restricted residential soil cleanup objectives for surface soils and the protection of groundwater soil cleanup objectives for soils at depth (greater than 2 feet below grade) are achieved. Treated soils will be placed back into the excavation at their original depth of approximately 4 to 8 feet below grade. The

previously-removed overburden soils will be placed over the treated soils to create a cover system that is suitable for restricted residential use, as described below. Based on the removal of source material in contact with groundwater, the Department expects that groundwater will achieve ambient water quality standards over time. Post-remedial groundwater sampling will be conducted to verify that groundwater standards have been achieved.

3. Treatment of off-site petroleum-impacted soil will utilize the same approach as the on-site soil, with the soil piles placed on the site. Since the off-site area is not under the control of the Town, the unrestricted SCOs must be achieved. Treated soil meeting the unrestricted SCOs (URSCOs) will be placed back into the excavation at their original depth of approximately 4 to 8 feet below grade. The previously-removed overburden soils that achieve the URSCOs may also be placed in the excavation.

4. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the restricted residential soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential 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). Post remedial groundwater sampling will be conducted to verify that groundwater standards have been achieved.

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

- requires the 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 restricted residential, commercial and industrial as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- requires compliance with the Department approved Site Management Plan.
- 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.

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

a. an 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 above.
Engineering Controls: The soil cover as discussed in Paragraph 3.
This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed in item above.
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

As described in the RI report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and inorganics (metals). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for waste, soil, and sediment. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$). The following are the media which were investigated and a summary of the findings of the investigation.

Groundwater

Groundwater samples were collected from three temporary and eight permanent overburden monitoring wells to assess groundwater conditions on-site and off-site (See Figure 2). Groundwater wells were installed to the top of bedrock and varied in depth from 8.5 to 17 feet below grade. Groundwater was analyzed for VOCs, SVOCs, PCBs and metals. The groundwater data indicate that contamination in shallow groundwater exceeds the SCGs for VOCs, SVOCs and metals.

VOCs are the primary groundwater contaminants and consist of 1,2,4-trimethylbenzene, 1,3,4-trimethylbenzene, benzene, ethylbenzene, toluene and xylene. Groundwater contamination is predominately found on the south side parcel (Historic Well MW-2, MW-3, and MW-4) and to the northeast in the vicinity of MW-7.

The SVOC contamination is comprised of polyaromatic hydrocarbons (PAHs) and was found at low levels primarily in the temporary wells located across the site. The contamination is believed to be associated with the residual zone of petroleum contamination.

The inorganic compounds found in groundwater are considered related to the historic fill at the site, but may also be attributed to sample turbidity. Metals in the groundwater were also found across the site with no apparent source or consistent pattern of distribution. Therefore, the metal compounds are not considered site specific contaminants of concern.

A summary of the analytical results and the frequency at which they exceed their SCGs are found in the table below.

Table 1 – Groundwater

Detected Concentrations	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	ND-30	1	1 out of 28
Toluene	ND- 21	5	1out of 28
Ethylbenzene	ND -210	5	7 out of 28

Table 1 – Groundwater			
Detected Concentrations	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Xylenes (total)	ND – 280	5	9 out of 28
Isopropylbenzene	ND -40	5	5 out of 28
n-Propylbenzene	ND – 100	5	5 out of 28
1,3,5-Trimethylbenzene	ND - 83	5	7 out of 28
1,2,4-Trimethylbenzene	ND - 360	5	7 out of 28
SVOCs			
Bis (2-ethylhexyl) phthalate	ND – 500	0.002	4 out of 28
METALS			
Cadmium	ND – 32.3	5	1 out of 28
Iron	60 – 55,700	300	23 out of 28
Manganese	54.7 – 1,400	300	10 out of 28
Magnesium	33,000 – 77,500	35,000	26 out of 28
Sodium	20,700 – 90,800	20,000	27 out of 28

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).

Based on the findings of the RI, the disposal of petroleum and/or hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern are: 1,2,4-trimethylbenzene, 1,3,4-trimethylbenzene, benzene, ethylbenzene, toluene and xylene The area of VOC contaminated groundwater is in the vicinity of Historic Well MW-2, MW-3, MW-4 and MW-7(see Figure 2).

Surface Soil

Twelve surface soil samples were collected at the site during the RI to assess the potential for direct human exposure (See Figure 3). Samples were collected from a depth of 0-2 inches below grade. The results indicate that no exceedances of the unrestricted SCOs were found.

No site-related surface soil contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface soils.

Sediments

Two sediment samples were collected during the RI from the bank of the St. Lawrence River (See Figure 3). The samples were collected to assess the potential for impacts to river sediment from the site. The results indicate that sediment do not exceed the Departments Technical Guidance for Screening Contaminated Sediments.

No site-related sediment contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for sediment.

