

USEPA Action Memorandum

Property Located at
121-123 Reynolds Street, Rochester, New York 14608
USEPA Cooperative Agreement No. BF-96261018

May 2020

I. Purpose

In accordance with the requirements of the City of Rochester's (City) Cooperative Agreement with the United States Environmental Protection Agency (EPA), the City has prepared this Action Memorandum for the environmental cleanup of a parcel of property owned by the City of Rochester at 121-123 Reynolds Street in Rochester, New York (the "Site"; See location, Figure 1). The Site has been assigned EPA Agreement number BF-96261018.

This Action Memo serves as the primary decision document for federal grant compliance and substantiates the need for remedial action. The following information is provided herein:

- a. A description of the Site and its history;
- b. A listing of environmental investigations performed;
- c. A summary of the cleanup alternatives evaluated, and a description of the alternative chosen for implementation;
- d. A summary of environmental impacts identified at the Site;
- e. An explanation of why the cleanup is authorized by the regulatory agency; and
- f. An explanation of the rationale for selecting that particular action and how the plan meets cleanup goals and will conform to applicable or relevant and appropriate requirements including federal and state laws or regulations.

This Action Memorandum considers the following documents previously prepared for the Site, which contain detailed information on previous investigations, subsurface environmental conditions, evaluation of potential cleanup alternatives, and plans and specifications for implementation of the chosen cleanup alternative:

- *Analysis of Brownfield Cleanup Alternatives, 121-123 Reynolds Street, Rochester, New York, NYSDEC Spill No. 1103833 (ABCA)*, dated February 2020; and
- *Corrective Action Plan, Petroleum-Impacted Soil, 121-123 Reynolds Street, Rochester, NY, NYSDEC Spill No. 1103833 (CAP)*, dated April 2020.

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II. Background

A. Site Description and History

The Site, which is owned by the City (Monroe County Tax ID No. 12.52-3-18.001) is located in a low-density residential area. The Site is generally level, and the parcel is approximately 0.19 acres in size.

Several phases of investigation and partial remediation have previously been completed at the site, as detailed in the following reports:

- *Subsurface Evaluation Data Package, Environmental Assessment and Remediation Services*, Day Environmental (Day), December 2011;
- *Phase I Environmental Site Assessment (ESA)*, Day, April 2015;
- *Phase II ESA*, Day, January 2016; and
- *Supplemental Phase II ESA*, Day, January 2017.

In June 2011, apparent petroleum contamination was observed in soil encountered during excavation of the basement foundation of a new residential house on the 125 Reynolds Street parcel that abuts the Site on the south. Subsequent historical research by the City revealed the former presence of a gas station, and an auto repair facility that included a paint spraying operation on the northern portion of the Site (Former 121 Reynolds Street).

Historical records indicate that up to four petroleum underground storage tanks (USTs) containing gasoline and kerosene had been documented on the Site. In addition, a single-family house had previously been located on the southern portion of the site (former 123 Reynolds Street). The City and its consultant then removed the four USTs in August 2011. A limited amount of impacted soil was also excavated and disposed offsite at that time; confirmatory sampling indicated residual petroleum impacts remained in soil at levels above regulatory cleanup criteria.

The City then commissioned a Phase I ESA in early 2015, followed by a Phase II ESA in the fall of 2015. The Phase II investigation provided the following findings:

- Twenty locations were drilled and sampled across the site, using either Geoprobe direct-push or rotary drilling methods. Four interface monitoring wells were installed; one in the northern half of the site and three in the southern half.
- Bedrock was encountered at depths ranging from approximately 8 to 10 feet below ground surface (bgs).
- Photoionization detector (PID) readings from soil screening were detected in 8 of the 20 borings. Peak PID readings ranged up to 1,659 parts per million (ppm).
- Four of nineteen soil samples contained petroleum volatile organic compounds (VOCs) at levels above applicable Part 375 soil cleanup objectives (SCOs) and CP-51 soil cleanup levels (SCLs).

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- Only one sample obtained from one of several Site perimeter borings (some of which were in the rights-of-way) exceeded applicable SCOs for VOCs.
- Urban fill was encountered in 12 of the 20 test boring locations, to depths ranging up to 6 feet bgs. Two samples of urban fill were analyzed; one sample (located in the southeast portion of the site) contained lead at a level above the Restricted Residential (RR) SCO but a TCLP analysis did not indicate a hazardous level.
- All four groundwater samples exhibited petroleum VOCs at levels above TOGS 1.1.1 groundwater standards and/or guidance values.
- Based on readings in the four monitoring wells, groundwater flows toward the south.

