PROPOSED REMEDIAL ACTION PLAN

RG&E - East Station
State Superfund Project
Rochester, Monroe County
Site No. 828204
March 2022

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes associated with the former manufactured gas plant operations (MGP wastes) at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The contamination and media in which it is found at this site is more fully described in Section 6 of this document. 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 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:

Central Library of Rochester and Monroe County
115 South Avenue
Rochester, New York 14604
585-428-7300

Please note physical document repositories may be temporarily unavailable/limited hours due to COVID-19 precautions. Key project documents are also included on DEC Info Locator/On-line repository at: https://www.dec.ny.gov/data/DecDocs/828204/

A public comment period has been set from:

March 30, 2022 to April 28, 2022

A virtual public meeting will be held on April 13 via Webex (virtual platform). The public may participate in the virtual public meeting using the link and login information below:

To join via computer: https://meetny.webex.com/meetny/onstage/g.php?MTID=ed8674347175d239c2e2d55ad2398f0c2 and use event password: Welcome1

To join by phone, call: 1-518-549-0500 and use access code: 161 766 3165

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

Written comments may also be sent through to:

Salvatore F. Priore, P.E.
NYS Department of Environmental Conservation
Division of Environmental Remediation, 12th Floor
625 Broadway
Albany, NY 12233-7014
salvatore.priore@dec.ny.gov

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 Rochester Gas and Electric (RG&E) East Station former manufactured gas plant (MGP) site is located in the City of Rochester, Monroe County in an industrial/commercial area.

The site is on the eastern bank of the Genesee River, at the foot of Suntru Street, north of the Inner Loop Highway.

Site Features: The site is located within the Genesee River Gorge directly adjacent to the river. The site is relatively flat with the gorge wall rising to the east and the river to the west. The majority of the former MGP site is open space with four RG&E buildings located in the northern portion of the parcel. These buildings are no longer occupied. A high-pressure gas main is located in the central portion of the former MGP site, and a natural gas regulator station is located in the northeastern quadrant. The site is approximately 13.4 acres and is bounded to the north by property owned by Bausch & Lomb (B&L), to the west by a 2.25-acre parcel owned by New York State along the Genesee River, to the east by Suntru Street and the gorge wall, and to the south by the Bausch Street Bridge. A beverage brewing facility is located south of the Bausch Street Bridge on the eastern side of the Genesee River. Further east and west lie commercial and industrial properties beyond which are residential properties.

Current Zoning and Land Use: According to the City of Rochester, both the former MGP site and B&L property are zoned M-1 Industrial, and the site and buildings are vacant except for a natural gas regulating station.

Past Use of the Site: A coal carbonization plant was constructed at the former MGP site in 1872 by Citizen's Gas Works, and coal gas manufacturing at the former MGP site ceased around 1952. A catalytic reforming process was used at the former MGP site from around 1951 until 1976. Manufactured gas operations ceased at the former MGP site in 1976. The former MGP had several gas holders and gas manufacturing plant buildings which have since been demolished and the foundations filled in. However, four buildings remain on-site and are no longer used nor occupied.

Prior to April 2018, the site was tracked under the Voluntary Cleanup Program as site number V00358.

Site Geology and Hydrogeology: The site is underlain by approximately 10 to 20 feet (ft) of unconsolidated deposits consisting of urban fill materials and the remains of the former MGP, over a discontinuous layer of alluvial deposits. The alluvial deposits beneath the fill material and former MGP structures range in thickness from 1 to 10 ft, where present. Alluvial deposits tend to be thicker along the eastern property boundary and generally become thinner or pinch out in the western portion of the former MGP site.

Overburden soil on the adjacent B&L property to the north, is similar. The fill thickness ranges from approximately 20.5 ft in the southeast corner of this property to not present along the Genesee River, where alluvial deposits were observed at ground surface. The alluvial deposits range in thickness from 32 ft in the southeast corner of this property to 8.5 ft along the Genesee River.

The top of weathered bedrock surface generally slopes gently to the north and west toward the Genesee River. Weathered bedrock consists of rock fragments and gravel with silt and sand approximately 1 to 3 ft in thickness. Weathered bedrock was observed across the upland portions of the former MGP site. Weathered bedrock encountered directly beneath overburden soil consists of the Rochester Shale below the majority of the former MGP site, and Irondequoit Limestone

below the northwest portion of the former MGP site and the majority of the B&L Property. In total, nine bedrock formations are present beneath the former MGP site and/or B&L property as detailed in the feasibility study (FS).

Overburden groundwater is typically encountered 6 to 20 ft beneath the former MGP site. Groundwater elevation contours indicate that the groundwater flow direction is to the west towards the Genesee River. The Genesee River, a Class B waterway, flows south to north past the former MGP site and B&L property, eventually discharging to Lake Ontario to the north.

A site location map is attached as Figure 1, and a map of existing site conditions is attached as Figure 2.

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 remediation. For this site, alternatives that restrict the use of the site to restricted residential use, which would allow for active recreation use and an alternative which would allow for unrestricted use of the site and any off-site areas subject to remediation.

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

SECTION 5: ENFORCEMENT STATUS

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

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

Rochester Gas and Electric Corporation (RG&E)

RG&E was subject to a Multi-Site Voluntary Cleanup Agreement (VCA) that was executed on April 10, 2003, and subsequently amended and restated on December 23, 2014, Index No. B8-0535-98-07, pertaining to the MGP Sites listed in Table A of Paragraph I (together with appendices and any other modifications and prior agreements or orders related to the listed sites and the original Multi-Site VCA).

Due to circumstances unrelated to RG&E's performance under the Original Multi-Site VCA, the Department's Voluntary Cleanup Program was terminated, necessitating the completion of investigation and remediation pursuant to another legally controlling commitment document that replaces the Original Multi-Site VCA.

RG&E at the request of the Department proposed to further modify, amend and restate the Original Multi-Site VCA as multi-site order on consent Index Number; CO 8-20180517-48 (together with

appendices, and the RG&E Multi-Site Order).

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation (RI)

A 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

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, 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 (COCs). A COC is a hazardous pollutant 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 are:

arsenic
lead
benzo(a)pyrene
benzo(g,h,i)perylene
benzo(a)anthracene
ideno(1,2,3-cd)pyrene
naphthalene
benzene, toluene, ethylbenzene, and xylenes (BTEX)
polycyclic aromatic hydrocarbons (PAHs), total
cyanide
mercury
benzo(b)fluoranthene
benzo(k)fluoranthene
dibenz(a,h)anthracene
coal tar

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

- groundwater
- sediment
- 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.

The following IRMs have been completed at this site based on conditions observed during the RI.

Tar Well Removal IRM (2004 and 2005):

An IRM to address coal-tar impacts in the Former Tar Well area was performed between 2004 and 2005. The IRM included the removal of approximately 20,000 tons of impacted soil/fill material and the removal of the Former Tar Well structure in the southeastern quadrant of the former MGP site. IRM activities also included the construction of a circular perimeter slurry wall surrounding the tar well, soil excavation immediately outside the tar well to the inside of the slurry wall, and excavation dewatering and off-site disposal of approximately 978,000 gallons of groundwater. IRM activities are described in the "Final Engineering Report for IRM" by URS, Inc. in 2006.

In-Situ Solidification (ISS) IRM with Barrier Wall and Non-Aqueous Phase Liquid (NAPL) Collection System to Mitigate NAPL Seeps (2007 and 2008):

An IRM to mitigate seeps along the Genesee Riverbank was completed in 2007 and 2008 and included ISS of approximately 18,000 cubic yards (cu yd) of soil to immobilize MGP residuals (including NAPL) in the overburden material near the riverbank and the installation of a barrier wall consisting of a slurry wall and NAPL collection trench with 22 NAPL recovery/monitoring wells east of the ISS area. Approximately 27,000 tons of overburden soil containing purifier waste was also removed and transported to an off-site disposal facility. Construction details are described in the "Phase IV Interim Remedial Measure Implementation Report" (Ish, Inc., 2009).

Once the ISS IRM had been completed, NAPL and water quality in the ISS recovery wells and bedrock groundwater monitoring wells beneath the ISS columns has been monitored annually.

Measurable NAPL thicknesses were found for the first time during the May 2010 monitoring event in recovery well RW-5 (1.35 ft thick dense-NAPL [DNAPL] and 0.07 ft thick light NAPL [LNAPL]), in shallow bedrock monitoring wells DW-3R (0.33 ft thick DNAPL) and MW-5R (0.21 ft thick DNAPL) near the former light oil plant area. Recent NAPL measurements completed in October 2020 indicated that DNAPL was present in DW-3R and RW-5 and measurable LNAPL was not present in well MW-5R.

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.

Soil, including soil between the barrier wall and the sediment (near-river soil), groundwater and sediments were analyzed for volatile organic compounds (VOCs), semi-VOCs, metals, polychlorinated biphenyls (PCBs), pesticides and cyanide. No PCBs or pesticides were detected in any media. Based on the investigations conducted to date, the primary contaminants of concern include SVOCs and metals in shallow soils; VOCs, SVOCs and metals in subsurface soils, groundwater and VOCs and SVOCs in river sediment. Groundwater in several select monitoring wells was additionally analyzed for the emerging contaminants per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane.

Nature and Extent of Contamination:

On-Site Shallow Soil (0-0.8 feet, below ground surface [bgs]): Several semi-VOCs, including but not limited to polycyclic aromatic hydrocarbons (PAHs), such as benzo(a)pyrene (BAP) (0.44-7.2 parts per million [ppm]) and dibenz(a,h)anthracene (0.42-1.3 ppm) exceeded their respective unrestricted use soil cleanup objectives (UUSCO) and restricted residential soil cleanup objectives (RRSCOs) of 1.0 ppm and 0.33 ppm, respectively. Inorganic analytes (metals) had limited impact on the on-site surface soil, however arsenic notably ranged from 5.4-169 ppm, exceeding the UUSCO and RRSCO of 13 and 16 ppm, respectively, in three surface soil samples.

On-site Subsurface Soil (below top 0.8 feet, bgs): VOCs, SVOCs and metals, including MGP impacts (NAPL, sheen and staining) were found in on-site subsurface soils. While minor staining was observed in fill material throughout the former MGP site, NAPL and sheen observations were limited to certain areas of the parcel, typically as blebs and stringers within the lower portion of the fill material, alluvial deposits, and/or weathered bedrock. NAPL was typically found in these areas:

- The northeast quadrant of the former MGP site in the vicinity of the former purifier area;
- The southeast quadrant of the former MGP site in the vicinity of the former oil tanks, former tar well; and

- The southwest quadrant and southern portion of the northwest quadrant of the former MGP site in the vicinity of the former light oil plant and along the riverbank west of the ISS area.

Remaining former MGP structures investigated during the RI do not appear to be significant sources of contaminants. Negligible quantities of NAPL were observed, if present at all, in the structures.

On-site subsurface soil samples were collected up to approximately 32 feet bgs. VOCs, such as benzene (non-detect to 370 ppm), toluene (90 ppm - 600 ppm) and xylene (non-detect to 1,100 ppm) exceeded their respective UUSCOs of 0.06 ppm, 0.7 ppm and 0.6 ppm. SVOCs mainly consisting of PAHs such as benzo(a)anthracene (0.011 ppm - 780 ppm), benzo(a) pyrene (0.0048 ppm - 530 ppm) and benzo(b)fluoranthene (0.0093 ppm - 460 ppm) exceeded their respective UUSCOs of 1.0 ppm, 1.0 ppm, and 0.8 ppm respectively, as well as their respective RRSCOs of 1.0ppm, 1.0 ppm and 3.9 ppm. Metals, including arsenic (1.4 ppm – 1,940 ppm) and total cyanide (0.57 ppm – 401 ppm) exceeded their respective UUSCOs of 13 ppm and 27 ppm, and their respective RRSCOs of 16 ppm and 27 ppm. However, soil with higher metals concentrations were generally limited to fill found less than 7 to 25 ft bgs, dependent on location, and do not typically exceed SCOs in the natural alluvial soil. Higher concentrations of total cyanide were typically located in the vicinity of the Former Purifier Area, west of the existing ISS Area adjacent to the Genesee riverbank and along the southern property boundary near the former Light Oil Plant.

Off-site Soil: On the B&L property to the north, MGP-related impacts appear to be limited to the southeast portion of the property, north of the former purifier area at the former MGP site. In the southeast portion of the B&L property, MGP impacts such as sheen and/or NAPL blebs, were observed in overburden soil at depths typically greater than 10 ft bgs. The MGP impacts were typically observed in the overburden soil directly above and within weathered bedrock, as noted below.

In the central portion of the B&L property, petroleum-like odor and sheen are present at and below the water table. These impacts were analyzed and identified as diesel/petroleum-related impacts that appear to be from other sources at the B&L property and their operations. Petroleum-like odor and/or minor sheens were observed in borings completed to the east of the former plant floor slab and in two borings completed along the Genesee River west of the retaining wall. There were also limited exceedances of the 12 ppm UUSCO for naphthalene, with concentrations ranging from 0.025 – 50 ppm.

