PROPOSED REMEDIAL ACTION PLAN
NYSEG McMaster St. - Auburn MGP Site

Auburn, Cayuga County, New York
Site No. 7-06-010

September 2009

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 NYSEG Auburn McMaster Street MGP Site. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this proposed remedy. As more fully described in Sections 3 and 5 of this document, past operation of the former manufactured gas plant (MGP) has resulted in the disposal of hazardous wastes, including volatile organic compounds and polycyclic aromatic hydrocarbons. These wastes have contaminated the soil, groundwater and sediment at the site, and have resulted in:

- a significant threat to human health associated with the potential for exposure to soil, sediment and groundwater.

- a significant environmental threat associated with the current and potential impacts of contaminants to groundwater and the Owasco Outlet sediment.

To eliminate or mitigate these threats, the Department proposes excavation and off-site disposal of contaminated soil and sediment.

The proposed remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially 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.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the August 2008 Remedial Investigation (RI) Report, the January 2009 Feasibility Study" (FS), and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Seymour Library	NYSDEC
176 Genesee Street	625 Broadway
Auburn, New York 13201	Albany, New York 12233
Sheila Mikkelson, Library Director	Bernard Franklin, Project Manager
(315) 252-2571	(518) 402-9662
Mon-Wed 10am-9pm	Call for appointment
Th-Fr 10am-6pm	
Sat 10am-4pm	

The Department seeks input from the community on all PRAPs. A public comment period has been set from September 26 to October 26, 2009 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for October 7. 2009 at the Legislative Chambers - 6th Floor, Cayuga County Office Building, 160 Genesee Street, Auburn, NY beginning at 7:00pm.

At the meeting, the results of the RI/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 to Mr. Bernard Franklin at the above address through October 26, 2009.

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 all of the alternatives identified here.

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.

SECTION 2: SITE LOCATION AND DESCRIPTION

The site is located in a predominantly commercial area of the City of Auburn, New York (see Figure 1). The former MGP occupied a 1-acre triangular parcel of land that is presently bounded by the Owasco Outlet to the north, a railroad right-of-way to the east and south, and an asphalt parking lot and the Auburn Tank Manufacturing Company to the west. A 3,000-square foot single-story building currently occupies the site. The closest residence is located approximately 300 feet south of the site. The New York State Auburn Correctional Facility is located across the Outlet to the north. The site is located approximately one-half mile east of the Auburn Clark Street Former MGP Site. The Clark Street Former MGP Site is also adjacent to the Owasco Outlet, downstream of the McMaster Street Site.

Site geology is comprised of fill and native soil layers overlying limestone bedrock. The overburden is comprised primarily of historic fill, along with a discontinuous layer of native fine sands, silts and clays that lies on the bedrock surface. The overburden ranges from 2 to 10 feet thick, and where groundwater is present within it, the flow is primarily toward the Owasco Outlet. Below the overburden are the Onondaga Limestone and Manlius Limestone, which comprise the upper 65 to 70 feet of bedrock at the site. Groundwater flow in bedrock occurs primarily through fractures in the rock, and discharges to the Owasco Outlet.

The Owasco Outlet streambed in the vicinity of the site contains unsorted sands and gravels with varying amounts of cobbles and boulders underlain by bedrock. Sediment in the outlet near the site is sparse and limited to isolated pockets trapped by physical obstructions in the stream. The large number of stormwater outfalls and the use of dams to manage stream water levels creates a high energy waterway with a transient sediment environment.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The former MGP was first operated by the Auburn Gas Light Company (later known as the Auburn Gas Company) in 1869, and manufactured coal gas by coal carbonization until 1904, when operations ceased. Prior to being demolished, the MGP included the following major structures: a gas holder, purifier house, two coke sheds and retorts.

During gas production an oily liquid commonly known as MGP tar would condense from the hot gas and settle in the bottom of gas holders, pipes and other structures. Experience at other MGP sites has shown that these structures are often the source of contamination in soils, groundwater and sediment, as the structures may have leaked or may have been periodically cleaned without regard to proper disposal. No pipes discharging to the Owasco Outlet were found at the site, and no evidence currently exists of a direct discharge of contaminants from the subsurface of the site into the stream.

3.2: Remedial History

Between 1992 and 1994, NYSEG conducted an initial investigation of the site, which confirmed the plant's location and identified the need for additional investigation of the site. A Preliminary Site Assessment (PSA) was conducted in 2005 to develop a basic understanding of the nature and extent of contamination in soil and groundwater. In addition, a sediment-probing and sampling program was undertaken to characterize contamination in the Owasco Outlet sediment.

SECTION 4: 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 Department and the New York State Electric and Gas Corporation (NYSEG) entered into a multi-site Consent Order on March 30, 1994. The Order (D0-0002-9309) obligates the responsible party to implement a full remedial program for 33 former MGP sites across the State, including the Auburn McMaster Street Site.

SECTION 5: <u>SITE CONTAMINATION</u>

A remedial investigation/feasibility study (RI/FS) was conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between May 2006 and February 2008. The field activities and findings of the investigation are described in the August 2008 RI Report. The RI included surface and subsurface soil samples to establish the nature and extent of on-site and off-site MGP-related impacts. The RI was also designed to develop a better understanding of the bedrock groundwater flow and quality. Additional bedrock monitoring wells were installed, discrete hydraulic conductivity tests were performed, and groundwater samples were collected from designated zones. In addition, sediment probing was conducted, sediment samples were collected, and soil vapor and outdoor air samples were collected.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil, groundwater, surface water, sediment and soil vapor contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the Department's Soil Cleanup Objectives (SCOs) identified in 6 NYCRR Subpart 375-6 and "Technical and Administrative Guidance Memorandum [TAGM] 4046".

- Surface water and sediment SCGs are developed based on site-specific background concentrations to establish cleanup goals, when sampling identifies sediment levels exceed the Department's "Technical Guidance for Screening Contaminated Sediments." Background surface water samples were taken from four locations, and background sediment samples were taken from five locations. These locations were from locations unaffected by historic or current site operations. The results of the background sample analysis were compared to relevant RI data to determine appropriate site remediation goals.

- Concentrations of VOCs in air were compared to typical background levels of VOCs in indoor and outdoor air using the background levels provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006. The background levels are not SCGs and are used only as a general tool to assist in data evaluation.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: <u>Nature and Extent of Contamination</u>

This section describes the findings of the investigation for all environmental media that were investigated.

As described in the RI report, many soil, groundwater, bedrock, sediment and surface water samples were collected to characterize the nature and extent of contamination. As shown on Figures #2, 3 and 4 the main categories of contaminants that exceed their SCGs are certain volatile organic compounds (VOCs) and certain semivolatile organic compounds (SVOCs). For comparison purposes, where applicable, SCGs are provided for each medium.

Coal tar is a reddish brown to black oily liquid by-product of manufactured gas plants which formed as a condensate as the gas cooled and which does not readily dissolve in water. Materials such as coal tar are commonly referred to as non-aqueous phase liquids, or NAPLs. The terms NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly more dense than water, the difference in density is slight. Consequently, this tar can either float or sink when in contact with water. Coal tar was found on-site during the remedial investigation.

Specific volatile organic compounds (VOCs) of concern are benzene, toluene, ethylbenzene, and xylenes. These are referred to as BTEX in this document. Semivolatile organic compounds of concern are the polycyclic aromatic hydrocarbons (PAHs). Total PAH concentrations are referred to in this document as the sum of the following individual PAH compounds:

acenaphthene	benzo(g,h,i)perylene	indeno(1,2,3-cd)pyrene
acenaphthylene	benzo(k)fluoranthene	2-methylnaphthalene
anthracene	chrysene	naphthalene
benzo(a)anthracene	dibenzo(a,h)anthracene	phenanthrene
benzo(a)pyrene	fluorene	pyrene
benzo(b)fluoranthene	fluoranthene	

Tars contain high levels of PAH compounds which often approach percent levels. Tars also exceed SCGs for BTEX by several orders of magnitude. In certain tar samples, enough benzene may be present to require the material to be managed as hazardous waste.

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 ($\mu g/m^3$). For comparison purposes, where applicable, SCGs are provided for each medium

Waste Materials

The majority of Dense Non-Aqueous Phase Liquid (DNAPL) contaminated soils at and near the site occur below the water table. DNAPL has migrated to the lower portion of overburden soils, to the bedrock surface both at the site and to the northwest of the site. DNAPL has also migrated in to the upper approximately 15 to 20 feet of bedrock (Onondaga Limestone) primarily along the northern edge of the site, below the bank of the Outlet. The distribution of DNAPL in bedrock is a function of the

DNAPL physical characteristics, hydraulic influences and the complex bedrock fracture network of jointing and horizontal bedding plane fractures in the bedrock. See Figure 6.

Waste identified during the RI/FS will be addressed in the remedy selection process.

Surface Soil (0-6 inches)

Five surface soils samples were taken off-site (background) and five were taken on-site. These ten surface soil samples were analyzed for VOCs (BTEX) and SVOCs (PAHs). Off-site concentrations of benzo(a)pyrene ranged from 0.13 to 1.8 ppm, compared to its soil cleanup objective (SCO) of 1 ppm for unrestricted use, and on-site values ranged from 0.20 to 4.2 ppm. Two other PAHs, chrysene and indeno(1,2,3-cd)pyrene, exceeded their SCOs for unrestricted use in on-site and off-site samples. All of the surface soil samples were below detection limits for VOCs.

Surface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Subsurface Soil

Twenty-four subsurface soil samples were collected and analyzed for BTEX, PAHs and cyanide. These samples were collected from approximately 3 to 5 feet above the bedrock surface, where visual impacts were observed in borings and test pits. Samples were collected primarily from this interval because it exhibited the most prevalent occurrences of NAPL, sheens and odors. Total BTEX was detected in 19 of 24 subsurface soil samples, ranging from 0.0041 ppm to 11,220 ppm. Total PAHs were detected in 23 of 24 subsurface soil samples, ranging from 0.047 ppm to 11,200 ppm. The extent of BTEX and PAH contamination in subsurface soils is shown on Figure 2.

Subsurface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from ten overburden wells, eight shallow bedrock wells, four intermediate bedrock wells, and four deep bedrock wells. Overburden wells are generally slotted around 2 to 12 feet below grade surface (bgs). Shallow bedrock wells are generally slotted within 15 to 30 feet bgs, intermediate bedrock wells within 35 to 60 feet bgs, and deep bedrock wells within 65 to 75 feet bgs.

One off-site monitoring well (MW-06-11R, see Figure 3) has accumulated NAPL and was therefore not sampled for chemical analysis. At this location, NAPL was measured and removed four times between November 2008 and April 2009, resulting in a cumulative removal of 3.6 gallons. During this period, the thickness of NAPL in this well has decreased from 10.60 ft to 2.70 ft. NAPL measurement and removal continues at this location approximately every two months.

On-site overburden wells contained BTEX with a maximum concentration of 5,100 ppb, which included benzene concentrations as high as 1,400 ppb, compared to its groundwater quality standard of 1 ppb.

Total PAH values ranging from 1.0 to 5,100 ppb, with naphthalene concentrations as high as 4,700 ppb, compared to its groundwater quality standard of 10 ppb. On-site shallow bedrock monitoring wells also contained BTEX up to 300 ppb, including benzene concentrations as high as 150 ppb, and total PAH values up to 210 ppb, including naphthalene as high as 65 ppb. On-site intermediate and deep monitoring wells did not contain detectable levels of BTEX or PAHs.

Two off-site overburden wells did not contain detectable BTEX, and contained low levels of PAHs (non-detect to 22 ppb), with individual PAHs at or below ambient water quality standards. Five off-site shallow bedrock wells contained BTEX ranging to 530 ppb, including benzene as high as 130 ppb, and total PAH values up to 2,000 ppb, including naphthalene as high as 1,700 ppb. Two off-site intermediate and deep bedrock wells did not contain detectable levels of BTEX, and a very low level of naphthalene (0.8 ppb).

Groundwater contamination identified during the RI/FS will be addressed in the remedy selection process.

Surface Water

Ten surface water samples were tested for BTEX, total PAH and cyanide. All levels of site-related contaminants were below detection limits. No site-related surface water contamination of concern was identified during the RI/FS. Therefore, no remedial alternatives need to be evaluated for surface water.

Sediments and Bank Soils

The Owasco Outlet sediments were investigated through a combination of probing and chemical analysis. Sediment probing was conducted along a series of transects, beginning approximately 500 feet upstream from the site and ending approximately 500 feet downstream of the site. A total of 338 probing stations were investigated along 46 transects, with a sheen generated at only one station located adjacent to the southern bank of the outlet.

Twenty sediment core samples were collected from four sediment depositional areas, as shown on Figures 4 and 5. These areas were located at the edge of water and bank locations, in flood plain areas, in depositional pockets near obstructions, as well as near outfall pipes. Sediment samples were taken from: 0 to 6 inches, 6 to 12 inches, and at additional 1-foot intervals where sediment was present. In addition, 15 bank soil samples and eight deep stream channel samples were collected for analysis. The results of the sediment investigation are shown on Figures 4 and 5. BTEX compounds were detected at low levels in all but one surficial sediment samples, but all BTEX values were below screening values for both acute and chronic toxicity to benthic aquatic life.

Surficial sediments next to the site ranged from 3.54 to 18.6 ppm total PAHs, and surficial sediments downstream of the site ranged from 8.06 to 14 ppm total PAHs. The highest upstream PAH concentrations, 943 ppm total PAHs, was located upstream and on the opposite bank from the site, adjacent to Outfall 12 (see Figure 5). Elevated concentrations of PAHs were also observed in upstream locations OO-SED-19 (65 ppm total PAHs) and OO-SED-20 (133 ppm total PAHs).