A supplemental Phase II ESA was then performed in the fall of 2016, consisting of an additional nine soil test borings and field PID screening; nine soil samples were submitted for analysis for VOCs. The results of this investigation were combined with the findings of the initial Phase II ESA to further refine the apparent limits of impacts to soil. Based on the cumulative results, recommendations were provided in the Phase II ESA report that included:

- Additional excavation of impacted soil (beyond that excavated at the time of tank removal) and the upper, fractured portion of bedrock in the source area in the northeast portion of the Site;
- Excavation of deeper, wet/saturated soils in the "plume area" in the southern portion of the Site;
- Excavation of urban fill materials in the northern portion of the site;
- Post-excavation, in-situ bioremediation in the saturated zone in petroleum-impacted areas;
- Implementation of a Soil and Groundwater Management Plan (SGMP) for future development; and
- Installation of a sub-slab depressurization system (SSDS) for any future structures on the Site.

As a result of the findings of these investigations and the City's desire to return the Site to productive residential use, a Brownfields Cleanup Grant was awarded by the USEPA to the City for the remediation of soil and groundwater impacts at the Site. Details of the proposed remedial program are provided below.

B. State and Local Authority's Roles

The environmental investigation and remediation for the Site is being performed by the City. The NYSDEC is overseeing the cleanup under Spill File No. 1103833 and in accordance with a Stipulation Agreement executed with the City. Work plans, reports and data will be submitted to NYSDEC for review and approval.

The remediation is also being performed as part of the City's Brownfield Cleanup Grant from the EPA, and the work is being jointly funded by the EPA and the City.

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III. Known or Suspected Releases or Threatened Releases into the Environment of a Hazardous Substance, Pollutant or Contaminant

Impacts to soil and groundwater identified at the site include petroleum constituents typical of gasoline and kerosene, and urban fill/soil mixtures. No chlorinated VOCs were identified at the Site.

The impacts at the site have essentially been divided into three remedial areas, with some overlap, as described below (see Figure 2):

- A. Urban Fill Area: The northern portion of the Site contains surface fill that is impacted with metals (lead) and SVOCs. This urban fill area is estimated to be a rectangular area approximately 81 x 38 feet in area and 4 feet deep. This is equivalent to approximately 456 cubic yards (cy; equivalent to 684 tons) of fill material that will require excavation and off-site disposal as a non-hazardous waste.
- B. Former UST Source Area: This area is associated with the former USTs and is considered a source area. This area consists of petroleum-impacted soil that was not removed at the time of UST removal, and associated impacted groundwater. This area is estimated to be 36 feet by 38 feet in area and 3 feet thick, located in a zone approximately 6.5 feet to 9.5 feet below ground surface (bgs). This is equivalent to approximately 152 cy (228 tons) of soil requiring excavation and off-site disposal as a non-hazardous waste. In addition, it is estimated that up to approximately 202 cy (404 tons) of impacted weathered bedrock may be removed during excavation within this same "footprint," and also disposed as non-hazardous waste.
- C. Petroleum Plume area: This area of petroleum-impacted saturated soil and groundwater is located downgradient (south) of the UST source area, and is estimated to be approximately 40 feet by 36 feet in area and 2 feet thick, located in a zone approximately 7.5 feet to 9.5 feet bgs. This is equivalent to approximately 107 cy (160 tons) of material requiring removal. The petroleum plume area soils are covered by an approximate 7.5 feet thick layer of non-impacted soil/fill beginning at the ground surface. In addition, it is estimated that up to approximately 214 cy (428 tons) of impacted weathered bedrock may be removed during excavation within this same "footprint," and also disposed as non-hazardous waste.

IV. Standards, Criteria and Guidance

The following have been selected as the Site Standards, Criteria and Guidelines (SCGs) for cleanup:

Soil: Soil impacts as determined through laboratory analyses will be compared to the Restricted Residential Soil Cleanup Objectives (SCOs) contained in NYSDEC's 6 *NYSCRR Part 375, Environmental Remediation Programs* (December 14, 2006). Site contaminants of concern (COCs) are defined as the constituents for which the concentrations in soil exceed the associated Restricted Residential SCOs.