Similar to the former MGP site, the samples that exceed UUSCOs for SVOCs consist mainly of PAHs including benzo(a)anthracene (0.02 ppm – 57 ppm vs. UUSCO of 1 ppm); benzo(a)pyrene (0.0061 ppm – 27 ppm vs UUSCO of 1 ppm); benzo(b)fluoranthene (0.0065 ppm – 18 ppm vs UUSCO of 0.8 ppm) and chrysene (0.0054 ppm – 60 ppm vs. UUSCO of 1ppm). These PAHs are distributed throughout the fill material in the southern portion of the B&L property and in soil along the Genesee River. The origin of the fill material used at the former B&L property, including fill material observed beneath the floor slab, is unknown and does not appear to be impacted by the former MGP. The use of coal as a fuel source at the former B&L plant , as indicated on Sanborn

Maps, may explain ash-like material (ALM) observed in the fill. Residuals from the 1915 fire that destroyed a portion of the former B&L manufacturing facility may also contribute to PAHs in overburden on the B&L property.

Soil exceedances for metals above UUSCOs include arsenic (1.1 ppm – 103 ppm vs. UUSCO of 13 ppm); cadmium 0.035 ppm - 38.3 ppm vs. UUSCO of 2.5 ppm); lead (1.3 ppm – 7,460ppm vs. UUSCO of 63 ppm); barium (10.3 ppm – 8,330 ppm vs. UUSCO of 350 ppm) and mercury (0.0099 ppm - 6.1 ppm vs. UUSCO of 0.18 ppm) are most prevalent in soil borings completed west of the former B&L property plant floor slab. The presence of these metals in soil does not appear to be related to the former MGP operations or MGP waste material. PAHs and metals were also detected in one location completed beneath the B&L property plant floor slab. Additional completed test pits in the vicinity of gas conveyance subsurface pipes on the eastern side of the former plant floor slab found no evidence of past or ongoing release of MGP residuals.

On-site and Off-site Bedrock: MGP-related impacts, including sheens and NAPL, are present in competent bedrock at several discrete depths. NAPL, when present, was typically encountered as blebs and was observed in deep bedrock at five locations as follows:

- BR-10-08 (Reynales Limestone from 68 to 76 ft bgs) and BR-10-07 (Reynales Limestone at 94 ft bgs and Maplewood Shale from 96 to 101 ft bgs) in the southern portion of the Former MGP site;
- BR-10-02 (Maplewood Shale from 86 to 89 ft bgs) on the Former MGP site along the RG&E and B&L Property boundary; and
- BR-12-01 (Reynales Limestone from 63 to 67 ft bgs) and BR-12-02 (Irondequoit Limestone at 37 and 40 ft bgs) in the southern portion of the B&L Property.

A depression in the bedrock surface observed in the southwest corner of the former MGP site did not appear to be collecting and retaining DNAPL, though sheen and trace DNAPL were observed in drilling fluid. Sheen was observed at several locations at discrete depth intervals.

NAPL and sheen were not observed at the Grimsby Sandstone and Queenston Shale interface, or at the top of the Queenston Shale (150 feet to 200 feet bgs), which defines the lower vertical extent of visual/olfactory impacts. The vertical extent of NAPL and sheen appears to be limited to the transmissive features observed in the Grimsby Sandstone and overlying bedrock formations ranging from approximately 72 to 143 feet bgs.

In the vicinity of the three areas of the former MGP site and B&L property where MGP-related NAPL is present in overburden soil, NAPL or sheen is typically observed in shallow bedrock similar to the impacts to the Irondequoit Limestone at BR-10-01 and BR-12-02 (approximately 26 feet, bgs) near the former purifier area. This information suggests that NAPL impacts in the overburden likely migrated downward into bedrock through bedrock fracture and joint features, cross-cutting bedding plane partings, and migrated horizontally along the bedding plane partings.

Overburden Groundwater: Overburden groundwater across the former MGP site exceeds Class GA Water Quality Standards (GWQS) for VOCs (typically benzene, toluene, ethylbenzene, and xylenes [BTEX]), PAHs and several metals including arsenic and total cyanide. Benzene ranged

from 0.44 parts per billion (ppb) to 15,000 ppb vs. GWQS of 1 ppb; ethylbenzene ranged from non-detect to 1,300 ppb vs. GWQS of 5 ppb; toluene ranged from 0.52 ppb to 7,500 ppb vs. GWQS of 5 ppb; and xylenes ranged from 1.5 ppb to 1,400 ppb vs. GWQS of 5 ppb. PAHs such as benzo(a)pyrene ranged from 0.62 ppb to 5.1 ppb vs. GWQS of non-detect. Arsenic ranged from 9.2 ppb to 5,600 ppb vs. GWQS of 25 ppb. Cyanide ranged from 11 ppb to 197,000 ppb vs. GWQS of 200 ppb. Phenol ranged from 11 ppb – 580 ppb vs. GWQS of 1 ppb. VOC and PAH concentrations in groundwater are typically lowest in the northwestern portion of the former MGP site, which generally coincides with the distribution of MGP impacts observed in overburden soil. The presence of NAPL in the subsurface likely contributes to impacts to the overburden groundwater aquifer. Perfluorooctanesulfonic acid (PFOS) was detected in two downgradient wells at 18 and 32 parts per trillion (ppt) exceeding the drinking water maximum contaminant level (MCL) of 10 ppt. Several other PFAS compounds were detected for which there are no guidance values or standards.

NAPL has been measured in overburden monitoring wells in the southwestern portion of the former MGP site in the vicinity of the former light oil plant. However, NAPL has not been detected in passive recovery wells installed in the gravel collection trench west (upgradient) of the ISS area. The absence of NAPL in these recovery wells suggests that NAPL present in overburden soil and highly weathered bedrock is not mobile or its mobility is severely limited. NAPL volume and mobility were decreased by removing the former tar well contents, which removed the primary NAPL source and the primary source of dissolved phase impacts in the onsite overburden groundwater.

Bedrock Groundwater: MGP-related dissolved-phase constituents in bedrock exceed GWQS for VOCs (typically BTEX and total cyanide in several bedrock monitoring well locations and at varying depth intervals. Benzene ranged from 0.56 ppb to 39,000 ppb vs. GWQS of 1 ppb; toluene ranged from 6.2 ppb to 14,000 ppb vs. GWQS of 5 ppb; ethylbenzene ranged from 1.3 ppb to 4,000 ppb vs. GWQS of 5 ppb and xylenes ranged from 300 ppb to 1,700 ppb vs. (GWQS of 5 ppb. SVOCs such as 2,4-dimethylphenol ranged from 3ppb to 200ppb relative to a GWQS of 1ppb. Cyanide ranged from 8.2 ppb to 2,900 ppb vs. GWQS of 200 ppb. The presence of NAPL and sheen in bedrock is likely the source of dissolved-phase impacts to shallow and deeper bedrock groundwater.

Sediment: NAPL impacts in Genesee River sediment related to former MGP operations appear to be limited to an area along the southern portion of the former MGP site adjacent to the former light oil plant. A discrete area of NAPL blebs was also observed adjacent to the B&L property located approximately 210 ft north (downstream) of the RG&E and B&L property boundary and consisted of VOCs, such as benzene (1.1 ppm - 14 ppm vs. Class A freshwater sediment guidance value (SGV) of 0.53 ppm); ethylbenzene (non-detect to 0.43 ppm vs. SGV of 0.43 ppm; o-xylene (non-detect to 22 ppm vs. SGV of 0.82 ppm; and total xylenes (non-detect to 31 ppm vs. SGV of 0.59 ppm and SVOCs consisting of total PAHs (0.3242 ppm - 859.2 ppm vs. SGV of 4 ppm).

Sediment cores collected during the investigation indicated that sediment thickness was limited in the vicinity of the former light oil plant, with soft sediment thickness ranging from 1 to 3.5 ft in the area where NAPL was observed. Since no apparent immediately upland source of the small area of NAPL observed in sediment adjacent to the B&L property was identified during the RI,

the NAPL may have been mobilized and deposited from an upstream source. The NAPL was observed near the top of a 4.5-ft core sample, immediately below a 0.8-ft-thick layer of sandy fluvial deposits. Analytical testing indicated that sediment with the highest PAH concentrations which exceeded the SGV of 4 ppm were co-located with areas of visual and olfactory impacts.

Soil Vapor: A soil vapor investigation was not conducted at the site due to unoccupied buildings.

Special Resources Impacted/Threatened: The site is located adjacent to the Genesee River. In this section the Genesee River is Class B surface water body. Much of the bank is vegetated with trees around the former MGP-related structures. Ecological species potentially affected by the remedy include fish, freshwater mussels, and local birds.

6.4: Summary of Human Exposure Pathways

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

Access to the site is restricted by fencing. For people entering the site, contact with contaminated soil or groundwater is unlikely unless they dig below the ground surface. People entering the river adjacent to the site have the potential to come into contact with contaminated river sediments. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. 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. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. Sampling indicates soil vapor intrusion is not a concern for off-site structures.

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 groundwater 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.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Sediment
RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of ambient water criteria.
- Restore sediment to pre-release/background conditions to the extent feasible.

Soil Vapor
RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing or potential soil vapor intrusion into future 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 FS report.

A summary of the remedial alternatives 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 the 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 Partial Excavation of On-Site Soil, Full Excavation of Off-Site MGP-Impacted Soil and Sediment, Groundwater MNA, Continued Site Management of the NAPL Recovery Wells and Long-term Monitoring.

The estimated present worth cost to implement the remedy is $47,747,000. The cost to construct the remedy is estimated to be $46,623,600 and the estimated average annual cost is $90,600.

The elements of the proposed remedy are as follows:

1. Remedial Design

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling, and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

Excavation and off-site disposal of contaminant source areas, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- concentrated solid or semi-solid hazardous substances per 6 NYCRR Part 375-1.2(au)(1)
- soil with visual waste material or non-aqueous phase liquid;
- soil containing total SVOCs exceeding 500 ppm;
- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Excavations will be conducted to various depths of up to approximately 30 feet below ground surface (bgs) or to competent bedrock, as feasible at the former MGP site, and up to 24 feet bgs at the B&L property adjacent to and north of the site or to competent bedrock, as feasible. The excavation will remove the former purifier area, the former light oil plant, a former gas holder, other underground structures, residual MGP wastes and near-river soil (soil between the ISS wall and the sediment). Lateral earth support and excavation dewatering will be required at the former MGP site and B&L property off-site to the north of the site. A pre-design investigation will be conducted to confirm the footprint of NAPL and other MGP impacts in the near-river soil and sediment areas.

Approximately 33,400 cu yd of off-site MGP-impacted soil and 299,500 cu yd of on-site MGP-impacted soil will be excavated. The upper 10 ft of surface and subsurface soil from the former MGP site (approximately 251,600 cu yd) will be stockpiled on-site for potential reuse. Prior to reuse on-site, stockpiled soil will be analyzed to confirm compliance with 6 NYCRR 375-6.7 (d), Commissioner Policy-51 (CP-51), DER-10 Section 5.4(e) and with Department concurrence. On- and off-site soil deemed unacceptable for reuse will be transported off-site for disposal or may be evaluated in the remedial design for on-site thermal treatment. The site will be re-graded to accommodate installation of a cover system as described in remedy element 5 outside of the near-river soils footprint.

For the near-river soils, the pre-design investigation will confirm the presence of MGP contamination (including NAPL) and confirm continued impact on the river prior to remediation. Removals will be conducted only where MGP contamination (including NAPL) is present and influencing the river with the goal of preserving the bank topography and vegetation where possible.

On-site soil which does not exceed the protection of groundwater SCOs (PGWSCOs) may be used below the cover system described in remedy element 5 to backfill the excavation.

Clean fill meeting lower of RRSCOs and PGWSCOs per 6 NYCRR Part 375-6.7(d) will be brought in on-site to replace the excavated soil or complete the backfilling of the excavation and

establish the designed grades on-site. Clean fill meeting UUSCOs will be brought in to replace excavated soil on the B&L off-site property.

Following a pre-design investigation, sediment which contains MGP NAPL impacts and is above sediment PAH Class C SGV, will be removed from the Genesee River. This is currently predicted to be excavation and off-site disposal/thermal treatment of approximately 2,500 cubic yards (cy) of impacted sediment.

A restoration plan for the Genesee Riverbed and banks will be completed with the goal of restoring the stream bed, banks and floodplain in-kind to the extent possible using natural stream restoration/bioengineering design principles and with the goal of re-establishing habitat function. The design will include a monitoring plan for areas disturbed by the remedy and all activities will be consistent with the requirements of 6 NYCRR Part 608.

3. NAPL Recovery

Installation and operation of NAPL, petroleum or coal tar recovery wells to remove potentially mobile petroleum or coal tar from the subsurface. The number, depth, type and spacing of the recovery wells will be determined during the design phase of the remedy. Petroleum or coal tar will be collected periodically from each well; however, if wells are determined by the Department to accumulate large quantities of NAPL, petroleum or coal tar over extended time periods, they can be converted to automated collection.