Samples collected from bank soils along the Owasco Outlet contained NAPL, hardened tar and/or exhibited sheens. Total BTEX in 11 of 15 bank soil samples ranged from 0.002 ppm to 71 ppm, and total PAHs in 14 of 15 samples ranged from 9.1 ppm to 62,000 ppm. The highest levels of both BTEX and PAHs were found at the SED-BO-10 location (see Figure 4).

Based on the pattern of NAPL migration observed in the upland and bank soils, an additional investigation was conducted of sediments in deeper waters of the stream channel adjacent to these source areas. Tar was observed in subsurface sediments, generally six to 18 inches below the surface, at most of these locations. BTEX was detected in six of the 8 deep channel samples, at levels below the screening values for acute and chronic toxicity. PAHs were detected in all eight samples, ranging from 0.7 ppm to 49,000 ppm. The highest levels of BTEX were found in sample SED-SO-38 and the highest levels of PAHs were found in sample SED-SO-36 (see Figure 4).

The results indicate that DNAPL which has spread out laterally in the upper few feet of overburden immediately above bedrock on the site has moved north and westward along the bedrock surface into Owasco Outlet sediments six to 18 inches below the sediment surface. The extent of DNAPL in the downstream direction is approximately 320 feet west of the former holder. This material is present as a hardened tar with a high viscosity, and its rate of movement is expected to be very slow.

Sediment contamination identified during the RI/FS will be addressed in the remedy selection process.

Soil Vapor/Sub-Slab Vapor/Air

This investigation evaluated whether VOCs from the MGP were present in soil vapor at the site and near the Auburn Tank building west of the site. The investigation found that several VOCs were present in all eight soil vapor samples collected at low concentrations, but the VOCs in only two of the samples, both collected on site, appeared to be related to the MGP. These two samples were collected in areas where coal tar was also observed. The NYSDOH concluded that the levels of VOCs detected in all of the samples were within the range that is typically observed in urban settings, and no further soil vapor investigations are warranted at the site at this time.

No site-related soil vapor or indoor air contamination of concern was identified during the RI/FS. Therefore, no remedial alternatives need to be evaluated for this medium.

5.2: 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 completion of the RI/FS. There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 4.2 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

No completed exposure pathways have been identified at this site. Groundwater at the site is not used for drinking water purposes since the area is served by public water. Exposure to contaminated soil by the general public is unlikely because the majority of the site is covered with stone and public access is limited. Workers who conduct ground intrusive activities on-site or off-site could potentially be exposed through dermal contact , incidental ingestion or inhalation. Similarly, these workers may also be exposed to coal tar in the subsurface and contaminated groundwater. The public may also potentially be exposed as a result of dermal contact with or incidental ingestion of contaminated sediments during recreational use of the Owasco Outlet adjacent to the site. The Department and NYSDOH have determined that no actions are necessary to address exposures to site-related contaminants due to soil vapor intrusion.

5.4: <u>Summary of Environmental Assessment</u>

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as impacts to other natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

The Auburn McMaster St. former MGP site is located in an urban setting, including commercial properties which are associated with large paved parking lots. These commercial establishments are intermingled with industrial properties and leave very limited opportunities for wildlife resources. The eastern portion of the site is comprised of upland forest, which provides wildlife habitat to songbirds, and small arboreal mammals. The small upland forest and streambank areas serve as a travel corridor for local fauna. The release of NAPL to the subsurface sediments of the Owasco Outlet has created an exposure pathway for fish and wildlife receptors. Surface sediments are impacted by both site-related and upstream sources of contamination. Other sources of contamination not related to the former MGP include twenty-four outfall pipes that were observed along the Outlet study area, which may have contributed to the elevated tPAH concentrations found in upstream sediments.

Subsurface soil contamination has negatively impacted the groundwater resource in the overburden and bedrock units beneath the site. The contaminated soil is an ongoing source of contamination to downgradient off-site groundwater.

The following environmental exposure pathways and ecological risks have been identified:

- Site contamination has adversely impacted the groundwater resource in the overburden and bedrock so as to render the aquifers unusable without treatment.

- Sediments in the adjacent stream contain levels of PAHs that may affect the viability of benthic organisms.

SECTION 6: SUMMARY OF THE REMEDIAL GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remedial goals for this site are:

Public Health Protection

Groundwater

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with contaminated groundwater.
- Prevent inhalation of contaminants from groundwater.

Soil

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of contaminants from the soil.

Sediment

- Prevent ingestion/direct contact with contaminated sediments.

Environmental Protection

Groundwater

- Restore the groundwater aquifer to meet ambient groundwater quality criteria to the extent practicable.

Soil

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Sediment

- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity and impacts from bioaccumulation through the aquatic food chain.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected 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. Potential remedial alternatives for the Auburn McMaster St. former MGP site were identified, screened and evaluated in the FS report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth 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.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated surface and subsurface soils, sediments, and groundwater at the site. These alternatives were developed for two distinct areas, and are presented as on-land alternatives, which includes both the site and a portion of the adjacent Auburn Tank property, and sediment alternatives.

A. On-land (ON) Alternatives:

Alternative ON-1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. There are no costs associated with this alternative.

Common elements of Alternatives ON-2 through ON-5

Institutional controls in the form of an environmental easement would be established to limit future use of the NYSEG property to commercial and industrial uses, and prohibit the use of on-site groundwater without treatment. Additionally, a site management plan (SMP) would be developed to include, but not be limited to, the following:

- identification of site locations where soil remains that does not meet unrestricted SCOs,
- installation and maintenance of a 12-inch soil cover,
- health and safety requirements for future site workers when working in the subsurface,

- protocols for groundwater monitoring and NAPL recovery,
- an excavation plan for conducting intrusive (e.g., subsurface excavation) activities at the site and managing potentially impacted material encountered during these activities, and
- submittal of periodic review reports to document that the institutional and engineering controls are maintained and remain effective.

A NAPL monitoring and recovery program would be implemented, consisting of periodically monitoring for the presence of NAPL and recovering any NAPL that collects within the wells. NAPL monitoring would be conducted at up to five existing bedrock monitoring wells on a quarterly basis for a minimum of two years (i.e., 8 monitoring events). Based on the NAPL recovery rates, an assessment would be made regarding the necessity of increased monitoring, continued monitoring or whether a reduced monitoring frequency was warranted.

These alternatives would include an evaluation of groundwater monitoring data to confirm that concentrations of contaminants in groundwater are being reduced via natural processes and as a result of NAPL recovery activities. The monitoring program would consist of periodically collecting and analyzing groundwater samples from up to 12 existing overburden and bedrock monitoring wells, and data trends would be reviewed to confirm that BTEX and PAH concentrations in groundwater are decreasing.

Alternative ON-2: Soil Cover

Under this alternative, a soil cover would be installed to eliminate potential exposure to impacted soil. The top 12 inches of existing surface cover material (i.e., gravel and soil) that contains COCs at concentrations greater than 6 NYCRR Part 375-6 SCOs for commercial use would be removed from the site to facilitate installation of a soil cover. The cover would not alter the existing grades or elevation of the project area. The approximate limits of the cover are shown in Figure 7. The soil cover would consist of a geotextile fabric covered by 12-inches of soil meeting SCOs for commercial use, crushed stone, or asphalt pavement, buildings constructed at the site could also serve as the cover. Along the southern edge of the Owasco Outlet, a vegetated ecological buffer zone approximately 25 feet wide would be incorporated into the soil cover. In this zone, the top two feet of soil would meet the SCO for the protection of ecological resource. In addition, the institutional controls, NAPL recovery, and monitored natural attenuation common elements described above would be included under this alternative.

This alternative would not require the removal/relocation of aboveground or underground utilities (e.g., overhead electrical transmission lines, sanitary sewer, etc.). This alternative would take about 4 months to design and 6 months to implement. The remedial goals for human health protection would be met in 3 months. The remediation goals for groundwater would not be met.

Present Worth: $1,440,000
Capital Cost: $850,000
Annual Costs:
(Years 1-2): $23,000
(Years 3-30): $51,000

Alternative ON-3: In-Situ Solidification of Contaminated Soil, NAPL Recovery, Monitored Natural Attenuation, Institutional Controls

This alternative would involve mixing Portland cement and other materials with soil to solidify the material in place to reduce the leachability and mobility of contaminants and NAPL. Based on the shallow depth to bedrock and nature of fill material present at the site, ISS would be conducted using excavator bucket mixing or shallow soil blending. Initially, approximately 8,500 CY of MGP impacted materials would be removed and disposed of off site. ISS treatment would be conducted in areas where NAPL or tar-like material was identified and where soil contains total PAHs and BTEX at concentrations greater than 500 ppm and 10 ppm, respectively. As defined in Alternative ON-2, the top 12 inches of site backfill would meet the requirements for a soil cover, and an ecological buffer zone would be constructed along the edge of the Owasco Outlet. In addition, the institutional controls, NAPL recovery, and monitored natural attenuation common elements described above would be included in this alternative.

Based on one sample with total PAHs slightly above the 500 ppm cleanup goal, the area north of the Auburn Tank building would be evaluated during a pre-design Investigation, as shown on Figure 8. ISS of this area would be based on implementability and degree of contamination found.

This alternative would take about 9 months to design and 9 months to implement. The remedial goals for soil would be achieved at the end of the remedial action. The remedial goals for overburden groundwater would be achieved in approximately ten years. It is uncertain when the remedial goals for bedrock groundwater would be achieved

Present Worth: $4,880,000
Capital Cost: $4,290,000
Annual Costs:
(Years 1-2): $23,000
(Years 3-30): $51,000

Alternative ON-4: Excavation of NAPL Contaminated Soil, NAPL Recovery, Institutional Controls

This alternative would involve excavating approximately 12,000 cubic yards (cy) of soil containing visual indications of NAPL and total PAHs and BTEX at concentrations greater than 500 ppm and 10 ppm, respectively. Excavated material would be staged, dewatered, and characterized to determine appropriate treatment, disposal and/or reuse requirements. Excavated material containing total PAHs and BTEX at concentrations below the remediation criteria could be reused as site subsurface backfill. Remaining excavation areas would be backfilled with imported material that meets regulatory requirements for clean backfill. As defined in Alternative ON-2, the top 12 inches of site backfill would meet the requirements for a soil cover, and an ecological buffer zone would be constructed along the edge of the Owasco Outlet. Institutional controls and groundwater monitoring (i.e., MNA) and bedrock NAPL recovery programs would be included in this alternative, based on the potential presence of NAPL within fractured bedrock. In addition, the institutional controls, NAPL recovery, and monitored natural attenuation elements described above would be implemented under this alternative. Similar to

Alternative ON-3, the area north of the Auburn Tank building would be evaluated during a pre-design Investigation, as shown on Figure 9. Excavation of this area would be based on implementability and the degree of contamination found.

This alternative would take about 9 months to design and 9 months to implement. The remedial goals for soil would be achieved at the end of the remedial action. The remedial goals for overburden groundwater would be achieved in approximately ten years. It is uncertain when the remedial goals for bedrock groundwater would be achieved.

Present Worth: $6,480,000
Capital Cost: $5,890,000
Annual Costs:
(Years 1-2): $23,000
(Years 3-30): $51,000

Alternative ON-5: Excavation of Soil Exceeding SCOs for Unrestricted Use, NAPL Recovery, Monitored Natural Attenuation

This alternative would excavate approximately 24,500 cy of soil containing VOCs, SVOCs, or inorganic constituents at concentrations greater than 6 NYCRR Part 375-6 unrestricted use SCOs. (See Figure 10) Similar to Onland Alternative ON-4, for ON-5 excavated material would be staged, dewatered, and characterized to determine appropriate treatment, disposal, and/or reuse requirements. The site would be restored with imported fill materials that meet the unrestricted use SCOs. In addition, the institutional controls, NAPL recovery, and monitored natural attenuation elements described above would be included in this alternative due to the continued presence of NAPL in fractured bedrock beneath the site.

This alternative would take about 9 months to design and 12 months to implement. The remedial goals for soil would be achieved at the end of the remedial action. The remedial goals for overburden groundwater would be achieved in approximately ten years. It is uncertain when the remedial goals for bedrock groundwater would be achieved.

Present Worth: $11,100,000
Capital Cost: $10,500,000
Annual Costs:
(Years 1-2): $23,000
(Years 3-30): $51,000

B. Sediment Alternatives:

Alternative SED-1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative SED-2: Monitored Natural Recovery

No active remedial activities would be conducted for this alternative. A monitoring plan would be developed and implemented on a periodic basis as part of the site management plan to assess whether naturally-occurring attenuation processes are effective in reducing contaminant levels in the sediments.

This alternative would take about 2 months to implement.

Present Worth: $450,000
Capital Cost: $68,000
Annual Costs: (Years 1-30): $50,000

Alternative SED-3: Capping

For this alternative, NAPL-containing sediments would be covered with an engineered cap to eliminate, to the extent practicable, the potential for NAPL exposure and migration due to physical forces in the Owasco Outlet. A reactive core mat or other suitable method would be used as the primary cap component, and would be placed in the area between bank observation boring BO-7 and stream channel observation sample SO-44 (see Figure 11), where NAPL was identified during the RI. The cap would also cover sediments with elevated concentrations of BTEX and PAHs which are co-located with the NAPL. The limits of the cap area would be more accurately determined in a pre-design investigation. Monitoring would be implemented to evaluate the long-term effectiveness and integrity of the cap as part of the site management plan.