Subsurface Soils

In August and September of 2009 subsurface soil samples, through the use of soil borings, were collected at the site to assess the extent of contaminated soils and their impacts on groundwater (See Figure 3). Soil borings were advanced from the ground surface to the top of bedrock. Soil cores were retrieved in four (4) foot intervals. Each 4 foot core was screened with a photo-ionization detector and observed for any visual or olfactory evidence of contamination. Samples were taken from the petroleum-impacted interval where grossly contaminated soil was found. Subsurface soil samples were analyzed for VOCs, SVOCs, PCBs and metals. In the summer of 2011, twenty four (24) test pits were excavated to further delineate the boundaries of petroleum contaminated soil based on visual, olfactory and photo-ionization detector readings (See Figure 4). The primary subsurface soil contamination is PAHs and chromium which appears to be associated with the release of petroleum and historic fill, respectively.

A summary of the analytical results and the frequency at which they exceed their SCOs are found in the table below.

Table 3 Subsurface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Restricted Residential SCO	Protection of Groundwater SCO[c] (ppm)	Frequency Exceeding Protection of Groundwater SCO
SVOCs					
Benzo(a)anthracene	ND – 40	1	1 out of 20	1	1 out of 20
Benzo(a)pyrene	ND – 30	1	1 out of 20	22	1 out of 20
Benzo(b)fluoranthene	ND – 30	1	1 out of 20	1.7	1 out of 20
Benzo(k)fluoranthene	ND – 30	0.8	1 out of 20	1.7	1 out of 20
Chrysene	ND – 40	1	1 out of 20	1	1 out of 20
Indeno(1,2,3-cd)pyrene	ND – 20	0.5	1 out of 20	8.2	1 out of 20
METALS					
Chromium	ND – 19.3	30	0 out of 20	19	1 out of 20

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), Protection of Groundwater Soil Cleanup Objectives

The zone of petroleum impacted soil is approximately 4 to 8 feet below grade and fluctuates with the groundwater table. The depth to bedrock varies across the site from a depth of 8.5 to 17 feet below grade. Sampling results indicate that subsurface soils at the site exceed the protection of groundwater SCOs for SVOCs and metals at only

one location (B-1). However, visual and olfactory evidence of petroleum contamination was identified at 11 out of 20 soil boring locations. The chromium detected at B-1 is only slightly above the residential and protection of groundwater SCO. Limited visual impacts to sub-surface soils were also noted off-site along the western border on the Haggerty Property. Although the laboratory data showed a small number of exceedances of the protection of groundwater SCOs, the site is heavily contaminated. Visual and olfactory inspection of the soil borings and test trenches revealed the wide spread contamination of soils with petroleum. Aged and weathered petroleum products retain strong visual and olfactory evidence of contamination. However the laboratory analysis for VOCs and SVOCs show very low if no exceedances of SCOs.

Based on the findings of the Remedial Investigation, the past disposal of petroleum related compounds 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 SVOCs.

Soil Vapor

The nature and extent of contamination in soil vapor was evaluated by the sampling of soil vapor at the locations shown on Figure 3. The survey included the sampling of ten soil vapor points (VP-01 through VP-10) along the site boundaries, as well as an ambient air reading. Samples were analyzed for VOCs (EPA Method TO-15). The soil vapor survey revealed detections of several VOCs at all soil vapor points, particularly at VP-05, VP-06, and VP-07 on the Riverside Parcel.

Several VOCs were detected as part of the soil vapor investigation, including benzene, tolune, ethylbenzene and xylene (BTEX) compounds and others such as tetrachloroethene and acetone. There is no known historic use of tetrachloroethene or acetone at the site, and no corresponding subsurface contaminant source has been identified.

Due to the presence of contaminant source areas beneath the site, there is potential for on-site soil vapor contamination to create soil vapor intrusion concerns if new buildings are constructed on-site. Therefore, the potential for on-site soil vapor intrusion will be addressed by the remedy selection process.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Exhibit B) 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. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Monitored Natural Attenuation

This alternative provides no active remediation and relies solely on natural attenuation for remediation of contaminated soil. Long term monitoring of the overburden groundwater using existing groundwater monitoring wells would be performed for a period of 30 years or more. This alternative also includes a soil vapor evaluation to determine if additional sampling or actions would be recommended to address current or potential exposures related to soil vapor intrusion. An environmental easement, which includes a groundwater use restriction, will be placed on the property to ensure future use/control of the site that would protect human health and the environment.

Present Worth: $288,000
Capital Cost: $46,000
Annual Costs: $16,000

Alternative 3: Soil Excavation with Off-Site Disposal

This Alternative includes the removal of approximately 16,300 cubic yards of petroleum impacted soil from areas both on-site (owned by the Town of Oswegatchie) and off-site (lands owned privately that have been impacted by site-related contamination) to the southwest (See Figure 6). Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Confirmation soil sampling of the excavation and post-remedial groundwater monitoring would be included in this alternative. If soil cleanup objectives and/or groundwater standards are not achieved, then an environmental easement, which would include groundwater use restrictions, would be placed on the property to ensure future use/control of the site that would protect human health and the environment.

Present Worth: $3,114,000
Capital Cost: $3,114,000
Annual Costs: $0

Alternative 4: In-Situ Bio-Remediation

This alternative would utilize the injection of concentrated oxygen to enhance microbial activity in the subsurface followed by the addition of an oxidant, addressing both soil and groundwater contamination at the site. Oxygen releasing compounds, such as slow release ORC Advanced® and RegenOx would be injected into

the site subsurface using a direct-push technology (e.g., Geoprobe boring installation). Groundwater monitoring will continue at the site to measure the decline in VOC concentrations over time. Performance monitoring of the soil and groundwater will be conducted to evaluate the effectiveness of the remedial alternative. If soil cleanup objectives and/or groundwater standards are not achieved an environmental easement, which would include groundwater use restrictions, would be placed on the property to ensure future use/control of the site that would protect human health and the environment.