4. Monitored Natural Attenuation

Groundwater contamination (remaining after active remediation) will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and also for MNA indicators which will provide an understanding of the (biological activity) breaking down the remaining contamination. It is anticipated that contaminant concentrations will decrease steadily over a reasonable period of time. Reports of the attenuation will be provided periodically in accordance with the monitoring and reporting requirements in the site management plan, and additional active remediation will be proposed if it appears that natural processes alone will not address the remaining groundwater contamination. The contingency remedial action will depend on the information collected, but it is currently anticipated that oxygen injection would be the expected contingency remedial action.

5. Cover System

An on-site cover will be required to allow for restricted residential use of the site, which includes anticipated active recreation, where the upper two feet of exposed surface soil exceed the restricted residential use SCOs. Where a soil cover is to be used it will be a minimum of two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. In near-river soils, the upper 2 ft will be sufficient quality to maintain a vegetative layer and the demarcation layer will not include any fabric. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components

may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs. Off-site, a soil cover will not be required since the backfill shall meet unrestricted use SCOs.

Where the soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil with the top two feet meeting the SCOs for restricted residential (active recreational) use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material. A cover system will not be used on the banks or within the floodplain of the Genesee River because ecological SCOs will be met through excavation and backfill.

6. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require 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);
- allow the use and development of the controlled property for restricted residential, uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County; and
- require compliance with the Department-approved Site Management Plan.

7. Site Management Plan

An SMP 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 in Element 6 above.

Engineering Controls:

- The soil cover noted discussed in Element 5 above.
- The IRMs discussed in Section 6.2, above, including the ISS barrier wall, slurry wall, NAPL collection trench; and NAPL monitoring/recovery wells in Element 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 on the former MGP site;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on site, and in off-site areas with site-related contamination, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should a building foundation or building slab on the former MGP site be removed in the future, a cover system consistent with that described in Remedial Element 5 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- 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 and Maintenance 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;
- periodic NAPL monitoring and recovery, and recovery well maintenance, as appropriate;
- monitoring and maintenance of the cover system to assess the performance and effectiveness of the remedy, erosion, settlement, or other disturbances;
- monitoring of the riverbank to assess for NAPL seeps into sediment or the river, with contingencies to address this condition, as appropriate;
- a contingent technology if MNA is not proven effective in the long-term;
- a schedule of monitoring, maintenance and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings developed on the site, and in off-site areas with site-related contamination, as may be required by the Institutional and Engineering Control Plan discussed above; and
- monitoring of remedial restoration success and repair actions, as needed.

Exhibit A

Nature and Extent of Contamination

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

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

This section describes the distribution of MGP-related impacts in overburden soil, overburden groundwater, bedrock, bedrock groundwater and sediment, taking into consideration historical operations, observations during subsurface investigations, and laboratory analytical results. Refer to Figures 3 and 4 (attached) for observations of MGP-related impacts. Pesticides and polychlorinated biphenyls (PCBs) were sampled at the site from 1993-2000 but were not found to be Contaminants of Concern (COCs) at the site and thus were not carried over to the RI and FS.

The following media and source locations were identified to require remedial actions based on the conclusions presented in the RIR and the presence of MGP-related impacts. The media and locations requiring remedial actions are shown on Figure 5.

- Surface Soil: Completed pathways for potential current and future exposure to MGP-related impacts to surface soil were identified during the RI in the following locations:
  - Former MGP site.
- Subsurface Soil: Completed pathways for potential current and future exposure to MGP-related impacts to subsurface soil were identified in the RI in the following locations:
  - Former MGP site, including:
    - The Former Purifier Area in the northeast quadrant;
    - The vicinity of the Former Oil Tanks, Former Tar Well, and Former MGP Plant in the southeast quadrant; and
    - The Former Light Oil Plant in the southwest quadrant, including an area north of the Former Light Oil Plant west of the ISS area.
  - The southeastern portion of the B&L Property adjacent to and north of the site. These MGP impacts appear to be contiguous with NAPL observed in the northeast quadrant of the former MGP site associated with the former purifier area.
- Overburden Groundwater: Completed pathways for potential current and future exposure to MGP-related impacts to overburden groundwater were identified in the RI in the following locations:
  - Former MGP site; and
  - The southern portion of the B&L property adjacent to and north of the site.

- Bedrock Groundwater: Completed pathways for potential current and future exposure to MGP-related impacts to bedrock groundwater in the following locations were identified in the RI:
  - Former MGP site; and
  - The southern and northern portions of the B&L property adjacent to and north of the site.
- Sediment: Completed pathways for potential current and future exposure to MGP-related impacts to sediment were identified in the RI in the following locations:
  - Along the southern portion of the former MGP site adjacent to the former light oil plant; this area is adjacent to an upland portion of the former MGP site where NAPL has been observed in the overburden at a similar elevation; and a small area north of the RG&E and B&L property boundary. adjacent to the B&L property.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil, and sediment.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source areas were identified at the site include areas of coal tar NAPL.

Two waste source areas were identified and addressed during the site investigation of the former MGP site through two IRMs. One area was the tar well area and the other was along the Genesee River. These areas were addressed by excavation/ISS of source material including NAPL, VOCs, SVOCs and cyanide and installation of a collection trench for NAPL extraction and monitoring. The IRMs were effective in addressing this source material and NAPL that were entering the bedrock and the adjacent Genesee River. These waste/source areas identified at the site were addressed by the IRM(s) described in Section 6.2.

NAPL (LNAPL and DNAPL) has been measured in overburden wells in the southwestern portion of the Former MGP site in the vicinity of the Former Light Oil Plant. Accumulating NAPL has not been detected in passive recovery wells installed in the gravel collection trench west of the ISS area. The absence of accumulating NAPL in the recovery wells suggests that NAPL present in overburden soil and highly weathered bedrock is not mobile or its mobility is severely limited. NAPL volume and mobility were decreased by removing the Former Tar Well contents, which removed the primary NAPL source.

Physical properties tests were completed to better understand potential DNAPL mobility in bedrock and provide parameters for future remedial alternative evaluation. LNAPL is limited to the location of the former Light Oil Plant area.

MGP residuals, including NAPL, sheen, and staining are encountered in Former MGP site overburden soil. While minor staining was observed in fill material throughout the Former MGP site, NAPL and sheen observations were limited to certain areas of the parcel, typically as blebs and stringers within the lower portion of the fill material, alluvial deposits, and/or weathered bedrock. NAPL was typically found in the following three areas:

· The northeast quadrant of the former MGP site in the vicinity of the former Purifier Area;
· The southeast quadrant of the former MGP site in the vicinity of the former Oil Tanks, former Tar Well, and former MGP; and

· The southwest quadrant and southern portion of the northwest quadrant of the Former MGP site in the vicinity of the former Light Oil Plant and along the riverbank west of the ISS area.

Former MGP structures assessed during the RI do not appear to be significant sources of contaminants. Negligible quantities of NAPL were observed, if present at all in the structures.

In the off-site overburden, NAPL blebs were observed in the southeast portion of the B&L property north of the site in overburden soil at depths typically greater than 10 ft bgs.

In the on-site and off-site bedrock, NAPL was typically encountered as blebs and found in the deep bedrock in the following areas:

- The southern portion of the former MGP site;
- The former MGP site along the RG&E and B&L boundary; and,
- The southern portion of the B&L property.

In the sediment, visible NAPL was limited to an area along the southern portion of the former MGP site adjacent to the former light oil plant. A discrete area of NAPL blebs was also observed adjacent to the B&L property located approximately 210 ft north (downstream) of the RG&E/B&L property boundary. These areas are shown on Figures 3 and 4.

On-site and Off-site Bedrock

In the vicinity of the three areas of the Former MGP site and B&L Property where MGP-related NAPL is present in overburden soil, NAPL or sheen are typically observed in shallow bedrock similar to the impacts to the Irondequoit Limestone at BR-10-01 and BR-12-02 near the Former Purifier Area. This information suggests that NAPL impacts in the overburden likely migrated downward into bedrock through bedrock fracture and joint features, cross-cutting bedding plane partings, and migrated horizontally along the bedding plane partings.

MGP-related impacts, including sheens and NAPL, are present in competent bedrock at several discrete depths, typically limited in vertical and horizontal extent to the transmissive features.

NAPL, when present, was typically encountered as blebs and was observed in deep bedrock at five locations:

· BR-10-08 (Reynales Limestone from 68 to 76 ft bgs) and BR-10-07 (Reynales Limestone at 94 ft bgs and Maplewood Shale from 96 to 101 ft bgs) in the southern portion of the former MGP site;

· BR-10-02 (Maplewood Shale from 86 to 89 ft bgs) on the former MGP site along the RG&E and B&L boundary; and

· BR-12-01 (Reynales Limestone from 63 to 67 ft bgs) and BR-12-02 (Irondequoit Limestone at 37 and 40 ft bgs) in the southern portion of the B&L Property.

A depression in the bedrock surface observed at BR-10-07, in the southwest corner of the Former MGP site, did not appear to be collecting and retaining DNAPL, though sheen and trace DNAPL were observed in drilling fluid. Sheen was observed at several locations at discrete depth intervals.

NAPL and sheen were not observed at the Grimsby Sandstone and Queenston Shale interface, or at the top of the Queenston Shale, which defines the lower vertical extent of visual/olfactory impacts. The vertical extent of NAPL and sheen appears to be limited to the transmissive features observed in the Grimsby Sandstone and overlying bedrock formations.

Groundwater

Groundwater samples were collected from overburden and bedrock monitoring wells. The presence of NAPL in the subsurface likely contributes to impacts to groundwater. Contamination in the on-site and off-site overburden and bedrock groundwater exceeds the SCGs for inorganic compounds, SVOCs including PAHs, and VOCs.

Overburden groundwater across the former MGP site exceeds Class GA Water Quality Standards for VOCs (typically benzene, toluene, ethylbenzene, and xylenes [BTEX]), PAHs, several metals, and total cyanide. VOC and PAH concentrations in groundwater are typically lowest in the northwestern portion of the former MGP site, which generally agrees with the distribution of MGP residuals observed in overburden soil.

On-site bedrock groundwater contains MGP-related dissolved-phase constituents. Bedrock groundwater exceeds Class GA Water Quality Standards for VOCs (typically BTEX), SVOCs including PAHs and naphthalene, metals, and total cyanide at several monitoring well locations and at several depth intervals. Wells that had no exceedance of MGP-related dissolved-phase constituents included DW-5 in the southeast quadrant of the former MGP site near the southern property boundary, and MW-6D, DW-10-01M, and DW-10-01R, located in the northeast quadrant of the former MGP site east of the Former Purifier Area. The presence of NAPL and sheen in bedrock is likely the source of dissolved-phase impacts to bedrock groundwater.

Table #1 - On-site Overburden Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
VOCs			
1,2-Dibromo-3-chloropropane (DBCP)	0.55 – 40	0.04	8 of 25
Benzene	0.67 – 15000	1	19 of 25
Carbon disulfide	5.9 – 520	60	2 of 25
Chlorobenzene	1 – 1	5	0 of 25
cis-1,2-Dichloroethene	1.2 – 1.2	5	0 of 25
Ethylbenzene	0.88 – 1300	5	16 of 25
Isopropylbenzene (Cumene)	0.87 – 92	5	13 of 25
o-Xylene	1.5 – 1400	5	9 of 15
Styrene	27 – 360	5	3 of 25
Tetrachloroethene	0.91 – 0.91	5	0 of 25
Toluene	0.52 – 7500	5	10 of 25
Trichloroethene	1.4 – 1.4	5	0 of 25
SVOCs			
2,4-Dimethylphenol	4.7 - 1400	1	8 of 25
2-Nitroaniline	73 - 73	5	1 of 25

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
Benzo(a)pyrene[e]	0.52 - 5	0	5 of 25
Biphenyl	1.6 - 95	5	12 of 25
bis(2-Ethylhexyl)phthalate	21 - 21	5	1 of 25
Di-n-butylphthalate	0.38 - 0.65	50	0 of 25
Phenol	11 - 580	1	6 of 25
Inorganics			
Antimony, Total	6.8 - 180	3	2 of 25
Arsenic, Total	9.3 - 5600	25	13 of 25
Barium, Total	29 - 1400	1000	1 of 25
Cadmium, Total	0.34 - 2.4	5	0 of 25
Chromium, Total	0.91 - 32	50	0 of 25
Copper, Total	1.5 - 41	200	0 of 25
Cyanide	11 - 197000	200	19 of 25
Iron, Total	660 - 94000	300	25 of 25
Lead, Total	3.3 - 10	25	0 of 25
Manganese, Total	4.5 - 1300	300	12 of 25
Mercury, Total	0.12 - 27	0.7	2 of 25
Nickel, Total	1.5 - 68	100	0 of 25
Selenium, Total	9.7 - 92	10	2 of 25
Silver, Total	1.7 - 4.9	50	0 of 25
Sodium, Total	123000 - 2230000	20000	25 of 25

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, May 2020).
c - Only detected parameters with an action level are summarized.
d - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.
e - For benzo(a)pyrene, the standard is 0 µg/L. Only detected concentrations are considered to exceed the standard.