This alternative would take about 3 months to design and 3 months to implement. RAOsnot a reasonable time frame The remedial goals for human health protection would be met in 3 months. The remediation goals for groundwater would not be met.

Present Worth: $1,020,000
Capital Cost: $395,000
Annual Costs: (Years 1-30): $50,000

Alternative SED-4: Removal of NAPL-Impacted Sediments and Restoration

Sediments which contain visible NAPL, produce a NAPL-related sheen when agitated in water, or which contain site-related PAH compounds at levels above upstream background levels would be removed (See Figure 12) . Removed sediment would be disposed off-site at a properly permitted facility.
The removal would also address elevated concentrations of BTEX and PAHs which are co-located with the NAPL . The limits of this excavation area would be more accurately determined in a pre-design investigation. Once the NAPL-containing sediments are removed, the excavated area would be restored to its current bed elevation/configuration with suitable clean material. This alternative would include an evaluation of the potential for NAPL to migrate from the bedrock beneath the Owasco Outlet and recontaminate sediments and if necessary, remedial measures to address this migration. Monitoring would be implemented to confirm the stability of the restored sediments as part of the SMP.

This alternative would take about 4 months to design and 4 months to implement. The remedial goals for sediments would be achieved at the end of the remedial action.

Present Worth: $1,440,000
Capital Cost: $1,310,000
Annual Costs: (Years 1-30): $31,000

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York 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.

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.

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

3. Short-term 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.

4. 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.

5. 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.

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.

7. Cost-Effectivness. 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 for each alternative are presented in Table 1.

This final criterion 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.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports 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.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternatives ON-4 and SED-4, as the remedy for this site. The elements of this remedy are described at the end of this section.

The proposed remedy is based on the results of the RI and the evaluation of alternatives presented in the FS. Based on the comparative evaluation of the onland and sediment alternatives, the combination of on-land Alternative ON-4 and sediment Alternative SED-4 is the preferred site-wide remedy. This combination would cost-effectively achieve the best balance of the seven evaluation criteria and would achieve the remedial goals in a reasonable time frame.

8.1 Basis for the Selection

Alternatives ON-4 and SED-4 are proposed since, as described below, they satisfy the threshold criteria and provide the best balance of the primary balancing criteria described in Section 7.2. They would achieve the remediation goals for the site by providing a permanent remedy and by reducing the toxicity, mobility, and volume of site media (soil, groundwater, sediment and NAPL) through removal and off-site disposal. The proposed remedy would greatly reduce the source of contamination to groundwater, and it would create the conditions needed to restore groundwater quality to the extent practicable. Alternative ON-1 would not comply with the threshold selection criteria because contamination would remain at the site with no controls. Alternatives ON-2 and ON-3 would also comply with the threshold selection criteria but would rely to a greater degree on long term monitoring and maintenance to be effective. Alternative ON-5 would achieve the threshold selection criteria to a similar degree as alternative ON-4, however the added cost of ON-5 is not justified because some NAPL contamination would remain in the bedrock due to the infeasibility of completely removing it. Long term monitoring and controls would be necessary for each of the alternatives under consideration.

Because Alternatives ON-2 to ON-5 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

Alternatives ON-2, ON-3, ON-4 and ON-5 all would have short-term impacts which would require varying actions to be controlled. Alternative ON-2 would have the fewest short term impacts due to the shorter time needed to implement this remedy, and since it requires the least amount of excavation into contaminated soil. Alternatives ON-3, ON-4 and ON-5, would have increasing short term impacts due to the greater time period needed to implement these remedies and the larger volumes of soil that would be excavated. The time needed to achieve the remedial goals would be the longest for Alternative ON-2 and similar for Alternatives ON-3, ON-4, and ON-5.

Achieving long-term effectiveness is best accomplished by excavation and removal of the contaminated overburden soils (Alternatives ON-4, and ON-5). Alternative ON-4 is favorable because it would result in the removal of approximately 92% of the NAPL-contaminated soil at the site, and almost all of the contaminated soil above the water table. Since most of the contamination is located in the northwestern portion of the site, within a five foot thick area on top of the bedrock, Alternative ON-4 would satisfy the remedial goals specified in Section 6. Alternative ON-2 would provide the least long term effectiveness because contamination would be managed in place under a soil cover, and the source of contamination to groundwater would remain. Alternative ON-3 would provide a higher level of long term effectiveness than ON-2, because the source of contamination would be solidified in place. Alternative ON-5 would provide a slightly higher level of long term effectiveness for the overburden soils than ON-4 by removing all soil containing contaminants that exceed the SCGs for unrestricted use. However Alternatives ON-3, ON-4 and ON-5 would each provide similar levels of long term effectiveness in remediating groundwater due to the technical limitations to removing the NAPL present in the fractured bedrock (none of the alternatives developed would address this).

Alternative ON-4 would provide a high level of reduction in waste toxicity, mobility and volume by excavating contaminated soil and removing it from the site. Alternative ON-3 would reduce the mobility of the same volume of contamination by treating it in place, while also lowering the toxicity by binding contaminants in the solidified matrix. Alternative ON–5 would address a slightly larger volume of contamination by excavating a larger quantity of soil containing low levels of contaminants. Alternative ON-2 is a isolation remedy that would not provide any treatment of the contamination.

Alternative ON-2 would be the easiest alternative to implement because no subsurface excavation would be performed. Alternative ON-3 would be more difficult to implement due to the need to excavate the upper layer of overburden soil and then solidify the underlying contamination. Alternative ON-4 would be more difficult to implement than ON-3 because of the need to excavate to the overburden/bedrock interface. Alternatives ON-4 and ON-5 would have similar implementation difficulties associated with large scale excavation adjacent to a surface water body and space limitations. ON-5 would be slightly more difficult to implement due to the higher volume of soil removed.

The cost of the alternatives varies significantly. Capping (Alternative ON-2) is the least expensive alternative, and ISS treatment (Alternative ON-3) is the next least costly remedy. The capital costs for Alternative ON-4 are significantly lower than the capital costs for Alternative ON-5. Alternative ON-5 would remove all of the contamination on-site, but the cost of this additional removal is approximately 70% greater than Alternative ON-4, and would remove an additional 8% volume of contaminated soil. Therefore, Alternative ON-5 is not as cost effective as Alternative ON-4.

Alternatives SED-1 and SED-2 would not comply with the threshold selection criteria because contaminated sediments would remain in place with no controls or active remediation. Alternative SED-3 would achieve the threshold criteria by capping, and would require long term monitoring and maintenance to be effective.

Alternative SED-4 would protect public health and the environment without the need for long term monitoring and maintenance.

Because SED-3 and SED-4 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting the remedy for the adjacent stream. Alternative SED-3 would have the fewest potential short term impacts due to the short time needed to implement the remedy and the ability to place a sediment cap without disturbing the sediments. Alternative SED-4 would have the greatest potential short term impacts of the sediment alternatives due to the need to excavate contaminated sediments from the stream. Potential adverse impacts include increased local traffic, potential odors, and releases to surface waters. However, these impacts can be minimized by careful construction practices.

Alternative SED-4 would provide the highest level of long-term effectiveness by excavating and removing nearly all contaminated stream sediments adjacent to the site. Alternative SED-3 would require long term monitoring and maintenance of the sediment cap to be effective. Alternative SED-2 would not be effective in the long term.

Alternative SED-4, excavation and off-site disposal, would provide the greatest reduction in the toxicity, mobility and volume of contaminated sediments by removing them from the stream. None of the other alternatives would reduce the toxicity, mobility or volume of the contamination through treatment.

Alternative SED-3 would be the next easiest alternative to implement because no sediments would be removed, and a sediment cap would be installed. SED-4 would be the most difficult alternative to implement because sediments would be removed from the stream.

The cost of the alternatives varies slightly. Capping (Alternative SED-3) has a significantly lower capital cost than excavation (Alternative SED-4). However the long term monitoring and maintenance costs of the sediment cap would result in a present worth cost that is approximately 30% less than the cost of sediment removal.

The estimated present worth cost to implement the remedy is $7,920,000. The cost to construct the remedy is estimated to be $6,900,000 and the estimated average annual costs for 30 years is $82,000.

8.2 The elements of the proposed remedy are as follows:

A. Remedial Actions (See Figures 9 and 12):

1. A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. A sampling program would be undertaken in the Owasco outlet to delineate the sediment area of concern for removal. This sampling would be performed using equipment capable of evaluating sediment efficiently to the bedrock.

2. Excavation and off-site disposal of surface and subsurface soil, structures and piping from areas where the soil contains visible tar or NAPL and/or total PAHs and BTEX at concentrations greater than the remediation criteria of 500 and 10 ppm, respectively. Soils exhibiting odors, staining or sheens would not be considered for removal as visual NAPL, but would be removed if they exceed

the 500 ppm PAH criterion.

3. Excavated materials that are below the remediation criteria would be stockpiled and evaluated for reuse as backfill. The excavation would be backfilled with stockpiled soils and imported soil that meets the Department's criteria for backfill or local site background.

4. Excavation and off-site disposal of sediments as determined in a pre-design investigation which contain NAPL, visible tar, produce a tar-related sheen when agitated in water, or which contain site-related PAH compounds that exceed background levels. Restoration of the stream bed and banks in compliance with the substantive requirements of 6NYCRR Part 608.

B. Engineering Controls:

1. NAPL recovery wells would be installed to provide for the periodic measurement and removal of accumulated NAPL. The locations and number of NAPL recovery wells, along with the method and frequency of NAPL removal, would be determined during the remedial design and remedial action phases. The bedrock surface and joints would be inspected and mapped during the soil excavation to determine the potential locations of NAPL recovery wells. Recovered NAPL would be transported off site for treatment or disposal. The operation of the NAPL recovery wells would continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

2. A soil cover would be placed over the remediated area consisting of a geotextile demarcation layer overlain by a 12-inch thick layer of soil to match the existing site grade, which meets Part 375-6.8 requirements for commercial use. Areas of the site to be developed could be covered with asphalt paving, crushed stone or buildings as needed for the future use of the site. Construction of an ecological buffer zone along the southern edge of the Owasco Outlet, approximately 25 feet wide measured laterally from the high water level, would be provided as part of the soil cover. The top two feet of soil in this zone would consist of soils that meet the SCO for protection of ecological resources, and would be vegetated.

C. Institutional Controls

1. Imposition of an institutional control in the form of an environmental easement that would require (a) limiting the use and development of the property to commercial use, which would also permit industrial use; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and (d) NYSEG or the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

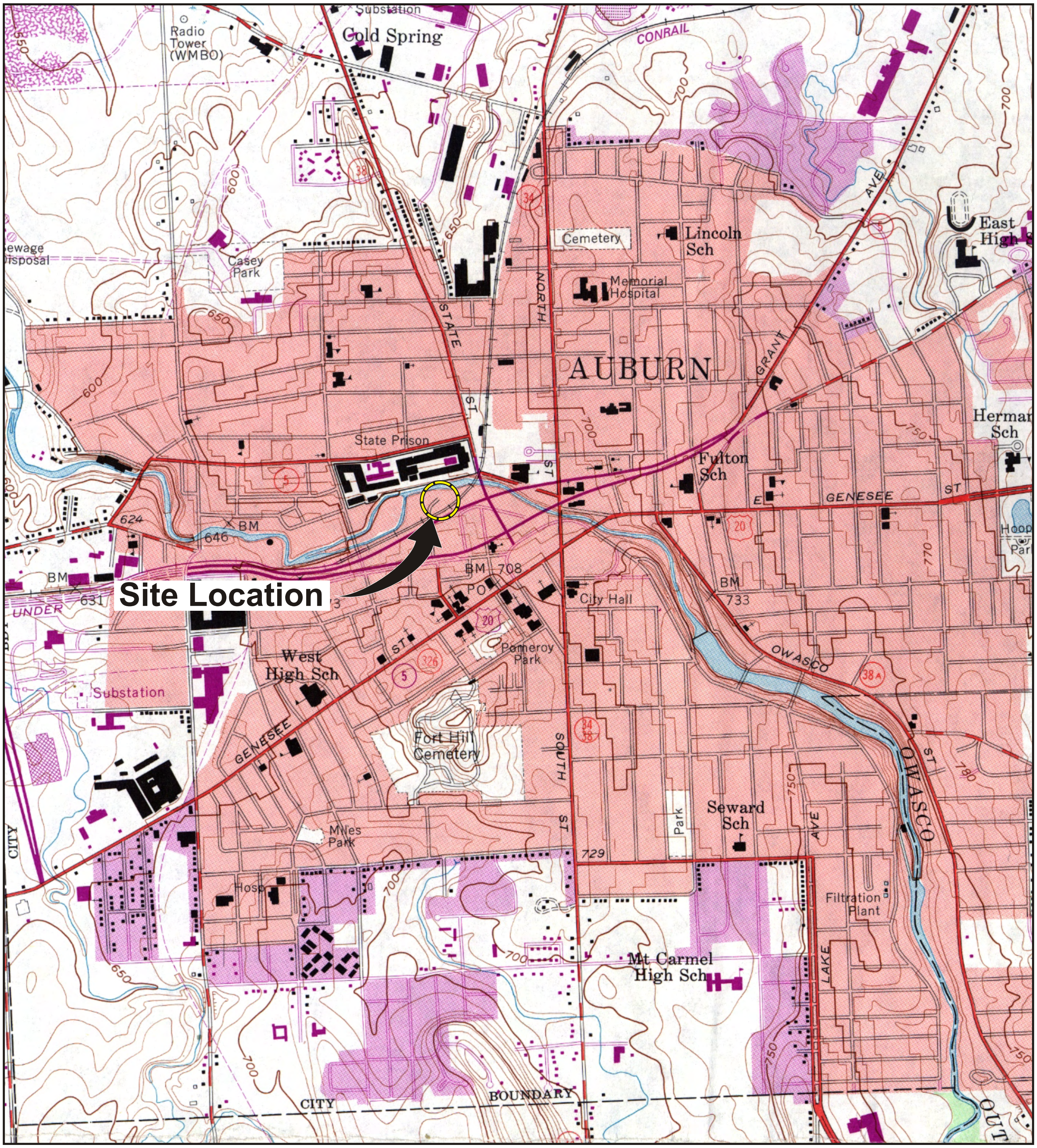
2. Development of a site management plan which would include the following: (a) provision for the management of the final cover system to restrict excavation below the soil cover's demarcation layer, pavement, or buildings; (b) an Excavation Plan to detail how excavation below the cover system would proceed and how any excavated soil would be tested, properly handled to protect the health and safety of workers and the nearby community, and properly managed in a manner acceptable to the Department; (c) evaluation of the potential for vapor intrusion for any buildings

developed on the site, including provision for mitigation of any impacts identified; (d) monitoring of stream bank, groundwater and sediment quality; (e) identification of any use restrictions on the site and adjacent properties; and (f) provisions for the continued proper operation and maintenance of the components of the remedy.