Present Worth: $848,000
Capital Cost: $802,000
Annual Costs (For 2 years of monitoring): $25,000

Alternative 5: Mechanical Aeration

This alterative would require the mechanical aeration of 16,300 cubic yards of petroleum contaminated materials through a mechanical aeration method which includes areas both on-site and off-site to the southwest (See Figure 6). Clean overburden would be removed to access the petroleum contaminated soil found between 4 and 8 feet below grade. Impacted soils will be excavated and staged to promote drying of the soils. Soils will be aerated using a mechanical aeration process such as an Allu™ excavator bucket. The mechanical aeration will continue until there is no visual, olfactory or photo-ionization detector readings. Confirmatory soil sampling will be conducted to verify that the protection of groundwater soil cleanup objectives has been achieved. Post remedial groundwater sampling will be conducted to verify that groundwater standards have been achieved and document the progress toward remedial action objectives. This alternative includes the imposition of an institutional control in the form of an environmental easement on the controlled property limiting the use to restricted residential and restricting the groundwater use.

Present Worth: $1,918, 000
Capital Cost: $1,918,000
Annual Costs: $0

Exhibit C

Remedial Alternatives Costs

Remedial Alternatives	Capital Cost ($)	Annual Costs ($)	Present Worth Cost ($)
1. No Action	0	0	0
2. Monitored Natural Attenuation	46,000	16,000	288,000
3. Excavation & Disposal	3,114,000	0	3,114,000
4. In-Situ Bioremediation	802,000	25,000	848,000
5. Mechanical Aeration	1,918,000	0	1,918,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 5, Mechanical Aeration as the remedy for this site. Alternative 5 would achieve the remediation goals for the site by excavating and mechanically aeration the contaminated soils to allow for biodegradation of VOCs. The elements of this remedy are described in Section 7. The proposed remedy is depicted on Figure 5.

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 Remedial Alternatives 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 5) would satisfy this criterion by removing the contaminated soils above and below the water table and to require institutional controls that would restrict the site use, groundwater use and address future soil vapor intrusion concerns. VOC impacted soils would be mechanically aerated to allow for biodegradation. Alternative 4 addresses the source of the groundwater contamination, which is the most significant threat to public health and the environment Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 3, by removing all soil contaminated above the “unrestricted” soil cleanup objective, meets the threshold criteria. Alternatives 2 and 4 also comply with this criterion but to a lesser degree and with lower certainty.

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.

Alternatives 3 and 5 comply with SCGs to the extent practicable. They address source areas of contamination and comply with the protection of groundwater soil cleanup objectives for all site soils. They also create the conditions necessary to restore groundwater quality to the extent practicable. Alternative 4 also complies with this criterion but to a lesser degree or with lower certainty. Alternative 2 is not likely to comply with this criterion in a reasonable period of time. Alternative 1 would not satisfy either threshold criteria, and therefore is not carried forward.

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.

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternatives 3 and 5). Both Alternative 3 and 5 would remove all contaminated soils from the environment resulting in long-term effectiveness and permenance. Alternative 5 would treat the soils on-site versus off-site disposal under Alternative 3. For Alternative 2, natural attenuation may be effective over a very long period of time (i.e., 20-30 years), but it will not be desirable in achieving measurable results in a reasonable period of time. Alternative 4 will be effective and permanent over a reasonable period of time (i.e., one to two construction seasons); however the in-situ chemical treatment has a lower certainty of treating all contaminated soil and therefore would not achieve a permanent solution as quickly as Alternatives 3 and 5in a reasonable period of time.

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 4 may reduce toxicity, mobility or volume; however it would be over a relatively longer time period. Alternatives 3 and 5 would achieve reduction of toxicity, mobility or volume by removing all VOC impacted soils for either off-site disposal or on-site treatment. The removal or treatment of VOC and SVOC impacted soil will reduce impacts to on-site groundwater.

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 3 and 5 have short-term impacts associated with the removal and treatment or disposal of contaminated soil, which can be easily controlled. Alternative 2 would have the smallest impact. The time needed to achieve the remediation goals is the shortest for Alternative 3 and longer for Alternative 5 (10-12 weeks). Alternative 2 takes the longest to achieve remediation goals followed by Alternative 4.

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, 4 and 5 are favorable in that they are readily implementable. Alternative 3 is also implementable, but the volume of soil excavated under this alternative would necessitate increased truck traffic on local roads for several months.

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.

The costs of the alternatives vary significantly. Alternative 2 has a low cost, but the contaminated soil would not be addressed other than by institutional controls. With their large volume of soil to be handled, Alternatives 3 and 5 (excavation and off-site disposal, and excavation and on-site mechanical aeration) would have the highest and

second highest present worth cost, respectively. In-situ bio-remediation (Alternative 4) is in the middle; however the program may not meet goals in a reasonable time period.