Table #2 On-site Bedrock Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
VOCs			
1,2-Dibromo-3-chloropropane (DBCP)	18 - 18	0.04	1 of 30
Benzene	0.56 - 39000	1	29 of 34
Carbon disulfide	0.57 - 22	60	0 of 30
Chlorobenzene	4.3 - 4.3	5	0 of 30
Chloroform (Trichloromethane)	0.97 - 10	7	5 of 30
Chloromethane (Methyl Chloride)	22 - 22	5	1 of 30
Ethylbenzene	1.3 - 4000	5	24 of 34
Isopropylbenzene (Cumene)	0.96 - 100	5	5 of 30
o-Xylene	300 - 1700	5	4 of 5
Styrene	2.3 - 1400	5	11 of 30
Tetrachloroethene	0.7 - 0.7	5	0 of 30
Toluene	6.2 - 12000	5	27 of 34
SVOCs			
2,4-Dimethylphenol	3 - 200	1	8 of 30
2-Nitroaniline	1.5 - 1.5	5	0 of 30
Benzo(a)pyrene[e]	5.1 - 5.1	0	1 of 34
Biphenyl	0.64 - 46	5	2 of 30
bis(2-Chloroethoxy)methane	0.71 - 0.71	5	0 of 30
bis(2-Ethylhexyl)phthalate	24 - 24	5	1 of 30
Phenol	36 - 55	1	3 of 30

Table #2 On-site Bedrock Groundwater (Continued)

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
Inorganics			
Arsenic, Total	5.9 - 36	25	3 of 30
Barium, Total	13 - 17500	1000	17 of 30
Cadmium, Total	0.42 - 8.8	5	5 of 30
Chromium, Total	0.93 - 1800	50	1 of 30
Copper, Total	1.7 - 140	200	0 of 30
Cyanide	8.8 - 2900	200	10 of 34
Iron, Total	480 - 95000	300	30 of 30
Lead, Total	3.8 - 150	25	3 of 30

Manganese, Total	15 - 28800	300	16 of 30
Nickel, Total	1.5 - 500	100	1 of 30
Sodium, Total	259000 - 81300000	20000	30 of 30

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, May 2020).
c - Only detected parameters with an action level are summarized.
d - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.
e - For benzo(a)pyrene, the standard is 0 µg/L. Only detected concentrations are considered to exceed the standard.

Table #3 Off-site Overburden Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
VOCs			
Benzene	0.44 - 840	1	6 of 12
cis-1,2-Dichloroethene	0.9 - 1	5	0 of 12
Ethylbenzene	0.85 - 470	5	3 of 12
Isopropylbenzene (Cumene)	0.83 - 34	5	2 of 12
Toluene	1.2 - 1.2	5	0 of 12
Trichloroethene	1.6 - 1.6	5	0 of 12
SVOCs			
Benzo(a)pyrene[e]	0.62 - 1.6	0	4 of 12
Biphenyl	0.95 - 2	5	0 of 12
bis(2-Ethylhexyl)phthalate	1.4 - 12	5	1 of 12
Di-n-butylphthalate	0.33 - 0.77	50	0 of 12
Phenol	19 - 19	1	1 of 12

Table #3 Off-site Overburden Groundwater (Continued)

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
Inorganics			
Arsenic, Total	9.2 - 270	25	5 of 12
Barium, Total	93 - 470	1000	0 of 12
Cadmium, Total	0.56 - 1.9	5	0 of 12
Chromium, Total	1.3 - 57	50	1 of 12
Copper, Total	2.1 - 200	200	0 of 12
Cyanide	24 - 3800	200	9 of 12
Iron, Total	51 - 75500	300	11 of 12
Lead, Total	4.6 - 890	25	4 of 12
Manganese, Total	340 - 3700	300	12 of 12
Mercury, Total	0.16 - 2.6	0.7	2 of 12
Nickel, Total	1.6 - 70	100	0 of 12
Selenium, Total	9 - 43	10	1 of 12
Sodium, Total	27100 - 1020000	20000	12 of 12

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, May 2020).
c - Only detected parameters with an action level are summarized.
d - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.
e - For benzo(a)pyrene, the standard is 0 µg/L. Only detected concentrations are considered to exceed the standard.

Table #4 Off-site Bedrock Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
VOCs			
Benzene	680 - 31000	1	7 of 7
Carbon disulfide	6.9 - 6.9	60	0 of 7
Chloroform (Trichloromethane)	1.4 - 17	7	1 of 7
Ethylbenzene	8.1 - 2400	5	7 of 7
Isopropylbenzene (Cumene)	28 - 50	5	2 of 7
Styrene	37 - 3400	5	5 of 7
Toluene	210 - 14000	5	7 of 7

Table #4 Off-site Bedrock Groundwater (Continued)

Detected Constituents	Concentration Range Detected (ppb)[a]	TOGS 1.1.1, Class GA Water Quality SCG[b] (ppb)[a]	Frequency Exceeding SCG
SVOCs			
2,4-Dimethylphenol	4.9 - 110	1	4 of 7
Benzo(a)pyrene[e]	0.83 - 0.83	0	1 of 7
Biphenyl	2.4 - 13	5	1 of 7
bis(2-Ethylhexyl)phthalate	3.7 - 3.7	5	0 of 7
Di-n-butylphthalate	0.35 - 0.41	50	0 of 7
Phenol	2 - 21	1	3 of 7
Inorganics			
Arsenic, Total	7.3 - 170	25	2 of 7
Barium, Total	230 - 5100	1000	4 of 7
Cadmium, Total	0.83 - 4.7	5	0 of 7
Chromium, Total	1.7 - 290	50	1 of 7
Copper, Total	6.6 - 29	200	0 of 7
Cyanide	5.5 - 1900	200	3 of 7
Iron, Total	650 - 76000	300	7 of 7
Lead, Total	3.3 - 4.9	25	0 of 7
Manganese, Total	17 - 18800	300	3 of 7
Nickel, Total	1.3 - 10	100	0 of 7
Selenium, Total	21 - 150	10	2 of 7
Sodium, Total	318000 - 66500000	20000	7 of 7

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, May 2020).
c - Only detected parameters with an action level are summarized.
d - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.
e - For benzo(a)pyrene, the standard is 0 µg/L. Only detected concentrations are considered to exceed the standard.

Based on the findings of the RI, the presence of NAPL has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants which will drive the remediation of groundwater to be addressed by the remedy selection process are: NAPL, inorganic compounds (arsenic, barium, cyanide, lead, mercury), SVOCs including PAHs, and VOCs.

Soil

Soil samples from across the former MGP site collected at a variety of depths exceed restricted residential SCOs for PAHs, metals and total cyanide. Soil with metals at concentrations greater than restricted residential SCOs are generally limited to fill soil and do not typically exceed restricted commercial SCOs in the natural alluvial soil. The PAH concentrations in soil exceed restricted residential SCOs in both fill and alluvial materials. VOC

detections exceeding restricted residential SCOs were limited to fill material sampled at two soil boring locations in the vicinity of the former light oil plant and along the riverbank west of the ISS area.

Surface and subsurface soil samples were collected from the site and B&L property during the RI as shown on Figure 3. Shallow soil samples were collected from a depth of 0 to up to 0.8 ft to assess direct human exposure. Subsurface soil samples were collected from a depth of 1 to 64 ft to assess soil contamination impacts to groundwater. The results indicate that soils at the site exceed the restricted residential SCOs for inorganic compounds, PAHs, and VOCs. The results indicate that soils at the B&L Property (off-site property to the north of the site) exceed the unrestricted SCOs for inorganic compounds, PAHs, and VOCs. MGP residuals, including NAPL, sheen, and staining are encountered in overburden soil and competent bedrock.

Table #5 – On-site Shallow Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use Soil Cleanup Objective (SCG)[b] (ppm)[a]	Frequency Exceeding Unrestricted SCG[b]	Restricted Use Soil Cleanup Objective for Restricted Residential (SCG)[c] (ppm)[a]	Frequency Exceeding Restricted Residential SCG[c]	Protection of Groundwater SCG (ppm)	Frequency Exceeding SCG
Acenaphthene	0.11 - 0.18	20	0 of 9	100	0 of 9	98	0 of 9
Acenaphthylene	0.24 - 2	100	0 of 9	100	0 of 9	107	0 of 9
Anthracene	0.26 - 1	100	0 of 9	100	0 of 9	1000	0 of 9
Benzo(a)anthracene	0.23 - 5.7	1	8 of 9	1	8 of 9	1	8 of 9
Benzo(a)pyrene	0.44 - 7.2	1	8 of 9	1	8 of 9	22	0 of 9
Benzo(b)fluoranthene	0.42 - 6.6	1	8 of 9	1	8 of 9	1.7	8 of 9
Benzo(g,h,i)perylene	0.9 - 5.1	100	0 of 9	100	0 of 9	1000	0 of 9
Benzo(k)fluoranthene	0.18 - 2.7	0.8	8 of 9	3.9	0 of 9	1.7	4 of 9
Chrysene	0.18 - 6	1	8 of 9	3.9	5 of 9	1.0	8 of 9
Dibenz(a,h)anthracene	0.42 - 1.3	0.33	8 of 9	.033	8 of 9	1000	0 of 9
Dibenzofuran	0.099 - 0.17	7	0 of 9	59	0 of 9	210	0 of 9
Fluoranthene	0.19 - 7.3	100	0 of 9	100	0 of 9	1000	0 of 9
Fluorene	0.19 - 0.33	30	0 of 9	100	0 of 9	386	0 of 9
Indeno(1,2,3- cd) pyrene	0.43 - 4	0.5	8 of 9	0.5	8 of 9	8.2	0 of 9
Naphthalene	0.16 - 0.28	12	0 of 9	100	0 of 9	12.0	0 of 9
Phenanthrene	0.8 - 3.5	100	0 of 9	100	0 of 9	1000	0 of 9
Pyrene	0.23 - 12	100	0 of 9	100	0 of 9	1000	0 of 9
Total PAHs	3.44 - 56.86	-	-			-	-
Arsenic	5.4 - 169	13	5 of 9	16	3 of 9	16	3 of 9
Barium	35.4 - 92.1	350	0 of 9	400	0 of 9	820	0 of 9
Beryllium	0.22 - 0.45	7.2	0 of 9	72	0 of 9	47	0 of 9
Cadmium	0.25 - 1.4	2.5	0 of 9	4.3	0 of 9	7.5	0 of 9
Copper	17.6 - 669	50	4 of 9	270	1 of 9	1720	0 of 9
Cyanide	1.7 - 13.7	27	0 of 9	27	0 of 9	40	0 of 9
Lead	34.6 - 1170	63	5 of 9	400	3 of 9	450	1 of 9

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use Soil Cleanup Objective (SCG)[b] (ppm)[a]	Frequency Exceeding Unrestricted SCG[b]	Restricted Use Soil Cleanup Objective for Restricted Residential (SCG)[c] (ppm)[a]	Frequency Exceeding Restricted Residential SCG[c]	Protection of Groundwater SCG (ppm)	Frequency Exceeding SCG
Manganese	319 - 730	1600	0 of 9	2000	0 of 9	2000	0 of 9
Mercury	0.11 - 15	0.18	6 of 9	0.81	3 of 9	0.73	3 of 9
Nickel	9.3 - 20.7	30	0 of 9	310	0 of 9	130	0 of 9
Silver	0.3 - 1.7	2	0 of 9	180	0 of 9	8.3	0 of 9
Zinc	48.8 - 221	109	2 of 9	10000	0 of 9	2480	0 of 9

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 (March 2020).
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Restricted Residential Use
d - Only detected parameters with an action level are summarized.
e - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.
f - Total PAHs are screened per CP-51.