3. NYSEG or the property owner would provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submission would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

Table 1
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
ON-1 - No Action	0	0	0
ON-2 Soil Cover, NAPL Recovery, **Institutional Controls**	$850,000	Years 1-2 $23,000 Years 3-30 $51,000	$1,440,000
ON-3: In-Situ Solidification, NAPL Recovery, **Institutional Controls**	$4,290,000	Years 1-2 $23,000 Years 3-30 $51,000	$4,880,000
ON-4: Removal of MGP contaminated Soil, NAPL Recovery, **Institutional Controls**	$5,890,000	Years 1-2 $23,000 Years 3-30 $51,000	$6,480,000
ON-5: Removal of Soil Exceeding Unrestricted Use SCOs, NAPL Recovery, **Institutional Controls**	$10,500,000	Years 1-2 $23,000 Years 3-30 $51,000	$11,100,000
SED-1: No Action	0	0	0
SED-2: Monitored Natural Recovery	$68,000	$50,000	$850,000
SED-3: Capping	$395,000	$50,000	$1,020,000
SED-4: Removal of NAPL-Contaminated Sediments	$1,010,000	$31,000	$1,440,000
Recommended Alternatives ON-4 & SED-4:	$6,900,000	Years 1-2 $54,000 Years 3-30 $82,000	$7,920,000



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., AUBURN, NY, 1954, PHOTOREVISED 1980.

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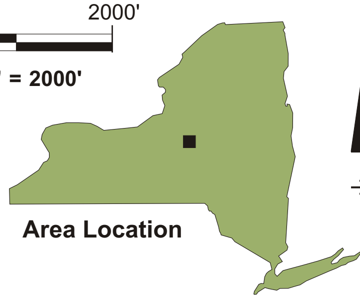
Approximate Scale: 1" = 2000'



Area Location

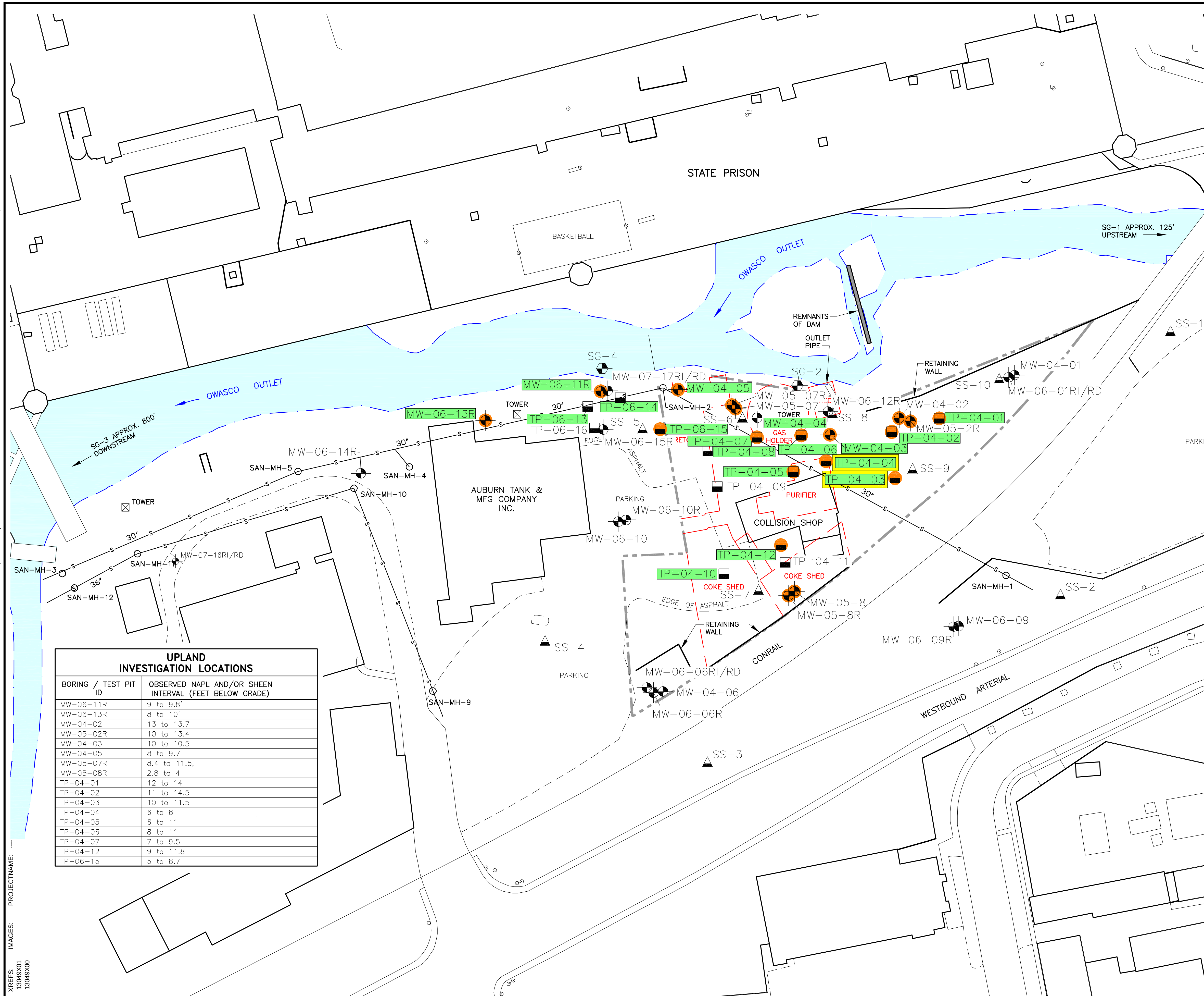
NEW YORK STATE ELECTRIC & GAS
AUBURN (MCMASTER STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

SITE LOCATION MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
1

06/12/07 SYR-D85-DJH
13049006/13049n01.cdr



UPLAND INVESTIGATION LOCATIONS

BORING / TEST PIT ID	OBSERVED NAPL AND/OR SHEEN INTERVAL (FEET BELOW GRADE)
MW-06-11R	9 to 9.8'
MW-06-13R	8 to 10'
MW-04-02	13 to 13.7
MW-05-02R	10 to 13.4
MW-04-03	10 to 10.5
MW-04-05	8 to 9.7
MW-05-07R	8.4 to 11.5,
MW-05-08R	2.8 to 4
TP-04-01	12 to 14
TP-04-02	11 to 14.5
TP-04-03	10 to 11.5
TP-04-04	6 to 8
TP-04-05	6 to 11
TP-04-06	8 to 11
TP-04-07	7 to 9.5
TP-04-12	9 to 11.8
TP-06-15	5 to 8.7

LEGEND:

- MW-04-01 MONITORING WELL
- TP-04-01 TEST PIT
- SS-1 SURFACE SOIL SAMPLE
- SG-1 STAFF GAUGE
- WATER EDGE
- SITE BOUNDARY
- HISTORICAL MGP STRUCTURE
- SANITARY PIPELINE
- SAN-MH-1 SANITARY MANHOLE
- COAL TAR NAPL OBSERVED IN OVERBURDEN (ANY VISUAL INDICATIONS)
- SUBSURFACE SOIL SAMPLE FROM THIS LOCATION EXCEEDED 6NYCRR PART 375-6 RESTRICTED USE SCOs FOR PROTECTION OF PUBLIC HEALTH-COMMERCIAL USE FOR ONE OR MORE PAHs
- SUBSURFACE SOIL SAMPLE FROM THIS LOCATION EXCEEDED 6NYCRR PART 375-6 RESTRICTED USE SCOs FOR PROTECTION OF PUBLIC HEALTH-COMMERCIAL USE FOR ONE OR MORE BTEX COMPOUNDS

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/18/04, NAMED AUBMCMAS.DWG. INTO FILE NAMED BASE_MAP.DWG, ALSO PROVIDED BY NYSEG ON 2/18/04. LAST REVISION DATE AND COORDINATE POSITIONING OF THESE FILES UNKNOWN.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06

0 80' 160'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

SUBSURFACE SOIL - NAPL OBSERVATIONS AND BTEX/PAH EXCEEDENCES

ARCADIS

FIGURE
2

CITY:SYRACUSE DIV/GROUP:141 DB:NJR RCA WLJ LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR: ON=*;OFF=*REF*
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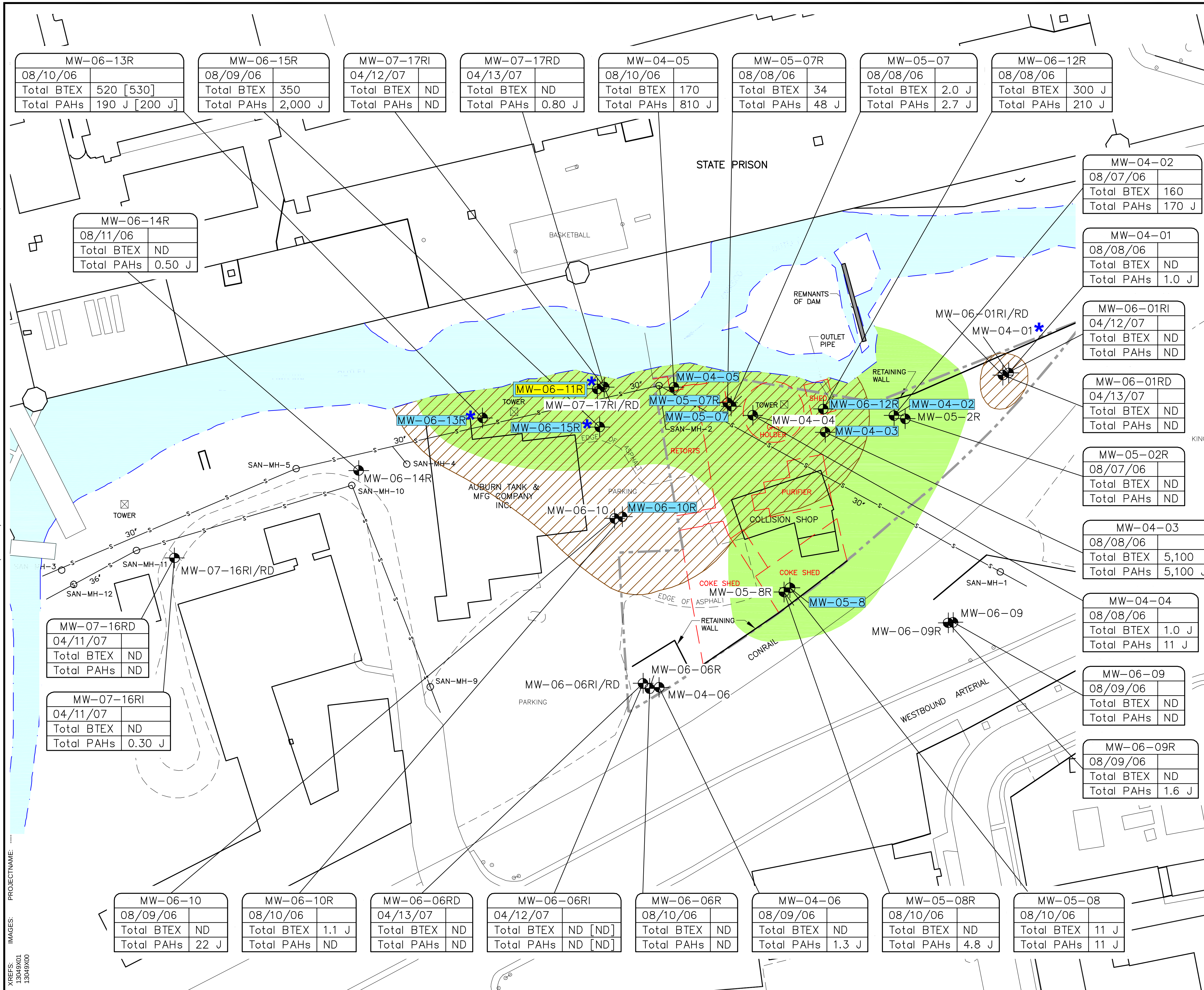

LEGEND:

- MW-04-01 MONITORING WELL
- WATER EDGE
- SITE BOUNDARY
- HISTORICAL MGP STRUCTURE
- SANITARY PIPELINE
- SAN-MH-1 SANITARY MANHOLE
- MOST RECENT GROUNDWATER SAMPLE EXCEEDS THE NYSDEC CLASS GA GROUNDWATER STANDARD OR GUIDANCE VALUE (TOGS 1.1.1.) FOR ONE OR MORE BTEX OR PAH CONSTITUENTS.
- NAPL PRESENT IN WELL. GROUNDWATER SAMPLE WAS NOT COLLECTED.
- SHALLOW BEDROCK WITH GROUNDWATER EXCEEDING STANDARDS OR GUIDANCE VALUES.
- OVERBURDEN GROUNDWATER EXCEEDING STANDARDS OR GUIDANCE VALUES.