Impacted soil or fill containing contaminants above SCOs that are left in-place will be managed with an Environmental Management Plan (EMP) that will provide guidance for potential future disturbances (e.g., utility installation or repair work), and with environmental engineering and

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institutional controls (e.g., placement of a clean soil cover, installation of a sub-slab depressurization system in future buildings, and flagging the Site in the City's Building Information System).

Groundwater: Groundwater COC levels will be compared to Class GA drinking water-based standards as contained in NYSDEC's *Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (June 1998, amended 2000 and 2004).

Quarterly groundwater monitoring would be conducted for VOCs for a one-year period post-remediation. The first round of sampling will be performed approximately three months after excavation and backfill are complete. If it is not feasible to achieve the applicable SGVs for groundwater within that period, a second year of semi-annual groundwater monitoring would be conducted. Sampling would continue as needed until SGVs or asymptotic conditions for VOCs are attained. At that time, it would be proposed to NYSDEC that the Institutional and Engineering Controls (ICs/ECs) be used to provide conditions protective of public health and the environment for the intended and reasonably anticipated use of the Site.

Soil Vapor: The site currently has no buildings; accordingly, no SGVs are currently proposed for vapor. However, the site is intended for future housing construction; as such, a sub-slab depressurization system (SSDS) will be required as part of any new structure design. Alternatively, post-remedial soil gas sampling would be required to confirm that an SSDS is not necessary based on the Human Health Risk Assessment guidelines outlined in NYSDEC's Technical Guidance for Site Investigation and Remediation (DER-10, May 2010) and the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006).

V. Description of Cleanup Alternatives

Three potential remediation alternatives were identified to address the impacts at the Site. These three alternatives are summarized below. Each of these three alternatives were evaluated in the ABCA using the nine evaluation criteria set forth in the DER-10 document. The first two evaluation criteria are threshold criteria and must be satisfied for an alternative to be considered for selection. The subsequent evaluation criteria are primary balancing criteria which are used to compare the positive and negative aspects of each remedial alternative that first meets the threshold criteria.

The three remedial alternatives chosen and evaluated are summarized below:

A. Alternative A: No Action/Monitored Natural Attenuation (MNA)

The No Action alternative does not involve proactive remedial measures but instead relies on periodically monitoring the groundwater contamination to verify that natural attenuation is continuing to occur. For calculating an opinion of probable cost, it was assumed that groundwater would be sampled quarterly from five (5) wells, with associated laboratory analysis and reporting, over the course of thirty (30) years.

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B. Alternative B: Excavation of Impacted Soils and Weathered Bedrock

This alternative includes the excavation and off-Site disposal of soil from the northern portion of the Site impacted by Lead and SVOCs, and petroleum-impacted soil and weathered bedrock from the source area in the northeast portion of the Site, as shown on Figures 4 and 5. Impacted soil and bedrock in the downgradient plume area located on the southeast portion of the Site would also be excavated and disposed of off-Site. The contractor on-Site will need to dewater both the source area and the downgradient plume area excavations once bedrock is encountered as the Phase II indicated the top of the groundwater table was situated in proximity to the overburden-bedrock interface. Impacted soil in the plume area is covered by approximately 7.5 feet of clean soil/fill material. Based on the depth to bedrock (approximately 9.5 ft bgs), trench boxes would be utilized during excavation along the northern and eastern sidewalls (adjacent to sidewalks). This would eliminate the need for benching those sidewalls to reduce the potential for sidewall collapse and would maximize the amount of impacted soil that can be removed. The use of trench boxes will result in excavating in smaller "cells". Overlying non-impacted soil/fill material would be removed, stockpiled onsite, and re-used as backfill following the excavation of impacted soils and bedrock. Prior to the placement of backfill, remediation infrastructure would be installed for potential future groundwater treatment.

Quarterly groundwater monitoring would be conducted for VOCs for a one-year period post-remediation. The first round of sampling will be performed approximately three months after excavation and backfill are complete. If it is not feasible to achieve the applicable SGVs for groundwater within that period, a second year of semi-annual groundwater monitoring would be conducted. Sampling would continue as needed until SGVs or asymptotic conditions for VOCs are attained. At that time, it would be proposed to NYSDEC that ICs/ECs be used to provide conditions protective of public health and the environment for the intended and reasonably anticipated use of the Site.