Table #6 – On-site Soil (Subsurface)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use Soil Cleanup Objective (SCG)[b] (ppm)[a]	Frequency Exceeding Unrestricted SCG[b]	Restricted Use Soil Cleanup Objective for Restricted Residential (SCG)[c] (ppm)[a]	Frequency Exceeding Restricted Residential SCG[c]	Protection of Groundwater SCG (ppm)	Frequency of Exceeding SCG
1,3-Dichlorobenzene	0.0093 - 0.19	2.4	0 of 207	49	0 of 207	2.4	0 of 207
1,4-Dichlorobenzene	0.022 - 0.67	1.8	0 of 207	13	0 of 207	1.8	0 of 207
2-Butanone (Methyl Ethyl Ketone)	0.0022 - 0.16	0.12	1 of 207	100	0 of 207	0.12	1 of 207
Acetone	0.0048 - 0.62	0.05	48 of 207	100	0 of 207	0 .05	48 of 207
Benzene	0.00049 - 370	0.06	39 of 207	4.8	5 of 207	0.06	39 of 207
Chlorobenzene	0.0024 - 0.07	1.1	0 of 207	100	0 of 2017	1.1	0 of 207
Chloroform (Trichloromethane)	0.00069 - 0.0037	0.37	0 of 207	49	0 of 207	0.37	0 of 207
Ethylbenzene	0.00049 - 170	1	35 of 207	41	11 of 207	1.0	35 of 207
Methylene chloride	0.0025 - 1.2	0.05	27 of 207	100	0 of 207	0.05	27 of 207
Naphthalene	0.13 - 160	12	1 of 4	100	15 of 207	12.0	1 of 4
Tetrachloroethene	0.00099 - 0.034	1.3	0 of 207	19	0 of 207	1.3	0 of 207
Toluene	0.00047 - 600	0.7	9 of 207	100	1 of 207	0.7	9 of 207
Trichloroethene	0.012 - 0.012	0.47	0 of 207	21	0 of 207	0.47	0 of 207
Xylene (total)	0.0011 - 1100	0.26	39 of 207	100	8 of 207	1.6	23 of 207
2-Methylphenol (o-Cresol)	0.3 - 2.3	0.33	2 of 207	100	0 of 207	0.33	2 of 207
4-Methylphenol	0.016 - 33	0.33	7 of 207	100	0 of 207	0.33	7 of 207
Acenaphthene	0.0037 - 290	20	20 of 207	100	6 of 207	98	7 of 207
Acenaphthylene	0.0065 - 1300	100	5 of 207	100	5 of 207	107	4 of 207
Anthracene	0.0068 - 1500	100	6 of 207	100	6 of 207	1000	0 of 207
Benzo(a)anthracene	0.011 - 780	1	115 of 207	1	115 of 207	1.0	115 of 207
Benzo(a)pyrene	0.0048 - 530	1	121 of 207	1	121 of 207	22	24 of 207
Benzo(b)fluoranthene	0.0093 - 460	1	114 of 207	1	114 of 207	1.7	100 of 207
Benzo(g,h,i)perylene	0.007 - 370	100	4 of 207	100	4 of 207	1000	0 of 207
Benzo(k)fluoranthene	0.0028 - 260	0.8	84 of 207	3.9	50 of 207	1.7	66 of 207

Table #6 – On-site Soil (Subsurface) (Continued)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use Soil Cleanup Objective (SCG)[b] (ppm)[a]	Frequency Exceeding Unrestricted SCG[b]	Restricted Use Soil Cleanup Objective for Restricted Residential (SCG)[c] (ppm)[a]	Frequency Exceeding Restricted Residential SCG[c]	Protection of Groundwater SCG (ppm)	Frequency of Exceeding SCG
Chrysene	0.0066 - 700	1	115 of 207	3.9	76 of 207	1.0	115 of 207
Dibenz(a,h)anthracene	0.0097 - 78	0.33	55 of 207	0.33	55 of 207	1000	0 of 207
Dibenzofuran	0.0044 - 320	7	15 of 207	59	4 of 207	210	2 of 207
Fluoranthene	0.01 - 1500	100	9 of 207	100	9 of 207	1000	2 of 207
Fluorene	0.0069 - 1700	30	17 of 207	100	8 of 207	386	3 of 207
Indeno(1,2,3-cd)pyrene	0.0085 - 310	0.5	118 of 207	0.5	118 of 207	8.2	14 of 207
Naphthalene	0.0066 - 18000	12	35 of 207	100	15 of 207	12.0	35 of 207
Phenanthrene	0.0076 - 4900	100	15 of 207	100	15 of 207	1000	0 of 207
Phenol	0.29 - 0.29	0.33	0 of 207	100	0 of 207	0.33	0 of 207
Pyrene	0.012 - 2200	100	9 of 207	100	9 of 207	1000	0 of 207
Total PAHs	0.012 - 39726	-	-			-	-
Arsenic	1.4 - 1940	13	68 of 207	16	59 of 207	16	59 of 207
Barium	3.3 - 1190	350	2 of 207	400	1 of 207	820	1 of 207
Beryllium	0.091 - 4.2	7.2	0 of 207	72	0 of 207	47	0 of 207
Cadmium	0.043 - 9.9	2.5	3 of 207	4.3	2 of 207	7.5	2 of 207
Copper	2 - 1360	50	28 of 207	270	7 of 207	1720	0 of 207
Cyanide	0.57 - 401	27	27 of 207	27	27 of 207	40	20 of 207
Lead	1.7 - 2630	63	73 of 207	400	11 of 207	450	7 of 207
Manganese	49.6 - 1560	1600	0 of 207	2000	0 of 207	2000	0 of 207
Mercury	0.0093 - 33.3	0.18	64 of 207	0.81	32 of 207	0.73	29 of 207
Nickel	1 - 135	30	14 of 207	310	0 of 207	130	1 of 207
Selenium	0.58 - 15.6	3.9	3 of 207	180	0 of 207	4.0	3 of 207
Silver	0.4 - 1.3	2	0 of 207	180	0 of 207	8.3	0 of 207
Zinc	7.8 - 2430	109	34 of 207	10000	0 of 207	2480	0 of 207

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 (March 2020).
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Restricted Residential Use.
d - Only detected parameters with an action level are summarized.
e - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.
f - Total PAHs are screened per CP-51.

Off-site Soil

On the B&L Property (off-site property to the north of and adjacent to the site), MGP-related impacts appear to be limited to the southeast portion of the property located north of the former purifier area at the former MGP site. In the southeast portion of the B&L property, apparent MGP residual material, including sheen, and/or NAPL blebs was observed in overburden soil at depths typically greater than 10 ft bgs. The apparent MGP residual material was typically observed in the overburden soil directly above and within weathered bedrock. NAPL migration from the former purifier area to the southeast portion of the B&L property along the overburden and bedrock interface is a possible transport mechanism from the former MGP site to the B&L property.

In the central portion of the B&L property, petroleum-like odor and sheen are present at depths typically at and below the water table. The apparent petroleum impacts appear to be unrelated to the MGP residual material observed in the southeast portion of the property. These were analyzed and identified as diesel/petroleum-related impacts from other possible sources at the B&L property and their operations. Minor apparent petroleum-related impacts, such as petroleum-like odor or minor sheen, were observed in borings completed to the east of the former plant floor slab and in two borings completed along the Genesee River west of the retaining wall.

Similar to the former MGP site, the samples that exceed SCOs for PAHs are distributed throughout the fill material in the southern portion of the B&L property and in soil along the Genesee River. The origin of the fill material used at the Former B&L property, including fill material observed beneath the floor slab, is unknown. Glass, presumably related to former B&L manufacturing operations, was found in fill material on the B&L property. The use of coal as a fuel source in the former B&L plant buildings, as indicated on Sanborn Maps, may explain ALM observed in the fill. Residuals from the 1915 fire that destroyed a portion of the former B&L manufacturing facility may also contribute to PAHs in overburden on the B&L property.

Soil exceedances for metals, including cadmium, lead, and barium, are most prevalent in soil borings completed west of the former B&L manufacturing plant floor slab. The presence of these metals in soil does not appear to be related to the former MGP operations or MGP waste material.

PAHs and metals were also detected in one location completed beneath the B&L plant floor slab, TG-14-06C, where a possible void was noted below a layer of fill material with ALM while advancing the direct-push boring. This boring was completed in an area where historical drawings indicate gas conveyance pipes from the MGP entered the former B&L manufacturing plant. However, test pits completed in the vicinity of the subsurface pipes on the eastern side of the former plant floor slab found no evidence of past or ongoing release of MGP residuals.

Table #7 – Off-site Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use Soil Cleanup Objective (SCG)[b] (ppm)[a]	Frequency Exceeding SCG[b]
VOCs			
1,2-Dichlorobenzene	0.00035 - 0.00035	1.1	0 of 89
2-Butanone (Methyl Ethyl Ketone)	0.0032 - 0.019	0.12	0 of 89
Acetone	0.0033 - 0.44	0.05	11 of 89
Benzene	0.00042 - 4.5	0.06	10 of 89
Chloroform (Trichloromethane)	0.0004 - 0.58	0.37	1 of 89
cis-1,2-Dichloroethene	0.00076 - 0.0054	0.25	0 of 89
Ethylbenzene	0.00044 - 16	1	4 of 89
Methylene chloride	0.0016 - 0.087	0.05	1 of 89
Tetrachloroethene	0.00073 - 0.0016	1.3	0 of 89
Toluene	0.00033 - 0.21	0.7	0 of 89
Trichloroethene	0.0019 - 0.079	0.47	0 of 89
Xylene (total)	0.00072 - 4.7	0.26	6 of 89
SVOCs			
2-Methylphenol (o-Cresol)	0.38 - 0.38	0.33	1 of 91
4-Methylphenol	0.05 - 0.05	0.33	0 of 54
Acenaphthene	0.0057 - 67	20	2 of 91
Acenaphthylene	0.0042 - 5.5	100	0 of 91
Anthracene	0.0054 - 41	100	0 of 91
Benzo(a)anthracene	0.02 - 57	1	24 of 91
Benzo(a)pyrene	0.0061 - 27	1	20 of 91
Benzo(b)fluoranthene	0.0089 - 130	1	24 of 91
Benzo(g,h,i)perylene	0.008 - 38	100	0 of 91
Benzo(k)fluoranthene	0.0065 - 18	0.8	19 of 91
Chrysene	0.0054 - 60	1	23 of 91
Dibenz(a,h)anthracene	0.012 - 4.8	0.33	16 of 91
Dibenzofuran	0.0078 - 20	7	2 of 91
Fluoranthene	0.0092 - 240	100	1 of 91
Fluorene	0.015 - 49	30	2 of 91
Indeno(1,2,3-cd)pyrene	0.006 - 30	0.5	20 of 91
Naphthalene	0.025 - 50	12	1 of 91
Pentachlorophenol	0.12 - 0.12	0.8	0 of 91
Phenanthrene	0.0087 - 190	100	3 of 91
Phenol	0.14 - 1.3	0.33	2 of 91
Pyrene	0.0086 - 160	100	1 of 91

Table #7 – Off-site Soil - (Continued)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use Soil Cleanup Objective (SCG)[b] (ppm)[a]	Frequency Exceeding SCG[b]
Inorganics			
Arsenic	1.1 - 103	13	21 of 88
Barium	10.3 - 8330	350	4 of 88
Beryllium	0.055 - 2.9	7.2	0 of 88
Cadmium	0.035 - 38.3	2.5	4 of 88
Copper	3.5 - 14900	50	13 of 88
Cyanide	0.55 - 111	27	1 of 88
Lead	1.3 - 7460	63	28 of 88
Manganese	12.6 - 1110	1600	0 of 88
Mercury	0.0099 - 6.1	0.18	22 of 88
Nickel	2.9 - 97.5	30	2 of 88
Selenium	0.42 - 2.2	3.9	0 of 88
Silver	0.27 - 27.7	2	9 of 88
Zinc	9.7 - 6300	109	20 of 88

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 (March 2020).
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use (March 2020).
d - Only detected parameters with an action level are summarized.
e - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.

Based on the findings of the RI, the presence of MGP residuals has resulted in the contamination of soil. The site contaminants identified in off-site surface soil which are considered to be primary COCs, to be addressed by the remedy selection process, are inorganic compounds (arsenic, copper, cyanide, lead, and mercury), PAHs, and VOCs. The site contaminants identified in off-site subsurface soil which are considered to be primary contaminants, to be addressed by the remedy selection process, are NAPL, inorganic compounds (arsenic, barium, cadmium, copper, cyanide, lead, and mercury), PAHs, and VOCs.

Sediment

Sediment samples were collected from locations adjacent to, and downstream of, the former MGP site in the Genesee River as shown on Figure 4. The samples were collected to assess the potential impacts to the river sediments from the site. The results indicate that the sediment exceeds SCGs for sediments for total PAHs and VOCs.

NAPL impacts to sediment related to former MGP operations appear to be limited to an area along the southern portion of the former MGP site adjacent to the former light oil plant. A discrete area of NAPL blebs was observed adjacent to the B&L property located approximately 210 ft north (downstream) of the northern RG&E and B&L property boundary.

The NAPL observed in sediment adjacent to the former light oil plant correlates with upland impacts to overburden along the overburden and bedrock interface. Previous NAPL migration from the overburden likely

contributed to the current impacts observed in sediment in the vicinity of the former light oil plant. Alternatively, erosion of the eastern riverbank may have exposed NAPL that was already present in the overburden. Sediment cores collected during the investigation indicated that sediment thickness was limited in the vicinity of the former light oil plant, with soft sediment thickness ranging from one to 3.5 ft in the area where NAPL was observed. Where observed, NAPL was present in sediment consisting of sand or sand and gravel at the top of bedrock at elevations similar to adjacent upland soil borings. Since no apparent upland source of the small area of NAPL observed in sediment adjacent to the B&L property was identified during the RI, the NAPL may have been mobilized and deposited from an upstream source. The NAPL was observed near the top of the 4.5-ft core sample, immediately below a 0.8-ft-thick layer of sandy fluvial deposits. The NAPL bleb was co-located with glass, wood, and shells. Analytical testing indicated that sediment with the highest PAH concentrations were co-located with areas of visual and olfactory impacts.