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/07/07, NAMED AUBMACMAS2.DWG.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. J = THE COMPOUND WAS POSITIVELY IDENTIFIED IN ONE OR MORE CONSTITUENTS, HOWEVER, THE ASSOCIATED NUMERIC VALUE IS AN ESTIMATED CONCENTRATION ONLY.
4. ND = NOT DETECTED.
5. ANALYTICAL RESULTS EXPRESSED AS MICROGRAMS PER LITER (ug/L).
6. * WHERE GROUNDWATER ANALYTICAL DATA DOES NOT EXIST, EXCEEDANCE OF GROUNDWATER STANDARDS OR GUIDANCE VALUES IN OVERBURDEN OR BEDROCK IS INFERRED BASED ON VISUAL OBSERVATIONS OF SAMPLES COLLECTED FROM THE OVERBURDEN OR BEDROCK. THE EXCEEDANCE IS NOT BASED ON ANALYTICAL DATA FROM GROUNDWATER SAMPLES.

0 80' 160'

GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

GROUNDWATER SAMPLING RESULTS

ARCADIS

FIGURE
3

CITY:SYRACUSE DIV/GROUP:141 DB:NJR RCA WLJ LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:ON=*;OFF=*REF*
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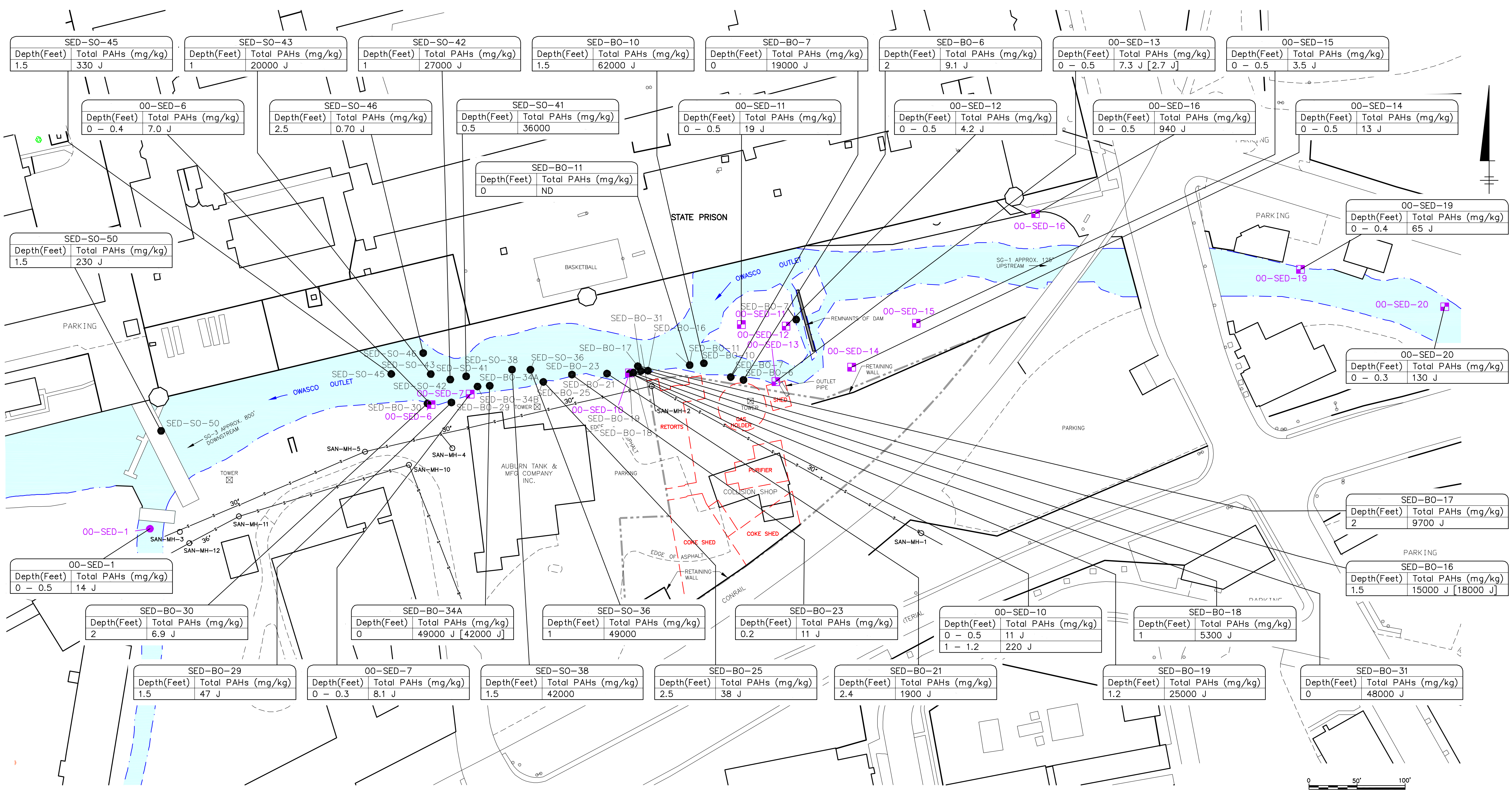


LEGEND:

- 00-SED-11 — SURFICIAL SEDIMENT SAMPLING LOCATION
- SED-SO-47 — DEEP SEDIMENT SAMPLING LOCATION
- WATER EDGE
- SITE BOUNDARY
- HISTORICAL MGP STRUCTURE
- SANITARY PIPELINE
- SAN-MH-1 — SANITARY MANHOLE

NOTES:

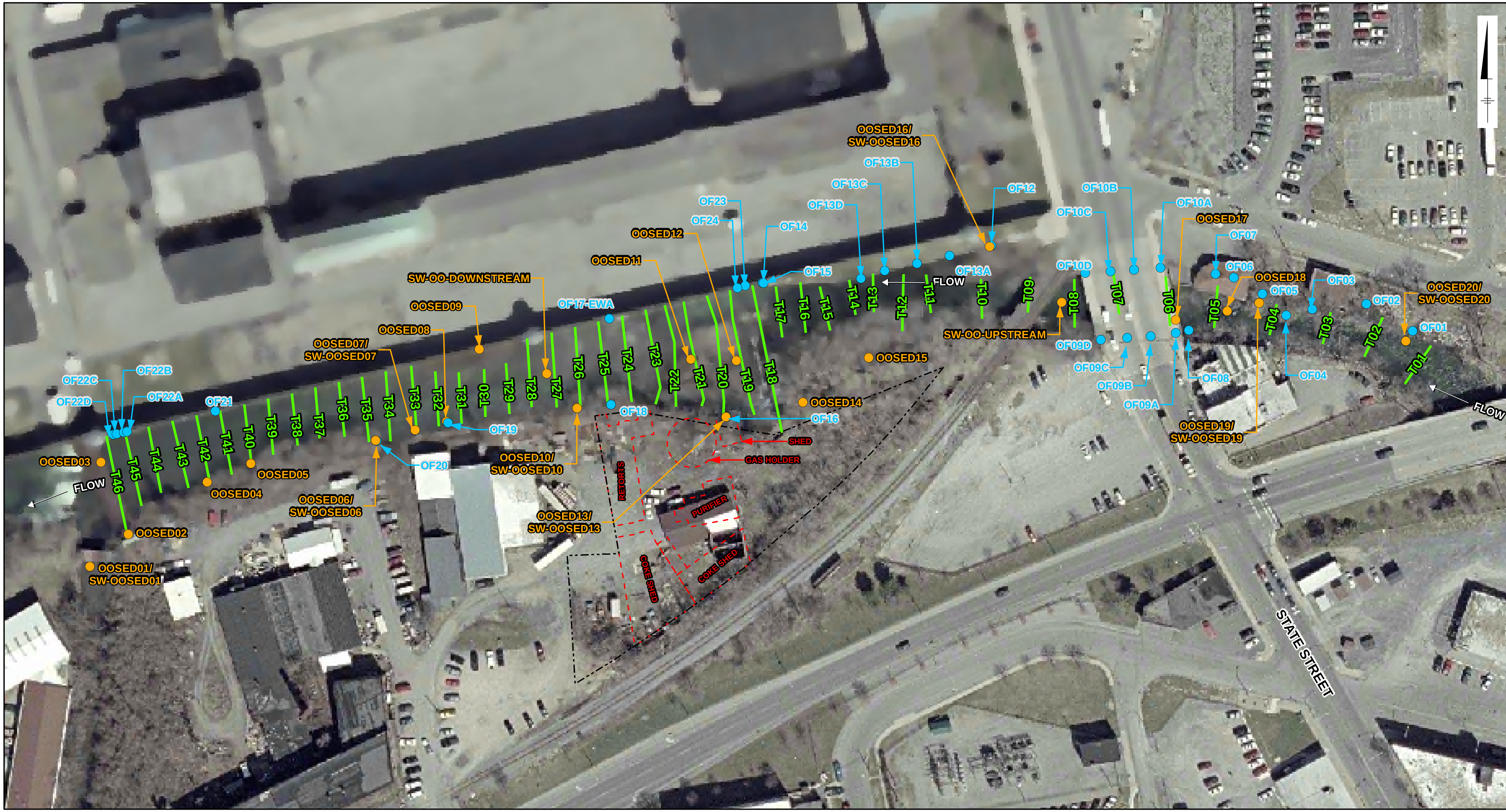
1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/18/04, NAMED AUBMCMAS.DWG, INTO FILE NAMED BASE_MAP.DWG, ALSO PROVIDED BY NYSEG ON 2/18/04. LAST REVISION DATE AND COORDINATE POSITIONING OF THESE FILES UNKNOWN.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06
3. FIGURE ONLY ILLUSTRATES INVESTIGATION LOCATIONS WHERE SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS.

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

TOTAL PAH CONCENTRATIONS IN SEDIMENT

ARCADIS

FIGURE 4



LEGEND:

- OUTFALL
- SEDIMENT AND/OR SURFACE WATER SAMPLE LOCATION
- SEDIMENT PROBING TRANSECT
- FLOW DIRECTION
- HISTORIC MGP STRUCTURES
- SITE BOUNDARY

NOTES:

1. AERIAL PHOTOGRAPHY PROVIDED BY THE NEW YORK STATE GIS CLEARINGHOUSE.
2. AERIAL PHOTOGRAPHY FLOWN IN APRIL 2003.

0 100 200 Feet

GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE

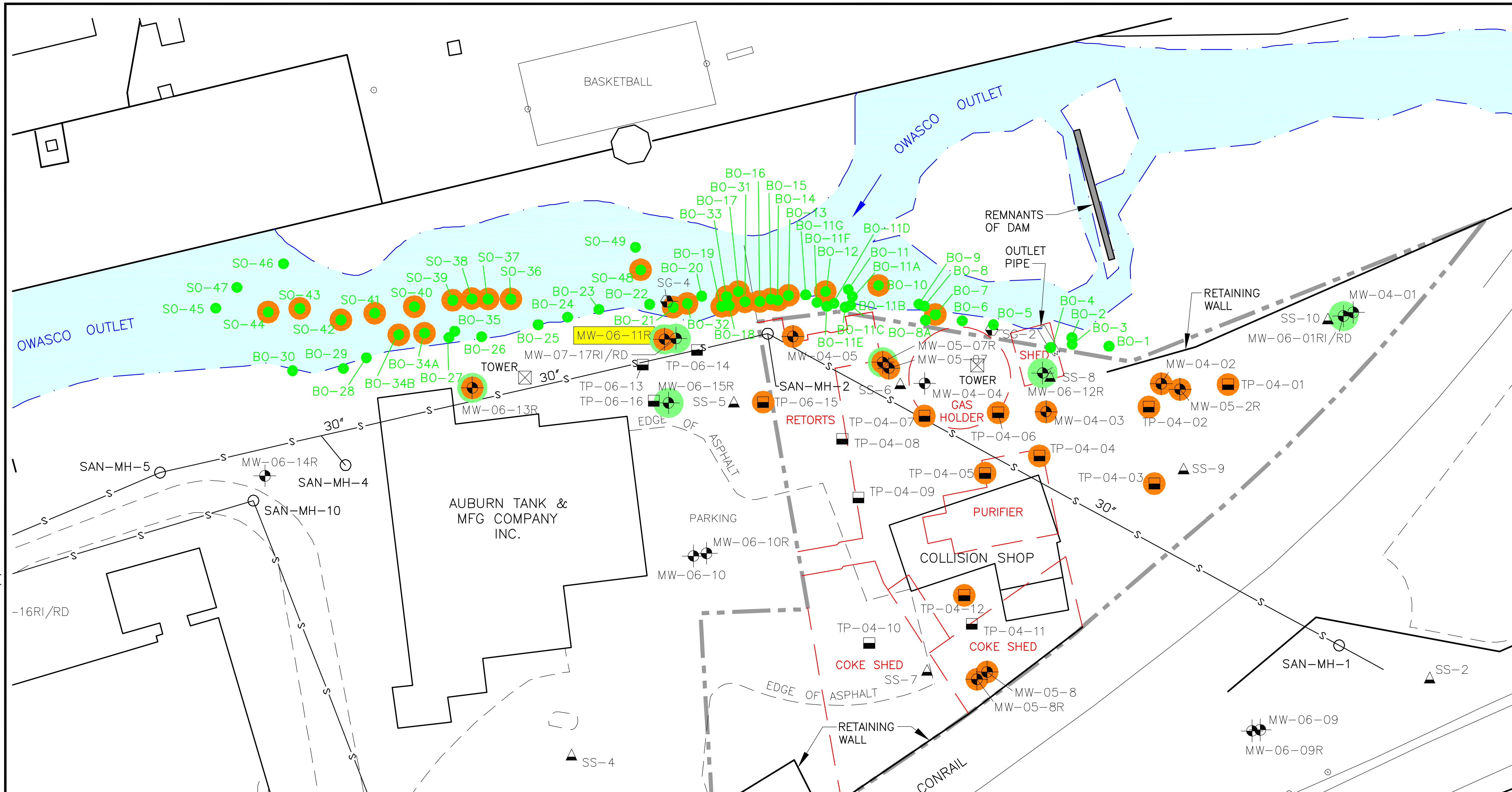
REMEDIAL INVESTIGATION

SEDIMENT PROBING TRANSECTS AND SEDIMENT AND SURFACE WATER SAMPLE LOCATIONS

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE 5

SYR-85 MTK KEW PGL
NYSEG (13049.006)
Q:\NYSEG\AuburnMGP\RI_WorkPlan\mxd\Survey Points Inc SW_v5.mxd - 6/18/2007 @ 1:12:46 PM