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 site is restricted residential, Alternatives 2 and 4 would be less desirable because at least some contaminated soil would remain on the property whereas Alternative 3 and 5 would remove or treat the contaminated soil permanently. However, the residual contamination with Alternative 4 would be controllable with implementation of a Site Management Plan.

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

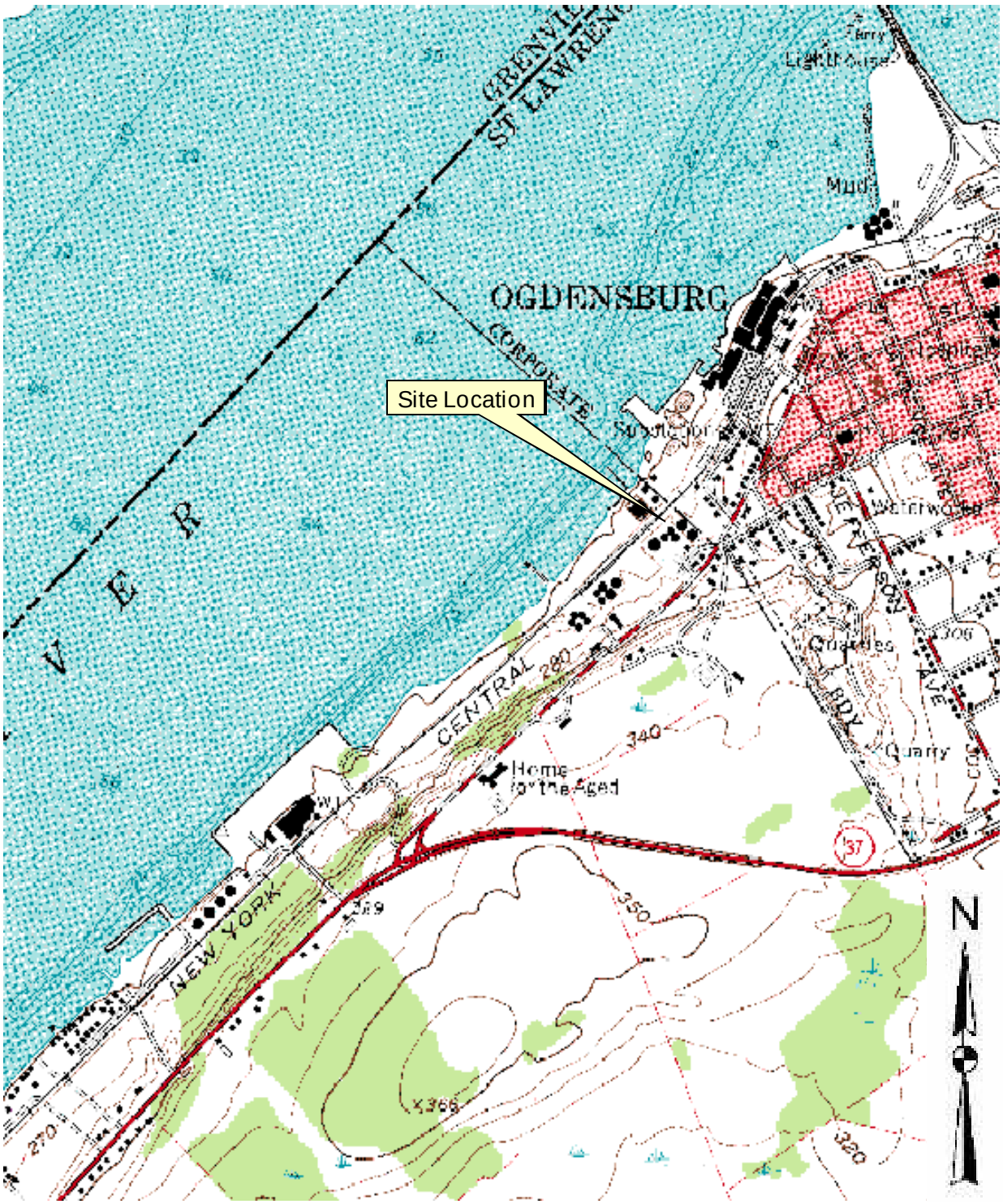


Figure 1 - Site Location

Town of Oswegatchie ERP

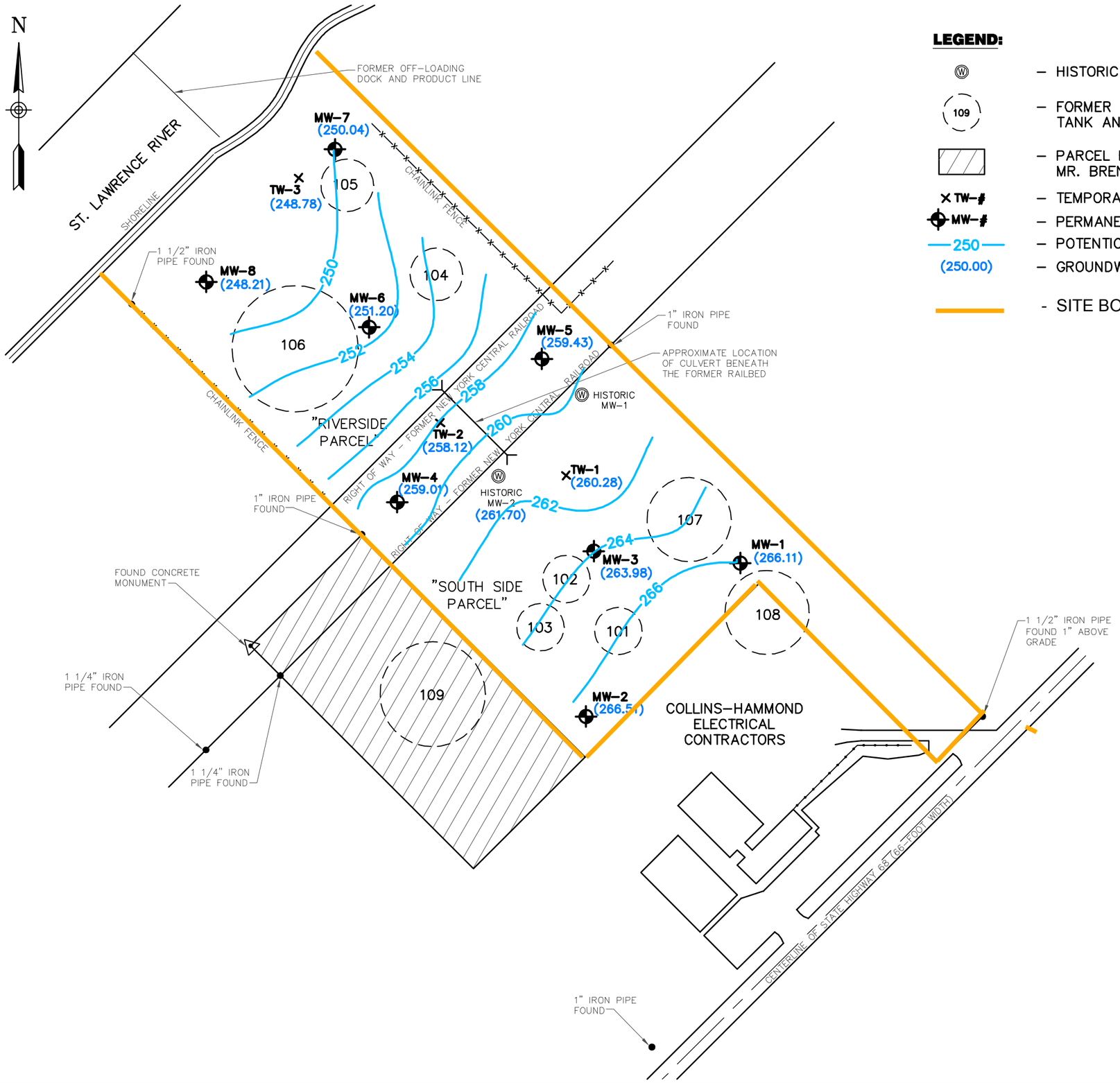
Town of Oswegatchie, New York

Barton & Loguidice, P.C.

Engineers • Environmental Scientists • Planners • Landscape Designers

Base Map from USGS West Ogdensburg (1963)

1 inch = 2000 feet



LEGEND:

- Ⓦ – HISTORIC MONITORING WELL
- 109 – FORMER PETROLEUM BULK STORAGE TANK AND I.D. NUMBER
- – PARCEL RECENTLY SOLD TO MR. BRENDAN HAGGERTY
- ✕ TW-# – TEMPORARY WELL LOCATION
- ⊕ MW-# – PERMANENT WELL LOCATION
- 250 – POTENTIOMETRIC CONTOUR – APRIL 22, 2010
- (250.00) – GROUNDWATER ELEVATION
- – SITE BOUNDARY

BASE MAP INFORMATION OBTAINED FROM ATL REPORT ENTITLED "ENVIRONMENTAL SUBSURFACE INVESTIGATION REPORT – FORMER ATLANTIC FUELS" DATED DECEMBER 22, 2004.

GENERALIZED POTENTIOMETRIC GROUNDWATER CONTOURS APRIL 22, 2010

OSWEGATCHIE (T) BROWNFIELD PROJECT

TOWN OF OSWEGATCHIE ST. LAWRENCE COUNTY, NEW YORK

Barton & Loguidice, P.C.