Table #8 – Sediment (Genesee River)

Detected Constituents	Concentration Range Detected (ppm)[a]	Freshwater Sediment Class A (SCG)[b] (ppm)[a]	Frequency Exceeding SCG
VOCs			
1,2,4-Trimethylbenzene	0.00044 - 54	3.4	3 of 21
Benzene	1.1 - 14	0.53	5 of 21
Ethylbenzene	0.000097 - 59	0.43	5 of 21
Isopropyl benzene (Cumene)	0.00047 - 7.5	0.21	5 of 21
o-Xylene	0.00013 - 22	0.82	4 of 21
Toluene	0.69 - 9.4	0.93	1 of 21
Xylene (total)	0.00012 - 31	0.59	6 of 21
SVOCs			
Total PAHs	0.3242 - 859.2	4	11 of 21

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment.
b - SCG: Freshwater Sediment Class A, New York State Department of Environmental Conservation Division of Fish, Wildlife and Marine Resources Bureau of Habitat (24 June 2014).
c - Only detected parameters with an action level are summarized.
d - Detected concentrations were screened against applicable SCGs. Sample counts are representative of all samples analyzed within each grouping.

Based on the findings of the RI, the presence of NAPL and MGP residual(s) has resulted in the contamination of sediment. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of sediment to be addressed by the remedy selection process are NAPL and PAHs.

Soil Vapor

A soil vapor investigation was not conducted at the site. The two laboratory buildings located in the northern portion of the former MGP site, the only buildings at the site, were previously the only occupied buildings at the former MGP site. The laboratory buildings are currently not used or occupied and may be demolished in the future. As a result, vapor intrusion into the two formerly occupied structures is not considered a complete exposure pathway.

Exhibit B

Description of Remedial Alternatives

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

Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment. This No Further Action Alternative generally consists of institutional controls to establish monitoring requirements for fences and to protect from potential future exposure to soil and groundwater; monitoring of existing IRMs at the site; engineering controls (i.e., fencing, signage) to restrict access to the river and natural gas infrastructure; long-term overburden and bedrock groundwater monitoring; and passive NAPL recovery at the former MGP site.

Present Worth: *$1,006,000*
Capital Cost: *$333,600*
Annual Costs: *$54,300*

Alternative 2: Soil Capping, Near-River Soil Excavation, Full Sediment Excavation, and Hydraulic Containment (Slurry Wall)

This alternative generally consists of surface soil excavation and asphalt-capping of surface soil at the former MGP site and B&L property adjacent to and north of the site, excavating subsurface near-river soil to competent bedrock, excavating sediment and installing a slurry wall at the former MGP site to mitigate groundwater flow off-site. Engineering controls would include existing fencing which restricts site access. Institutional controls would be implemented to establish monitoring and maintenance requirements for caps and fences and to protect from potential future exposure to subsurface soil and groundwater via an environmental easement. Long-term overburden and bedrock groundwater monitoring and passive NAPL recovery would also be conducted.

Present Worth: *$29,363,000*
Capital Cost: *$28,584,000*
Annual Costs: *$62,800*

Alternative 3: Full Excavation of On-site and Off-site Soil, Near-River Soil Excavation, and Full Sediment Excavation

This alternative generally consists of excavating surface, subsurface and near-river and upland soil at the former MGP site and the MGP-impacted area of the B&L property adjacent to and north of the site to competent bedrock. The upper 10 ft of soil would be stockpiled for sampling to confirm compliance with 6 NYCRR 375-6.7 (d) and CP-51 in accordance with DER-10 Section 5.4(e) and would receive the concurrence of NYSDEC prior to reuse at the former MGP site; impacted soil would be treated or disposed off-site. Site sediment would be excavated

for off-site disposal/thermal treatment. MNA of groundwater, or a contingent technology outlined in the remedial design if MNA is not effective, and passive recovery of NAPL.

Present Worth: *$89,873,000*
Capital Cost: *$88,791,500*
Annual Costs: *$87,200*

Alternative 4: Partial Excavation of On-site Soil, Full Excavation of Off-site Soil, Near-River Soil Excavation, and Full Sediment Excavation

This alternative generally consists of excavating former MGP site surface soil, fully excavating near-river soil (i.e., between the ISS wall and the river) to competent bedrock, partially excavating soil at upland source areas at the former MGP site and the MGP-impacted area of the B&L property adjacent to and north of the site to competent bedrock and backfilling with material allowing for unrestricted use, and constructing a vegetated two-foot clean soil cover with a demarcation layer on the former MGP site. The upper 10 ft of soil would be stockpiled for sampling to confirm compliance with 6 NYCRR 375-6.7 (d) and CP-51 in accordance with DER-10 Section 5.4(e) and would receive the concurrence of NYSDEC prior to reuse at the former MGP site; impacted soil would be treated or disposed off-site. Sediment containing MGP residuals and PAHs and VOCs above sediment criteria would be excavated for off-site treatment/disposal. Engineering controls would include a vegetated two-foot clean soil cover meeting restricted residential SCOs with a demarcation layer. Institutional controls would be implemented to document the presence of covered areas, to establish maintenance and monitoring requirements for the soil cover, and to protect from potential future exposure to subsurface soil and groundwater via an environmental easement. MNA of groundwater, or a contingent technology outlined in the remedial design if MNA is not effective, and passive NAPL recovery would also be conducted. This alternative is depicted on Figures 6, 7, and 8.

Present Worth: *$47,747,000*
Capital Cost: *$46,623,600*
Annual Costs: *$90,600*

Alternative 5: Partial On-site Excavation (Upper 10 feet), Partial On-site ISS, Off-site ISS, Near-River Soil Excavation, and Full Sediment Excavation

This alternative generally consists of excavating former MGP site surface soil and excavating the upper 10 ft of soil at the former MGP site upland source areas and the MGP-impacted area of the B&L Property adjacent to and north of the site. Near-river soil at the former MGP site would be excavated to competent bedrock. The soil would be stockpiled for sampling to confirm compliance with 6 NYCRR 375-6.7 (d) and CP-51 in accordance with DER-10 Section 5.4(e) and would receive the concurrence of the Department prior to reuse at the former MGP site; impacted soil would be treated or disposed off-site. Source area subsurface soil below 10 ft would be treated by ISS. Sediment containing MGP residuals and PAHs and VOCs above sediment criteria would be excavated for off-site treatment/disposal. Institutional controls would be implemented to record the presence of covered areas, to establish OM&M requirements for soil covers, and to protect from potential future exposure to subsurface soil and groundwater via an environmental easement. Engineering controls would include a vegetated two-foot clean soil cover meeting restricted residential SCOs with a demarcation layer. MNA of groundwater, or a contingent technology outlined in the remedial design if MNA is not effective, and passive NAPL recovery would also be conducted.

Present Worth: *$48,454,000*

Capital Cost: *$47,353,000*
Annual Costs: *$88,700*

Alternative 6: Partial On-site Excavation (Upper 10 feet), Partial On-site ISS, Off-site Excavation, Near-River Soil Excavation, and Full Sediment Excavation

This alternative generally consists of excavating former MGP site surface soil and the upper 10 ft of soil at the former MGP site upland source areas. Near-river soil at the former MGP site and the MGP-impacted area of the B&L property adjacent to and north of the site would be excavated to competent bedrock. The soil would be stockpiled for sampling to confirm compliance with 6 NYCRR 375-6.7 (d) and CP-51 in accordance with DER-10 Section 5.4(e) and would receive the concurrence of the Department prior to reuse at the former MGP site; impacted soil would be treated or disposed of off-site. Former MGP site source area subsurface soil below 10 ft would be treated by ISS. Sediment containing MGP residuals and PAHs and VOCs above sediment criteria would be excavated for off-site treatment/disposal. Engineering controls would include a vegetated two-foot clean soil cover with a demarcation layer. Institutional controls would be implemented to document the presence of covered areas, to establish monitoring and maintenance requirements for the soil cover meeting restricted residential SCOs, and to protect from potential future exposure to subsurface soil and groundwater via an environmental easement. MNA of groundwater, or a contingent technology outlined in the remedial design if MNA is not effective, and passive NAPL recovery would also be conducted..

Present Worth: *$53,362,000*
Capital Cost: *$52,261,000*
Annual Costs: *$88,700*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1: No Further Action	$333,600	$54,300	$1,006,000
2: Soil Capping, Near-River Soil Excavation, Full Sediment Excavation, and Hydraulic Containment (Slurry Wall)	$28,584,000	$62,800	$29,363,000
3: Full Excavation of On-site and Off-site Soil, Near-River Soil Excavation, and Full Sediment Excavation	$88,791,500	$87,200	$89,873,000
4: Partial Excavation of On-site Soil, Full Excavation of Off-site Soil, Near-River Soil Excavation, and Full Sediment Excavation	$46,623,600	$90,600	$47,747,000
5: Partial On-site Excavation (Upper 10 feet), Partial On-site ISS, Off-site ISS, Near-River Soil Excavation, and Full Sediment Excavation	$47,353,000	$88,700	$48,454,000
6: Partial On-site Excavation (upper 10 feet), Partial On-site ISS, Off-site Excavation, Near-River Soil Excavation, Full Sediment Excavation	$52,261,000	$88,700	$53,362,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, Partial Excavation of On-site Soil, Full Excavation of Off-site Soil, Near-River Soil Excavation, and Full Sediment Excavation, as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by removing contaminated soil on the former MGP site and off-site B&L property, removing contaminants near-the river and contaminated sediments in the river. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figures 6, 7, and 8.

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 approved FS report.

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

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

The proposed remedy (Alternative 4) would satisfy this criterion by removing impacted soil from the former MGP site source areas including the source of groundwater impacts; removing MGP-impacted soil at the B&L property adjacent to and north of the site; removing contaminated sediment; and constructing a soil cover at the former MGP site. Implementing MNA and NAPL recovery would restore overburden and bedrock groundwater quality and may attain Class GA Water Quality Standards over time. In addition, a contingent technology will be outlined in the remedial design if MNA is not proven effective in the long term.

The No Further Action alternative (Alternative 1) is least protective of human health and the environment. Alternative 2 includes institutional controls that are protective of potential future exposure to subsurface soil and uses containment technologies to restrict additional impacts from migrating off-site. This Alternative would result in some improvement in groundwater quality, though Class GA Water Quality Standards would not be attained within 30 years.

Alternatives 3, 4, 5, and 6 are protective, but to different degrees. Alternative 3 is the most protective of the alternatives with respect to MGP-impacted soil and NAPL source areas and would restore the former MGP site to conditions suitable for unrestricted future use within the applicable zoning designation. As noted above for Alternative 4, Alternatives 5 and 6 would also require implementing MNA and NAPL recovery or a contingent technology if MNA is not proven effective in the long term.

Alternatives 2 through 6 are equally protective with respect to sediment and riverbank soil.

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, 4, 5, and 6 comply with SCGs to the extent practicable. Alternative 1 is the least compliant with SCGs related to remediating impacted soil, groundwater, and sediment. Alternative 2 would partially comply with SCGs related to direct exposures to surface soil and containment of impacts on-site but would not comply with Class GA Water Quality Standards or address impacts to subsurface soil. Alternative 3 meets and exceeds the restricted residential use SCGs and would also meet unrestricted SCGs related to each of the impacted media. Alternatives 4, 5, and 6 would result in substantial compliance with SCGs but would rely on a vegetated two-foot clean soil cover with a demarcation layer and an environmental easement to preclude contact with limited remaining impacted soil at the former MGP site. Alternatives 2, 3, 4, 5, and 6 would include MNA, or a contingent technology outlined in the remedial design if MNA is not effective, and NAPL recovery to improve groundwater quality to meet regulatory standards over time. Alternatives 4, 5, and 6 satisfy the restricted residential use SCGs. Each Alternative would include engineering and institutional controls.

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

3. <u>Long-term Effectiveness and Permanence.</u> 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 Alternatives 3 through 6 which address long-term impacts to the environment resulting from NAPL in subsurface soil through removal of NAPL, soil and sediment contaminants and natural attenuation of groundwater contaminants. Alternatives 1 and 2 do not include measures for addressing these impacts. These alternatives are therefore not likely permanent solutions. Given their reliance on engineering and institutional controls, alternatives 1 and 2 would have limited effectiveness over the long term as compared to other Alternatives.

Alternative 3 addresses current and future potential human exposure to soil and sediment and potential long-term risks to the environment via removal of remaining soil contaminants outside of existing treated areas (i.e. ISS wall) to achieve pre-release conditions. NAPL present in bedrock groundwater would be reduced through passive NAPL recovery and managed through a groundwater use prohibition. Groundwater contamination will be reduced through natural attenuation.