LEGEND:

- MW-04-01 MONITORING WELL
- TP-04-01 TEST PIT
- SS-1 SURFACE SOIL SAMPLE
- SG-1 STAFF GAUGE
- SO-47 STREAM CHANNEL OBSERVATION
- BO-1 BANK OBSERVATION
- WATER EDGE
- SITE BOUNDARY
- HISTORICAL MGP STRUCTURE
- SANITARY PIPELINE
- SAN-MH-1 SANITARY MANHOLE
- COAL TAR NAPL/SHEEN OBSERVED IN BEDROCK
- COAL TAR NAPL OBSERVED IN OVERBURDEN (ANY VISUAL INDICATIONS)
- MEASURABLE COAL TAR NAPL OBSERVED IN WELL

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/18/04, NAMED AUBMCMAS.DWG. INTO FILE NAMED BASE_MAP.DWG, ALSO PROVIDED BY NYSEG ON 2/18/04. LAST REVISION DATE AND COORDINATE POSITIONING OF THESE FILES UNKNOWN.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.

0 30' 60'
GRAPHIC SCALE

UPLAND INVESTIGATION LOCATIONS

BORING / TEST PIT ID	OBSERVED NAPL AND/OR SHEEN INTERVAL (FEET BELOW GRADE)
MW-06-11R	9 to 11.8, 13.4 to 13.9, 17.5 to 18.2
MW-06-12R	13 to 14.2, 17.5
MW-06-13R	11.5, 13
MW-06-15R	8 to 10', 13.5 to 14.3, 16.7 to 17
MW-06-01RI/RD	21 to 30
MW-07-17RI/RD	11.7, 13 to 15, 18
MW-04-02	13 to 13.7
MW-05-02R	10 to 13.4
MW-04-03	10 to 10.5
MW-04-05	8 to 9.7
MW-05-07R	8.4 to 11.5, 12.8 to 16
MW-05-08R	2.8 to 4
TP-04-01	12 to 14
TP-04-02	11 to 14.5
TP-04-03	10 to 11.5
TP-04-04	6 to 8
TP-04-05	6 to 11
TP-04-06	8 to 11
TP-04-07	7 to 9.5
TP-04-12	9 to 11.8
TP-06-15	5 to 8.7

NAPL AND/OR SHEEN IN BEDROCK WAS OBSERVED ON FRACTURE SURFACES AND/OR DRILLING RETURN WATER IN THE SPECIFIED INTERVAL.

OWASCO OUTLET INVESTIGATION LOCATIONS

BANK OR STREAM CHANNEL SAMPLING ID	OBSERVED NAPL AND/OR HARDENED TAR INTERVAL (FEET BELOW GRADE)
BO-7	Hardened Tar*
BO-10	1.0 to 2.0*
BO-12	1.5 to 2.0*
BO-13	1.5 to 2.0*
BO-14	1.5 to 2.0*
BO-16	1.5*
BO-17	1.5 to 2.5*
BO-18	1.0 to 1.4*
BO-19	1.2 to 2.0*
BO-21	2.4 to 3.0*
BO-31	Hardened Tar*
BO-32	Hardened Tar*
BO-33	Hardened Tar*
BO-34	Hardened Tar*
SO-36	1.0 to 1.5*
SO-37	1.0 to 1.5*
SO-38	1.5 to 2.0*
SO-39	1.5 to 2.0*
SO-40	0.5 to 1.0*
SO-41	0.5 to 1.0*
SO-42	1.0 to 1.5*
SO-43	1.0 to 1.5*
SO-44	1.0 to 1.5*
SO-48	1.0 to 1.5*

* SAMPLING METHOD UNABLE TO REACH BOTTOM OF OBSERVED NAPL INTERVAL.

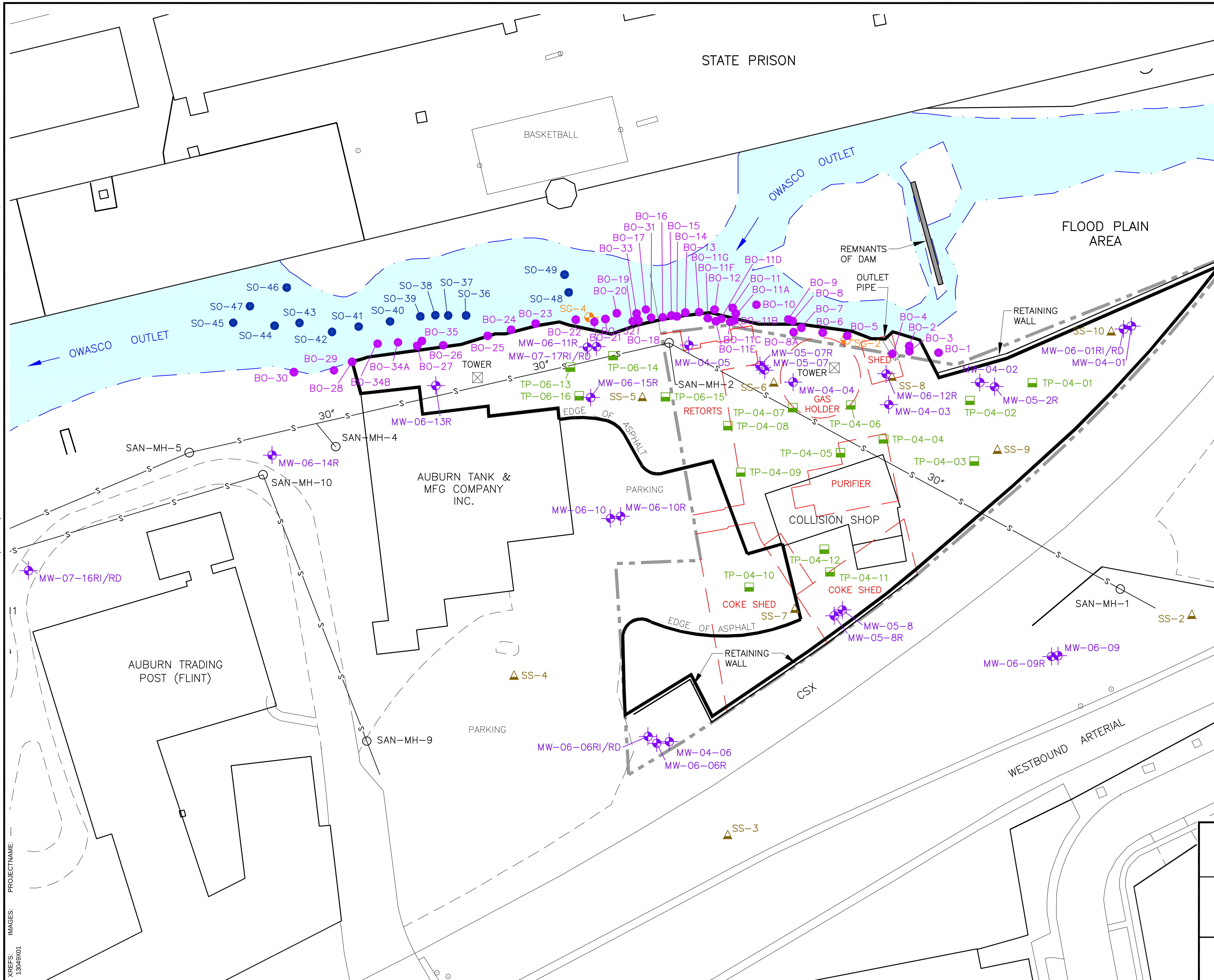
NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

NAPL/SHEEN OBSERVATIONS

ARCADIS

FIGURE
6

SYR-85-NJR RCA MLJ LAYER: ON=*, OFF=REF (FRZ)
G:\ENVCAD\SYRACUSE\ACT\B0013049\0001\00008\DWG\13049B01.DWG SAVED:12/2/2008 10:38 AM LAYOUT:2-1 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED:1/7/2009 5:35 PM BY:PLISTER
PROJECTNAME:---- IMAGES: XREFS: 13049X01 13049X00



LEGEND:

MW–04–01	MONITORING WELL
TP–04–01	TEST PIT
SS–1	SURFACE SOIL SAMPLE
SG–1	STAFF GAUGE
SO–47	STREAM CHANNEL OBSERVATION
BO–1	BANK OBSERVATION
	WATER EDGE
	SITE BOUNDARY
	HISTORICAL MGP STRUCTURE
—S—	SANITARY PIPELINE
SAN–MH–1	SANITARY MANHOLE
	APPROXIMATE EXTENT OF SOIL CAP

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/07/07, NAMED AUBMACMAS2.DWG.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. PROPERTY LINES FOR AUBURN TANK AND AUBURN TRADING POST PROPERTY DIGITIZED FROM TAX MAP 115.52–1, PROVIDED BY NYSEG ON 10/18/06.
4. HORIZONTAL DATUM = NAD 83.

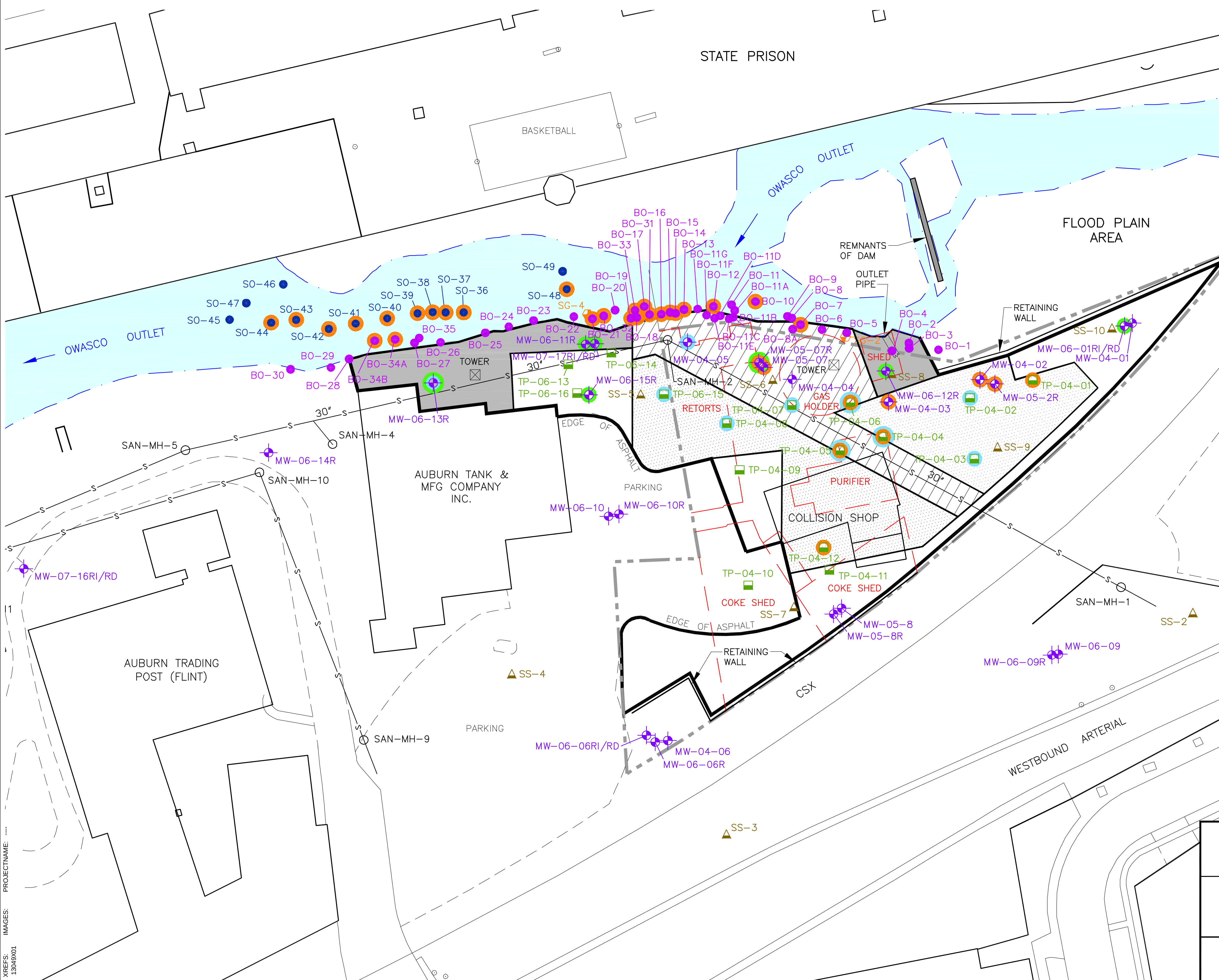
0 60' 120'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