Date: FEBRUARY, 2011

Scale: 1" = 100'

Figure Number: 2

Project Number: 1003.002

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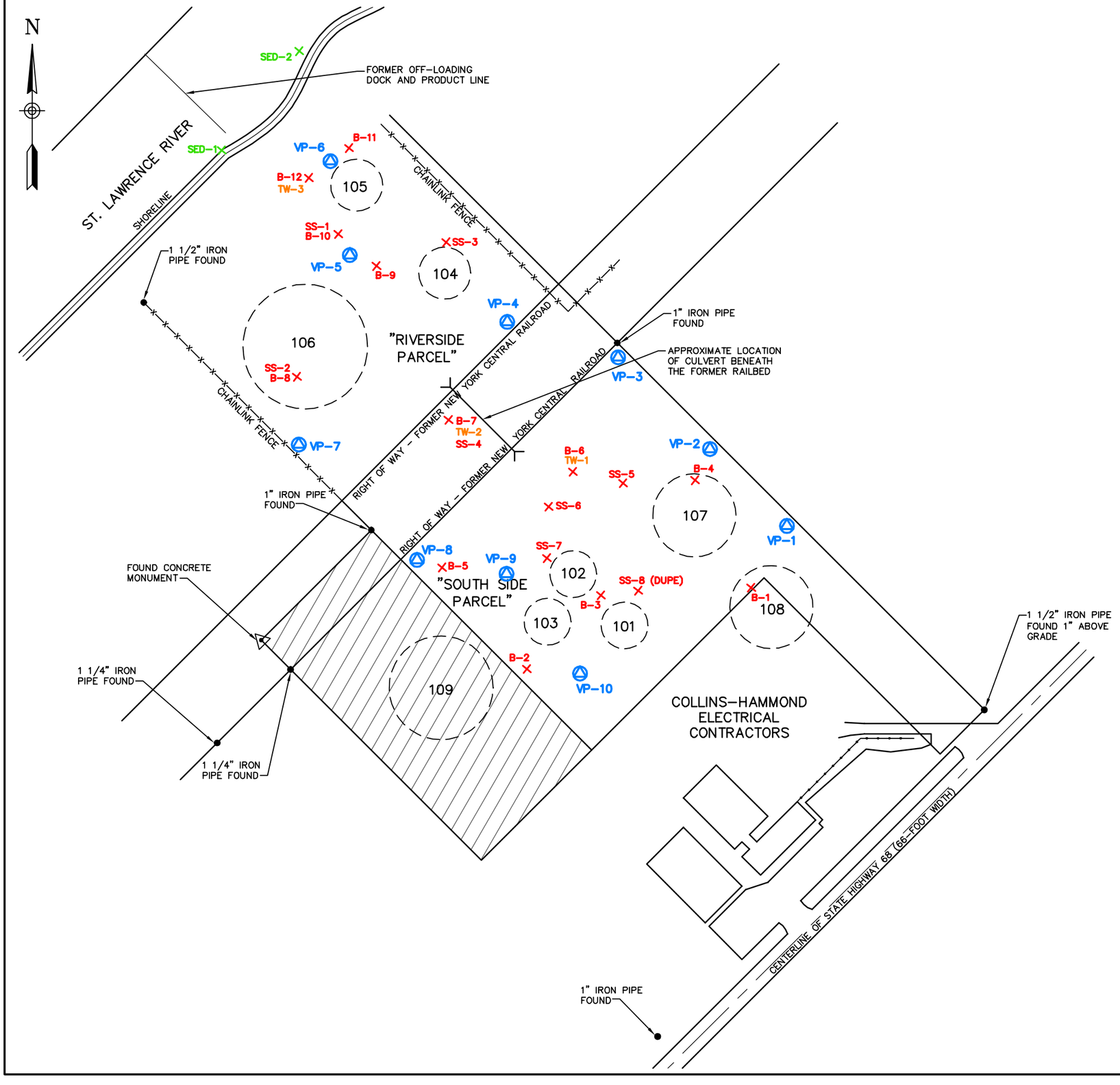

LEGEND:

- 109 – FORMER PETROLEUM BULK STORAGE TANK AND I.D. NUMBER
- – PARCEL RECENTLY SOLD TO MR. BRENDAN HAGGERTY
- SS-# – SURFACE SOIL SAMPLE LOCATION
- B-# – BORING LOCATION
- TW-# – TEMPORARY WELL LOCATION
- SED-# – SEDIMENT SAMPLE LOCATION
- VP-# – SOIL VAPOR POINTS

BASE MAP INFORMATION OBTAINED FROM ATL REPORT ENTITLED "ENVIRONMENTAL SUBSURFACE INVESTIGATION REPORT – FORMER ATLANTIC FUELS" DATED DECEMBER 22, 2004.

SURFACE SOIL, SEDIMENT, SUBSURFACE SOIL BORING, AND SOIL VAPOR SAMPLE LOCATIONS

OSWEGATCHIE (T) BROWNFIELD PROJECT

TOWN OF OSWEGATCHIE ST. LAWRENCE COUNTY, NEW YORK

Barton & Loguidice, P.C.

Date: NOVEMBER, 2010

Scale: 1" = 100'