Alternatives 4, 5, and 6 are equally effective and permanent over the long term. These alternatives address potential current and future exposures to surface soil contaminants, subsurface soil containing contaminants including NAPL and total PAHs greater than 500 parts per million (ppm), and sediment contaminants. COC-impacted subsurface soil including total PAHs less than 500 ppm would remain on-site. These alternatives would rely on engineering controls and institutional controls to monitor the soil cover installed at the former MGP site. Alternatives 5 and 6 would also rely on engineering and institutional controls to document the presence and locations of solidified soil and manage solidified soil if excavated in the future. Under Alternative 6, controls related to solidified soil would not be required at the B&L Property, as it includes excavation for off-site areas. Source removal and stabilization along with MNA or a contingent technology outlined in the remedial design if MNA is not effective and NAPL recovery would support the potential restoration of overburden and bedrock groundwater quality to Class GA Water Quality Standards over a long 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.

The highest degree of mobility and volume reduction is offered by alternatives that permanently remove contamination from the site. Thus, the full excavation called for under Alternative 3 ranks highest for this criterion and is the most effective with respect to reducing toxicity, mobility, or volume. Alternatives 1 and 2 would not reduce the volume or toxicity of on-site impacted soil. Alternative 1 would not reduce the mobility of impacted media. Through capping and sediment excavation, Alternative 2 would reduce the mobility of impacted soil via erosion and the potential transport of impacted sediment. Alternatives 4, 5, and 6 are slightly less effective than Alternative 3 because some COC-impacted subsurface soil would remain at the former MGP site; however, these alternatives meet the SCGs for the site. The volume of subsurface soil contamination remaining at depth would be minimal and have a minimal potential human health exposure.

Alternatives 2, 3, 4, 5, and 6 would further reduce contaminant mass in overburden and bedrock groundwater over time via MNA or a contingent technology outlined in the remedial design if MNA is not effective, and NAPL recovery.

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.

Alternative 1 would have the lowest level of potential short-term impact to the public and on-site workers because no active remediation would occur on the site.

Alternatives 2 through 6 involve the use of standard construction machinery, which will produce some degree of short-term construction impacts. Varying levels of truck traffic, dust, noise generation, and potential odor impacts will be generated, though dust and odor control are required as part of the remedial design plans. Alternative 3 would have the greatest short-term impacts to the public and site workers given the large soil volume requiring excavation. Much lower levels of traffic would be produced under Alternatives 4, 5, and 6 because less material would be transported off-site. Some inbound traffic associated with delivery of materials for the cap or ISS would be required under Alternatives 2, 5, and 6.

The potential for odors is lower for Alternatives 2, 4, 5, and 6; however, controls would be needed to mitigate odors and dust generated during bentonite slurry wall construction for Alternative 2 and when mixing and handling the cement/ground granulated blast-furnace slag (GGBFS) or other ISS agents for Alternatives 5 and 6 and during excavation of contaminated soil. The length of time required to complete remediation would be the greatest under Alternative 3 (4 to 5 years), with lesser and broadly similar lengths of time required for Alternatives 2 (1 to 1.5 years) and 4, 5, and 6 (3 to 4 years).

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.

All of the retained alternatives employ readily available technologies and have been used at other sites. Alternative 2 would have some challenges associated with working around active utilities when installing the bentonite slurry

wall. Alternative 3 would be implementable but technically and logistically challenging. Alternative 5 would also have some challenges associated with incorporating buried structures and debris into the ISS mixture at the former MGP site and B&L property, though this has been completed similarly elsewhere. Bench-scale testing would be required to establish an effective mix design and field-testing during construction would be necessary to conform with the ISS mix design for Alternative 5. Implementability concerns related to sediment excavation (a presumptive remedy) are the same for Alternatives 2 through 6. Excavating sediment is a common practice although there can be difficulties associated with obtaining permits, sediment resuspension and turbidity, and managing water and flows. The remedial design will address in-water challenges.

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 1 has the lowest cost at approximately $1 million and Alternative 3 has the highest cost at approximately $89.87 million with its large volume of soil to be handled due to excavation and off-site disposal/thermal treatment or on-site treatment/potential soil reuse. The costs of Alternatives 4, 5, and 6 are similar to each other. Alternative 2 is much less expensive than Alternatives 3, 4, 5, and 6, but it does not address the volume of wastes existing in the former MGP site upland area and the B&L property overburden, which is a continuing source of impacts to groundwater quality.

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

The reasonably anticipated future use of the site is active recreation (restricted residential), and Alternatives 1 and 2 would impose the greatest restrictions on land use; however, continued commercial or industrial use of the former MGP site is possible under each of the remedies.

Alternative 3 would allow for essentially unrestricted future use of the former MGP site (except for the previously implemented ISS area) and continued commercial use of the B&L property adjacent to and north of the site in accordance with local zoning and ordinances.

Alternatives 4 and 5 would include limited use restrictions and active recreation (restricted residential) use of the MGP. The area of soil remediation at the B&L property would not require restrictions. In addition, Alternative 5 would include limited institutional controls placed on both properties, and Alternative 6 would include limited institutional controls placed on the Former MGP site only (i.e., documenting the presence/potential future management of solidified soil).

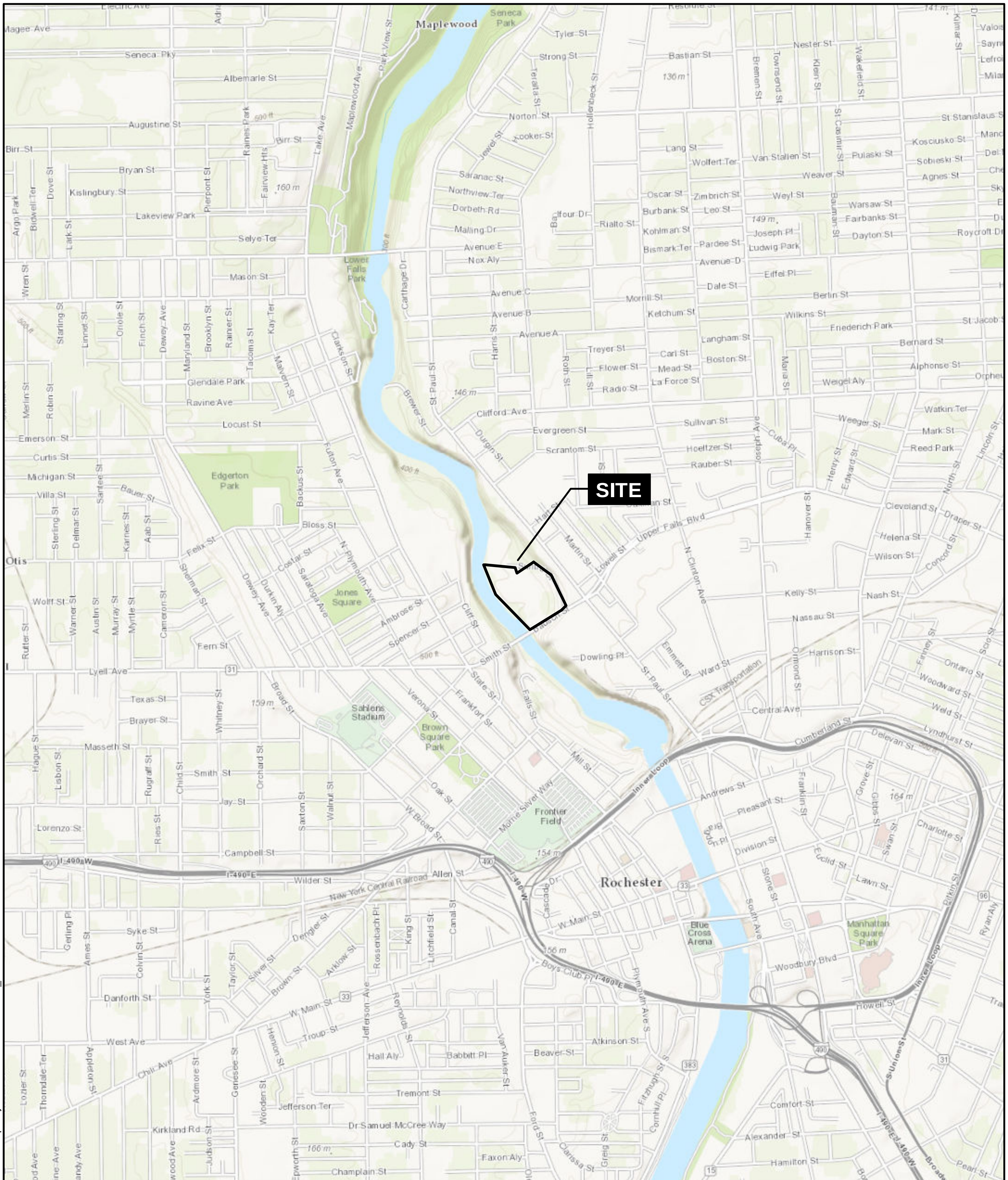
Alternatives 1 through 6 rely on institutional controls (e.g., an environmental easement) for the site.

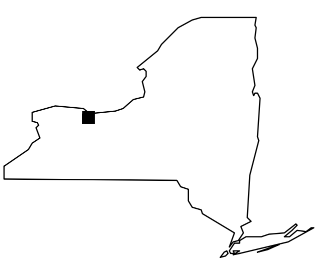
The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

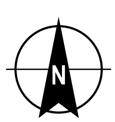
9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected

remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 4 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.







MAP SOURCE: ESRI

HALEY ALDRICH

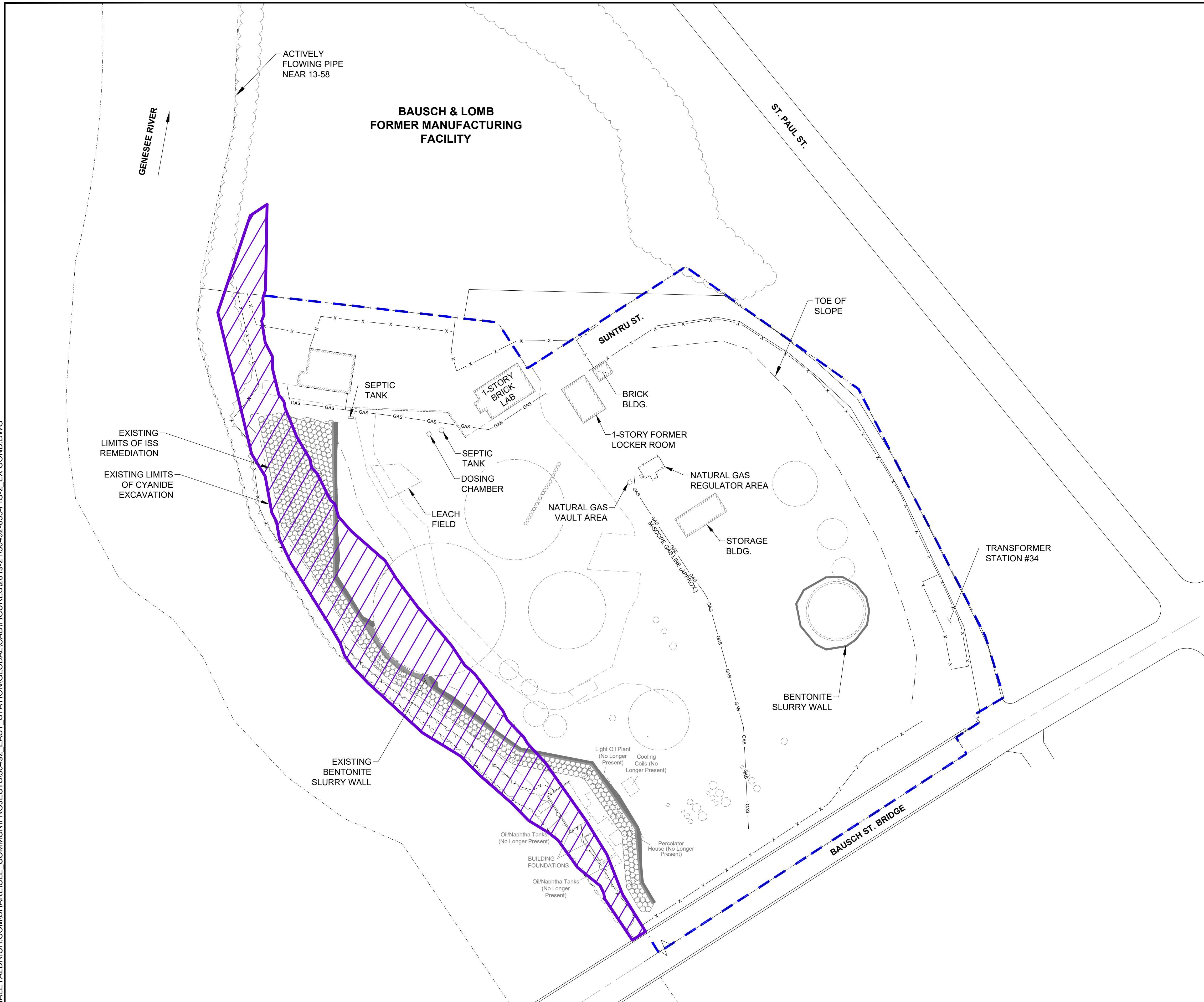
RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2,000 FT
OCTOBER 2021

FIGURE 1

GIS FILE PATH: G:\36492_East_Station\Global\GIS\MapProjects\36492-042-001-SITE_LOCUS.mxd ? USER: hmarch ? LAST SAVED: 3/26/2015 2:20:15 PM



LEGEND

- PROPERTY BOUNDARY
- RIVER BANK
- TOE OF SLOPE
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING BUILDING
- FORMER STRUCTURES/FEATURES
- EXISTING TREE LINE
- EXISTING ISS COLUMNS
- EXISTING SLURRY WALL
- APPROXIMATE BOUNDARY OF NEW YORK STATE-OWNED PARCEL
- APPROXIMATE BOUNDARY OF RG&E-OWNED PARCEL

NOTES

1. SITE FEATURES FROM SURVEYSITEMAP.DWG AND DIGITISED FROM GOOGLE EARTH PRO IMAGE.
2. ALL LOCATIONS ARE APPROXIMATE.
3. APPROXIMATE BOUNDARY OF NEW YORK STATE-OWNED PARCEL FROM CITY OF ROCHESTER, NY PROPERTY INFORMATION GIS TOOL.

HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

EXISTING SITE CONDITIONS

SCALE: AS SHOWN
MAY 2021

FIGURE 2

SLIVNYAK, OLEG Printed: 3/18/2022 3:10 PM Layout: FIGURE 2
\\HALEYALDRICH.COM\SHARE\CLE_COMMON\PROJECTS\36492_EAST_STATION\GLOBAL\CAD\FIGURES\2019-21\36492-035-FIG-2_EX COND.DWG

NOTES

1. CONFIRMATORY BORING, TEST PIT, AND SOIL BORING RANKING BASED ON VISUAL FIELD OBSERVATIONS ONLY.

2. AERIAL PHOTO DATED APRIL 2009 OBTAINED FROM THE NEW YORK STATE GIS CLEARINGHOUSE OPERATED BY THE STATE OF NEW YORK.

SOIL BORING OBSERVATIONS

- MINOR MGP IMPACTS OBSERVED
- SHEEN OBSERVED
- MINOR TLM/OLM OBSERVED
- TLM/OLM OBSERVED

TEST PIT OBSERVATIONS

- MINOR MGP IMPACTS OBSERVED
- SHEEN OBSERVED
- MINOR TLM/OLM OBSERVED
- TLM/OLM OBSERVED

MAXIMUM TarGOST RESPONSE

- BACKGROUND (LESS THAN 20%)
- 20% TO 50%
- 50% TO 100%
- GREATER THAN 100%

TarGOST CONFIRMATORY BORING OBSERVATIONS

- MINOR MGP IMPACTS OBSERVED
- SHEEN OBSERVED
- MINOR TLM/OLM OBSERVED
- TLM/OLM OBSERVED

N

0 150 300

SCALE IN FEET

HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

TARGOST, SOIL BORING, AND TEST PIT OBSERVATIONS

OCTOBER 2021

FIGURE 3

GIS FILE PATH: G:\36492_East_Station\GlobalGIS\2015-0327-HANY-NAPL Distribution L FULL.mxd — USER: dca — LAST SAVED: 3/27/2015 11:11:10 AM

NOTE:
1. SEDIMENT OBSERVATIONS WERE COMPLETED IN 2013 BY HALEY & ALDRICH OF NEW YORK.
2. AERIAL PHOTO DATED APRIL 2009 OBTAINED FROM THE NEW YORK STATE GIS CLEARINGHOUSE.

0 150 300
SCALE IN FEET

HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

SEDIMENT NAPL/SHEEN OBSERVATIONS - 2013

OCTOBER 2021

FIGURE 4

GIS FILE PATH: G:\36492_East_Station\Global\GIS\2015-0324-HANY-Sediment Observations 2013-F.mxd — USER: dca — LAST SAVED: 3/24/2015 2:52:59 PM

SEDIMENTS

SURFACE SOILS
SUBSURFACE SOILS
OVERBURDEN GROUNDWATER
BEDROCK GROUNDWATER

BEDROCK GROUNDWATER

SURFACE SOILS
OVERBURDEN GROUNDWATER
BEDROCK GROUNDWATER

SURFACE SOILS
SUBSURFACE SOILS
OVERBURDEN GROUNDWATER
BEDROCK GROUNDWATER

SURFACE SOILS
SUBSURFACE SOILS
OVERBURDEN GROUNDWATER
BEDROCK GROUNDWATER

SEDIMENTS

ACTIVELY FLOWING PIPE NEAR 13-58

GENESEE RIVER

BAUSCH & LOMB FORMER MANUFACTURING FACILITY

ST. PAUL ST.

SUNTRU ST.

TOE OF SLOPE

SEPTIC TANK

1-STORY BRICK LAB

BRICK BLDG.

1-STORY FORMER LOCKER ROOM

SEPTIC TANK

DOSING CHAMBER

EXISTING LIMITS OF ISS REMEDIATION

EXISTING LIMITS OF CYANIDE EXCAVATION

NATURAL GAS REGULATOR AREA

NATURAL GAS VAULT AREA

STORAGE BLDG.

TRANSFORMER STATION #34

BENTONITE SLURRY WALL

EXISTING BENTONITE SLURRY WALL

Light Oil Plant (No Longer Present)

Cooling Coils (No Longer Present)

Percolator House (No Longer Present)

BAUSCH ST. BRIDGE

LEGEND

- PROPERTY BOUNDARY
- RIVER BANK
- TOE OF SLOPE
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING BUILDING
- FORMER STRUCTURES/FEATURES
- EXISTING TREE LINE
- EXISTING ISS COLUMNS
- EXISTING SLURRY WALL
- RESPONSE ACTIONS AREA

NOTES

1. SITE FEATURES FROM SURVEYSITEMAP.DWG AND DIGITISED FROM GOOGLE EARTH PRO IMAGE.
2. ALL LOCATIONS ARE APPROXIMATE.

N

0 150 300

SCALE IN FEET

HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

MEDIA AND LOCATIONS REQUIRING RESPONSE ACTIONS

SCALE: AS SHOWN
MAY 2021

FIGURE 5

SLIVNYAK, OLEG Printed: 3/18/2022 3:15 PM Layout: FIGURE 11
\\HALEYALDRICH.COM\SHARE\CLE_COMMON\PROJECTS\36492_EAST_STATION\GLOBAL\CAD\FIGURES\2019-2136492-035-FIG-11_MEDIA AND LOC.DWG

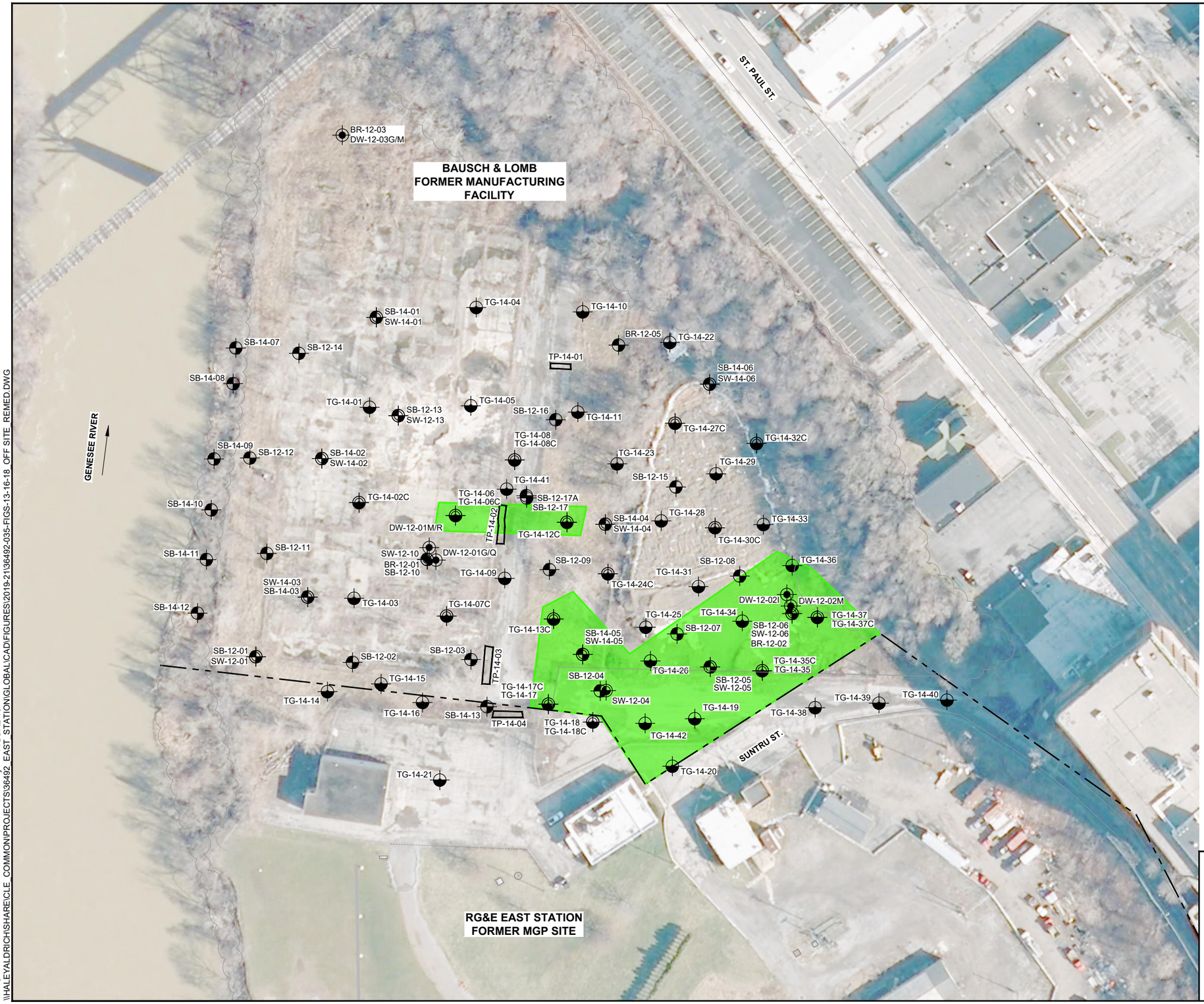
HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

SEDIMENT REMEDY
FULL EXCAVATION
(ALL ALTERNATIVES)

SCALE: AS SHOWN
OCTOBER 2021

FIGURE 6



LEGEND

- PROPERTY BOUNDARY
- SOIL BORING LOCATION
  SB = SOIL BORING
- SOIL BORING/OVERBURDEN MONITORING WELL LOCATION
  SW = SHALLOW (OVERBURDEN) WELL
- BEDROCK MONITORING WELL LOCATION
  BR = BEDROCK CORING, DW = DEEP (BEDROCK) WELL
- TARGOST LOCATION
  TG = TARGOST
- TARGOST WITH CONFIRMATION SOIL BORING
  TG-14-XXC
- TEST PIT
- OFF-SITE EXCAVATION

NOTES

1. AERIAL PHOTO DATED APRIL 2009 OBTAINED FROM THE NEW YORK STATE GIS CLEARINGHOUSE OPERATED BY THE STATE OF NEW YORK.
2. SOIL BORINGS, MONITORING WELLS, TEST PITS, AND TARGOST LOCATIONS ON BAUSCH & LOMB PROPERTY WERE SURVEYED BY HOFFMAN LAND SURVEYING & GEOMATICS ON 25 NOVEMBER 2013 AND 7 AUGUST 2014.

N

0 100 200
SCALE IN FEET

HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

OFF-SITE REMEDY EXCAVATION (ALTERNATIVES 3, 4 & 6)

SCALE: AS SHOWN
OCTOBER 2021

FIGURE 7

LEGEND

- PROPERTY BOUNDARY
- RIVER BANK
- TOE OF SLOPE
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING BUILDING
- FORMER STRUCTURES/FEATURES
- EXISTING TREE LINE
- EXISTING ISS COLUMNS
- EXISTING SLURRY WALL
- EXCAVATION
- EXCAVATE TO BEDROCK
- BOUNDARY OF SOIL COVER

NOTES

1. SITE FEATURES FROM SURVEYSITEMAP.DWG AND DIGITISED FROM GOOGLE EARTH PRO IMAGE.
2. ALL LOCATIONS ARE APPROXIMATE.
3. REMEDY TO EXTEND TO TOE OF SLOPE AT WESTERN PROPERTY BOUNDARY.

HALEY ALDRICH

RG&E EAST STATION FORMER MGP SITE
ROCHESTER, NEW YORK

ON-SITE REMEDY
PARTIAL EXCAVATION
(ALTERNATIVE 4)

SCALE: AS SHOWN
MAY 2021

FIGURE 8