ONLAND ALTERNATIVE ON-2

ARCADIS

FIGURE
7



LEGEND:

MW-04-01	MONITORING WELL
TP-04-01	TEST PIT
SS-1	SURFACE SOIL SAMPLE
SG-1	STAFF GAUGE
SO-47	STREAM CHANNEL OBSERVATION
BO-1	BANK OBSERVATION
	WATER EDGE
	PROPERTY BOUNDARY
	HISTORICAL MGP STRUCTURE
S	SANITARY PIPELINE
SAN-MH-1	SANITARY MANHOLE
	APPROXIMATE LIMITS OF ISS FOR SOIL CONTAINING NAPL (AMOUNTS GREATER THAN TRACE) AND/OR SOIL CONTAINING TOTAL PAHs GREATER THAN 500 PPM AND BTEX GREATER THAN 10 PPM
	APPROXIMATE EXCAVATION LIMITS OF SOIL CONTAINING NAPL (AMOUNTS GREATER THAN TRACE) AND/OR SOIL CONTAINING TOTAL PAHs GREATER THAN 500 PPM AND BTEX GREATER THAN 10 PPM
	APPROXIMATE EXTENT OF SOIL CAP
	AREA TO BE FURTHER EVALUATED AS PART OF PRE-DESIGN INVESTIGATION ACTIVITIES
	BANK OR STREAM CHANNEL OBSERVATION LOCATION CONTAINING NAPL AND/OR HARDENED TAR OR OVERBURDEN INVESTIGATION LOCATION CONTAINING NAPL (QUANTITIES GREATER THAN TRACE AMOUNTS)
	BEDROCK INVESTIGATION LOCATION CONTAINING NAPL OR SHEENS
	OVERBURDEN INVESTIGATION LOCATION CONTAINING TOTAL PAHs GREATER THAN 500 PPM AND BTEX GREATER THAN 10 PPM

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/07/07, NAMED AUBMACMAS2.DWG.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. PROPERTY LINES FOR AUBURN TANK AND AUBURN TRADING POST PROPERTY DIGITIZED FROM TAX MAP 115.52-1, PROVIDED BY NYSEG ON 10/18/06.
4. HORIZONTAL DATUM = NAD 83.
5. OUTLET BANK MATERIALS WILL BE ADDRESSED AS PART OF THE SEDIMENT PORTION OF THE SITE-WIDE REMEDY.

0 60' 120'

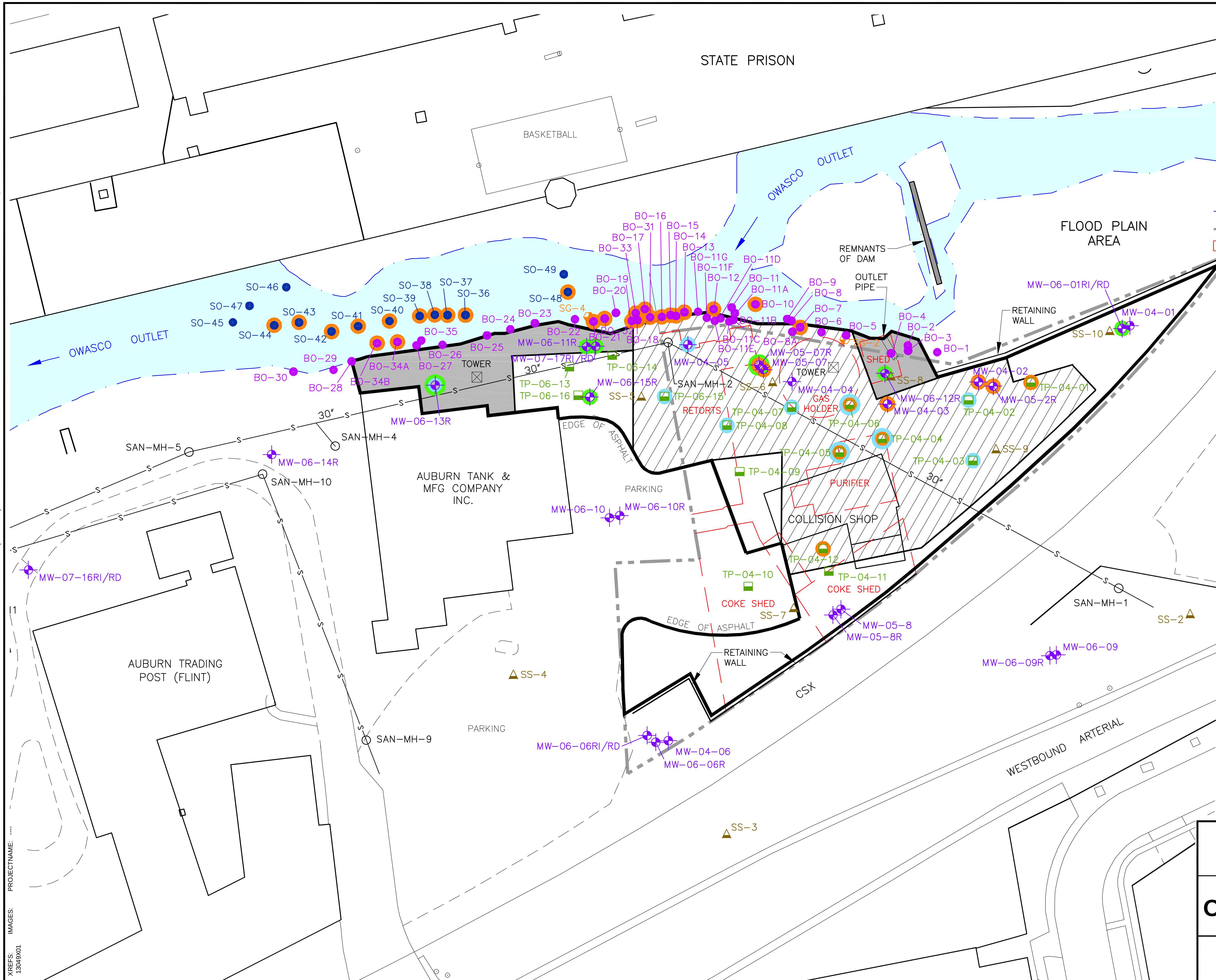
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

ONLAND ALTERNATIVE ON-3

ARCADIS

FIGURE
8



LEGEND:

- MW-04-01 MONITORING WELL
- TP-04-01 TEST PIT
- SS-1 SURFACE SOIL SAMPLE
- SG-1 STAFF GAUGE
- SO-47 STREAM CHANNEL OBSERVATION
- BO-1 BANK OBSERVATION
- WATER EDGE
- PROPERTY BOUNDARY
- HISTORICAL MGP STRUCTURE
- S SANITARY PIPELINE
- SAN-MH-1 SANITARY MANHOLE
- APPROXIMATE EXCAVATION LIMITS OF SOIL CONTAINING NAPL (AMOUNTS GREATER THAN TRACE) AND/OR SOIL CONTAINING TOTAL PAHs GREATER THAN 500 PPM AND BTEX GREATER THAN 10 PPM
- APPROXIMATE EXTENT OF SOIL CAP
- AREA TO BE FURTHER EVALUATED AS PART OF PRE-DESIGN INVESTIGATION ACTIVITIES
- BANK OR STREAM CHANNEL OBSERVATION LOCATION CONTAINING NAPL AND/OR HARDENED TAR OR OVERBURDEN INVESTIGATION LOCATION CONTAINING NAPL (QUANTITIES GREATER THAN TRACE AMOUNTS)
- BEDROCK INVESTIGATION LOCATION CONTAINING NAPL OR SHEENS
- OVERBURDEN INVESTIGATION LOCATION CONTAINING TOTAL PAHs GREATER THAN 500 PPM AND BTEX GREATER THAN 10 PPM

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/07/07, NAMED AUBMACMAS2.DWG.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. PROPERTY LINES FOR AUBURN TANK AND AUBURN TRADING POST PROPERTY DIGITIZED FROM TAX MAP 115.52-1, PROVIDED BY NYSEG ON 10/18/06.
4. HORIZONTAL DATUM = NAD 83.
5. OUTLET BANK MATERIALS WILL BE ADDRESSED AS PART OF THE SEDIMENT PORTION OF THE SITE-WIDE REMEDY.

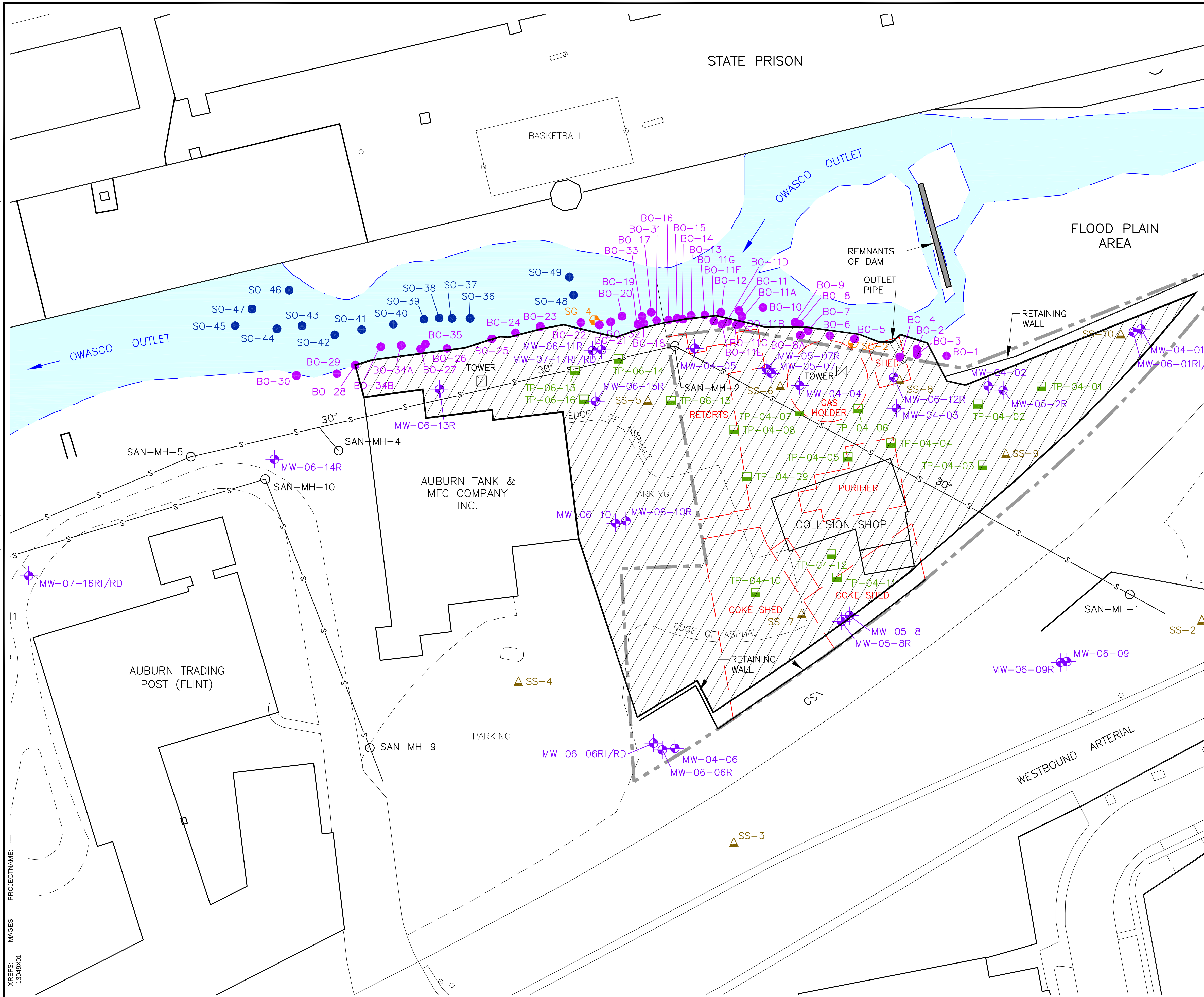
0 60' 120'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

ONLAND ALTERNATIVE ON4

ARCADIS

FIGURE
9



LEGEND:

MW-04-01 MONITORING WELL

TP-04-01 TEST PIT

SS-1 SURFACE SOIL SAMPLE

SG-1 STAFF GAUGE

SO-47 STREAM CHANNEL OBSERVATION

BO-1 BANK OBSERVATION

WATER EDGE

SITE BOUNDARY

HISTORICAL MGP STRUCTURE

SANITARY PIPELINE

SAN-MH-1 SANITARY MANHOLE

APPROXIMATE EXCAVATION LIMITS OF SOIL CONTAINING CONSTITUENTS AT CONCENTRATIONS GREATER THAN 6NYCRR PART 375-6 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES.