Figure Number: 3

Project Number: 1003.002

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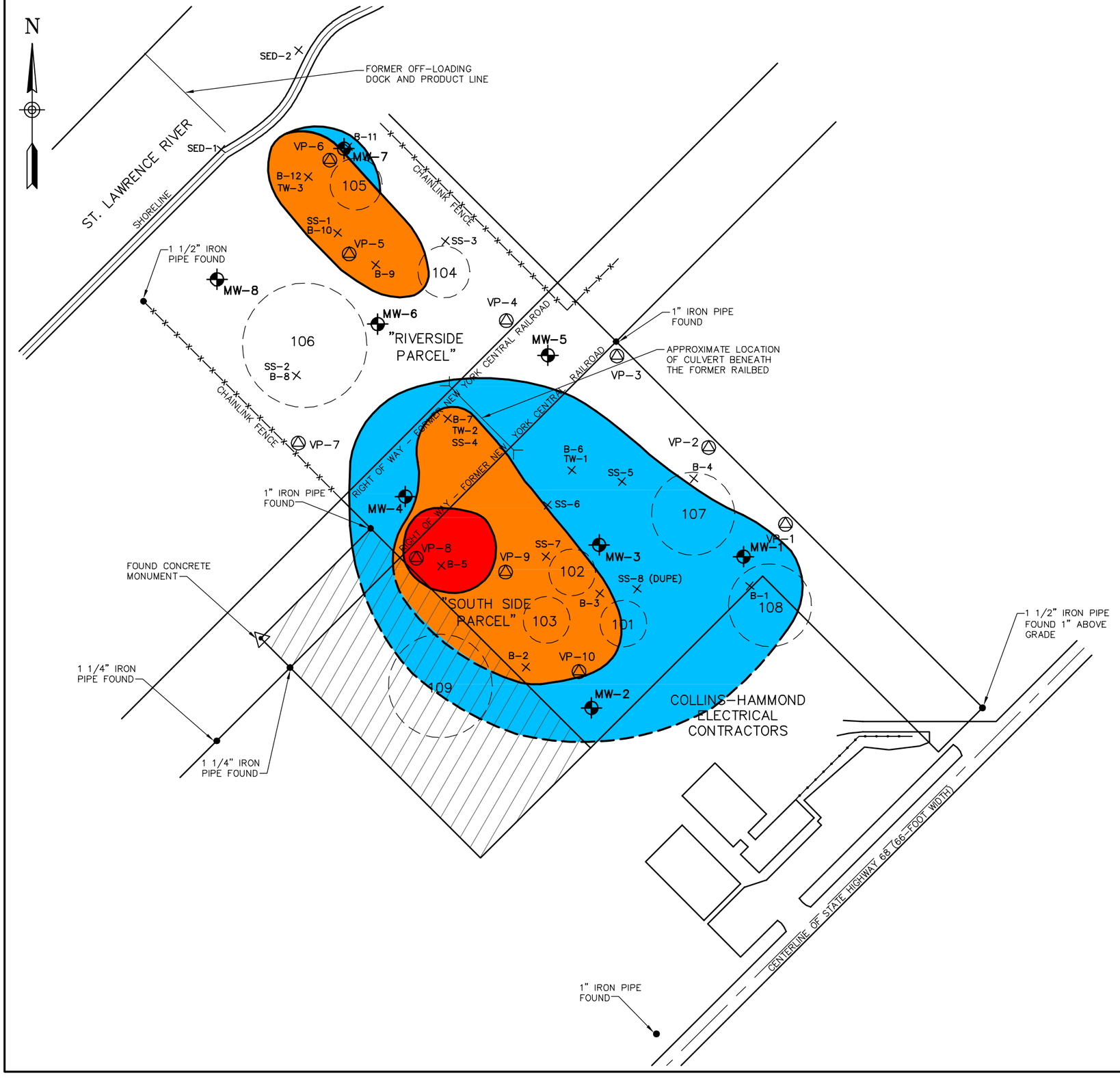

LEGEND:

- 109 — FORMER PETROLEUM BULK STORAGE TANK AND I.D. NUMBER
- — PARCEL RECENTLY SOLD TO MR. BRENDAN HAGGERTY
- × SS-# — SURFACE SOIL SAMPLE LOCATION
- × B-# — BORING LOCATION
- × TW-# — TEMPORARY WELL LOCATION
- × SED-# — SEDIMENT SAMPLE LOCATION
- △ VP-# — SOIL VAPOR POINTS
- ⊕ MW-# — MONITORING WELL LOCATION

PEAK PID READINGS

- 1–100 PPM
- 100–500 PPM
- 500–<1,000 PPM

SOIL CONTAMINATION TABLE		
PID RANGE	CUBIC FEET	CUBIC YARDS
1-100 ppm	358,965	13,295
100-500 ppm	234,620	8,690
500-<1,000 ppm	29,660	1,099

NOTE: DEPTH OF SOIL CONTAMINATION VARIES; AN AVERAGE THICKNESS OF 5 FEET WAS USED TO ESTIMATE THE VOLUME OF IMPACTED SOIL.

BASE MAP INFORMATION OBTAINED FROM ATL REPORT ENTITLED "ENVIRONMENTAL SUBSURFACE INVESTIGATION REPORT – FORMER ATLANTIC FUELS" DATED DECEMBER 22, 2004.

EXTENT OF CONTAMINATION PID READINGS AND VISUAL CONTAMINATION

OSWEGATCHIE (T)
BROWNFIELD PROJECT

ST. LAWRENCE COUNTY, NEW YORK

TOWN OF OSWEGATCHIE

Barton & Loguidice, P.C.