NOTES:

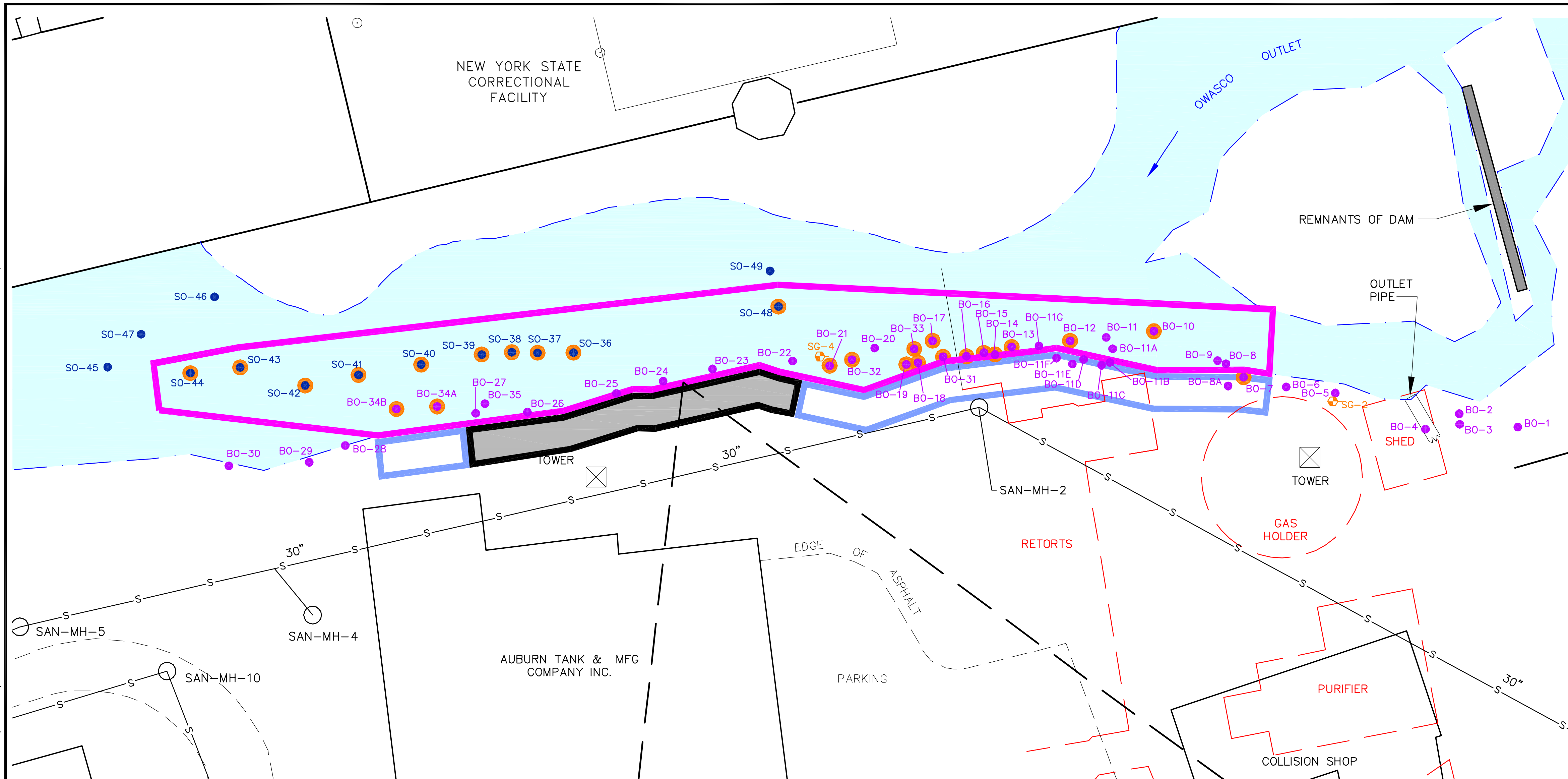
1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/07/07, NAMED AUBMACMAS2.DWG.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. PROPERTY LINES FOR AUBURN TANK AND AUBURN TRADING POST PROPERTY DIGITIZED FROM TAX MAP 115.52-1, PROVIDED BY NYSEG ON 10/18/06.
4. HORIZONTAL DATUM = NAD 83.

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

ONLAND ALTERNATIVE ON-5

ARCADIS

FIGURE
10



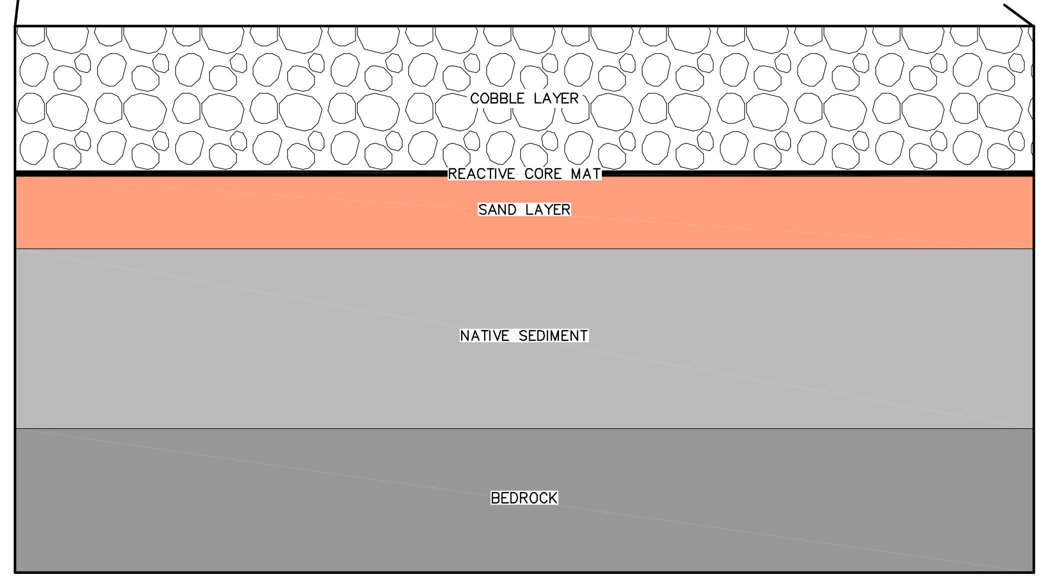
LEGEND:

- SG-2 STAFF GAUGE
- SO-47 STREAM CHANNEL OBSERVATION
- BO-1 BANK OBSERVATION
- WATER EDGE
- HISTORICAL MGP STRUCTURE
- SANITARY PIPELINE
- SAN-MH-1 SANITARY MANHOLE
- BANK OR STREAM CHANNEL OBSERVATION LOCATION CONTAINING NAPL AND/OR HARDENED TAR OR OVERBURDEN INVESTIGATION LOCATION CONTAINING NAPL (QUANTITIES GREATER THAN TRACE AMOUNTS)
- PROPOSED ENGINEERED CAP AREA
- PROPOSED BANK EXCAVATION AREA
- AREA TO BE FURTHER EVALUATED AS PART OF PRE-DESIGN INVESTIGATION ACTIVITIES

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/18/04, NAMED AUBMCMAS.DWG. INTO FILE NAMED BASE_MAP.DWG, ALSO PROVIDED BY NYSEG ON 2/18/04. LAST REVISION DATE AND COORDINATE POSITIONING OF THESE FILES UNKNOWN.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. THE LIMITS OF THE PROPOSED ENGINEERED CAP WILL BE FURTHER REFINED BASED UPON THE RESULTS OF ADDITIONAL SEDIMENT SAMPLING TO BE COMPLETED TO THE NORTH AND WEST OF THE PROPOSED CAP AREA AS PART OF A PRE-DESIGN INVESTIGATION.

0 40' 80'
GRAPHIC SCALE



ENGINEERED CAP CROSS SECTION SCHEMATIC

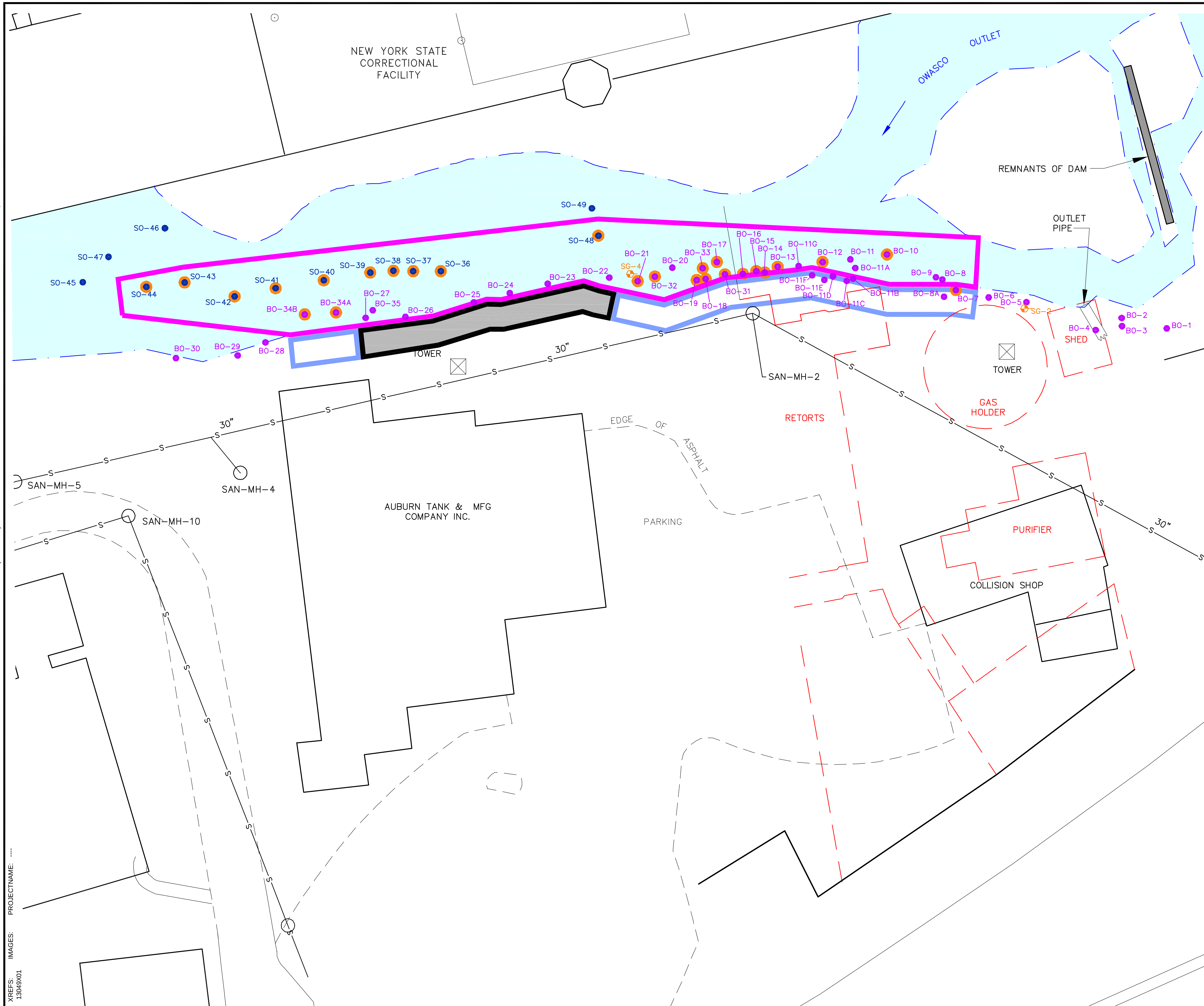
NOT TO SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

SEDIMENT ALTERNATIVE SED3

ARCADIS

FIGURE
11



LEGEND:

- SG-2 — STAFF GAUGE
- SO-47 — STREAM CHANNEL OBSERVATION
- BO-1 — BANK OBSERVATION
- WATER EDGE
- HISTORICAL MGP STRUCTURE
- S — SANITARY PIPELINE
- SAN-MH-1 — SANITARY MANHOLE
- BANK OR STREAM CHANNEL OBSERVATION LOCATION CONTAINING NAPL AND/OR HARDENED TAR OR OVERBURDEN INVESTIGATION LOCATION CONTAINING NAPL (QUANTITIES GREATER THAN TRACE AMOUNTS)
- PROPOSED SEDIMENT EXCAVATION AREA
- PROPOSED BANK EXCAVATION AREA
- AREA TO BE FURTHER EVALUATED AS PART OF PRE-DESIGN INVESTIGATION ACTIVITIES

NOTES:

1. BASE MAP PREPARED BY MERGING SITE HISTORICAL LOCATIONS FROM ELECTRONIC CADD FILE PROVIDED BY NYSEG ON 2/18/04, NAMED AUBMCMAS.DWG. INTO FILE NAMED BASE_MAP.DWG, ALSO PROVIDED BY NYSEG ON 2/18/04. LAST REVISION DATE AND COORDINATE POSITIONING OF THESE FILES UNKNOWN.
2. SANITARY LINE AND MANHOLE LOCATIONS BASED ON SURVEY PROVIDED BY NYSEG ON 5/31/06.
3. BEDROCK SURFACE IS ASSUMED TO BE AN AVERAGE OF 5 FEET BELOW THE RIVERBED WITHIN THE REMOVAL AREA
4. THE LIMITS OF PROPOSED SEDIMENT EXCAVATION AREA WILL BE FURTHER REFINED BASED UPON THE RESULTS OF ADDITIONAL SEDIMENT SAMPLING TO BE COMPLETED TO THE NORTH AND WEST OF THE PROPOSED CAP AREA AS PART OF A PRE-DESIGN INVESTIGATION.

0 40' 80'

GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS
AUBURN (McMASTER STREET) FORMER MGP SITE
FEASIBILITY STUDY

SEDIMENT ALTERNATIVE SED4

ARCADIS

FIGURE
12