Date
JUNE, 2011

Scale
1" = 100'

Figure Number
4

Project Number
1003.002

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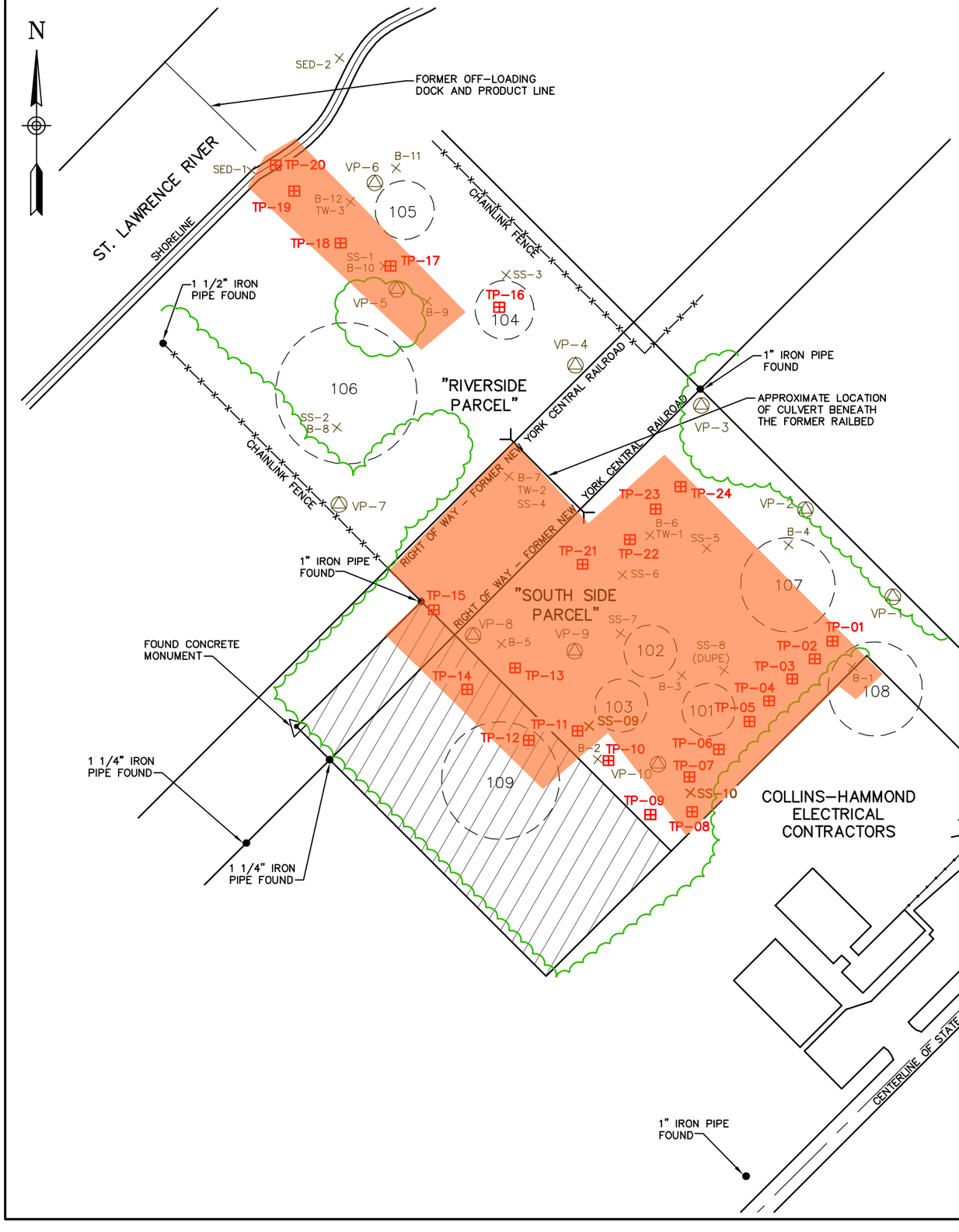

LEGEND:

- 109 – FORMER PETROLEUM BULK STORAGE TANK AND I.D. NUMBER
- – PARCEL RECENTLY SOLD TO MR. BRENDAN HAGGERTY
- × SS-# – SURFACE SOIL SAMPLE LOCATION
- × B-# – BORING LOCATION
- × TW-# – TEMPORARY WELL LOCATION
- × SED-# – SEDIMENT SAMPLE LOCATION
- △ VP-# – SOIL VAPOR POINTS
- ⊞ TP-# – 2011 TEST PIT LOCATION
- × SS-# – 2011 SURFACE SOIL SAMPLE LOCATION
- – APPROXIMATE TREELINE

[NOTE: ALL LOCATIONS ARE APPROXIMATE]

Areas identified for possible excavation

BASE MAP INFORMATION OBTAINED FROM ATL REPORT ENTITLED "ENVIRONMENTAL SUBSURFACE INVESTIGATION REPORT – FORMER ATLANTIC FUELS" DATED DECEMBER 22, 2004.

RESIDUAL SOIL IMPACTS

OSWEGATCHIE (T)
BROWNFIELD PROJECT
SUPPLEMENTAL INVESTIGATION

ST. LAWRENCE COUNTY, NEW YORK

TOWN OF OSWEGATCHIE

Barton & Loguidice, P.C.

Date
SEPTEMBER, 2011

Scale
1" = 100'

Figure Number
5

Project Number
1003.002

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