C. Alternative C: Excavation of Impacted Soils and Weathered Bedrock w/ Enhanced MNA

This alternative includes the components of Alternative B, plus the direct application of a bioremediation amendment to the open excavations to create aerobic conditions and accelerate VOC biodegradation in groundwater. This amendment material would be applied to the open excavations located at:

- 1) The UST Source Area for petroleum impacts located in the northeast portion of the Site; and
- 2) The downgradient Petroleum-impacted Plume Area.

Groundwater samples from monitoring wells in these locations indicated VOC impacts.

In the same manner as Alternative B, groundwater monitoring would be performed for one-year post-remediation, with the potential for a second year of monitoring, if needed to achieve required results.

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VI. Remedial Alternatives Evaluation

An analysis of the three alternatives using the nine evaluation criteria was included in the ABCA document; these alternatives are summarized in the following matrix:

Table 1. Alternatives Evaluation Matrix

Remediation Criteria	Alternative A (No Action/ MNA)	Alternative B (Soil and Bedrock Excavation)	Alternative C (Soil and Bedrock Excavation/ Enhanced MNA)
Protection of Human Health and Environment	No	Yes	Yes
Compliance with SCGs	No	Partial	Yes
Short-Term Impacts and Effectiveness	No	Yes	Yes
Long-Term Effectiveness and Permanence	Yes	Yes	Yes
Reduction of Toxicity, Mobility, and Volume	No	Yes	Yes
Implementability	Yes	Yes	Yes
Acceptable for Planned Future Use	No	Partial	Yes
Community Acceptance	No	Partial	Yes
Cost Effectiveness (Total Present Worth Cost)	\$168,909 (Note 1)	\$232,937 (Note 1)	\$343,902 (Note 2)

Notes:

1. Cost taken from ABCA.
2. Cost taken from final remediation proposal, after this Alternative was chosen, and modifications were made to the excavation methodologies per City of Rochester instructions.

A. Recommended Cleanup Alternative

Based on the evaluation results summarized above, Remedial Alternative C (Excavation and enhanced MNA) was chosen as the preferred alternative. This alternative satisfied each of the criteria. This action will be supplemented by Institutional and Engineering Controls.

Note that the enhanced MNA aspect applies only to the former UST Source and Petroleum Plume areas, where impacts, and therefore excavations, extend to or below the water table.

B. Proposed Remedial Action Description

The following provides details for the recommended Remedial Alternative C for the three identified remedial areas (see also Figure 2):

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1. Urban Fill Area: Approximately 456 cy (684 tons) of fill material will be excavated and disposed offsite. The fill material will be direct loaded (no staging) and disposed off-site as a nonhazardous waste. Post-excavation sampling will be completed in accordance with the NYSDEC DER-10 guidance document (DER-10). Soil samples will be tested for CP-51 SVOCs and Lead. The excavation resulting from this task and the fill removal will be backfilled with clean site soils and/or clean imported crushed stone. Up to 2 feet of clean imported topsoil cover will be placed across this area at completion of the work.
2. UST Source Area: Approximately 228 tons of petroleum-impacted soil will be excavated and disposed offsite. These source-area soils are covered by an approximate 4-foot-thick layer of fill beginning at the ground surface; these are the urban-fill materials described above in task 1, which will be removed and disposed off-site prior to completing the petroleum source area soil removal. Subsequent to fill removal, an approximate 2.5-foot-thick layer (approximately 127 cy or 191 tons) of non-impacted soil will be excavated, staged on-site and ultimately used as excavation backfill assuming it meets appropriate NYSDEC Part 375 SCOs and CP- 51SCLs. The petroleum-impacted zone of soil will then be removed to the top of bedrock. To the extent practicable, the upper portions of bedrock within the soil removal footprint will be broken up, excavated and disposed offsite as a non-hazardous waste. It is estimated that an additional amount of approximately 202 cy (404 tons) of rock will be excavated and disposed off-site, also as non-hazardous waste.

An approximate 21,000-gallon frac tank will be staged on-site. If significant groundwater accumulates during excavation, it will be pumped into the frac tank. The water will be tested and will be discharged to a public combined or sanitary sewer under a temporary sewer use permit with Monroe County. The portion of the excavation where bedrock is removed will be backfilled with #2 stone. Post-excavation sampling will be completed in accordance with DER-10. Soil samples will be tested for appropriate NYSDEC Part 375 and CP-51 VOCs. In-situ remediation piping will be placed in the bottom of the excavation for potential (if needed) additional bioremediation treatment (amendment solution injection) for residual contamination. Approximately 440 pounds of ORC-Advanced® (ORC-A) aerobic bioremediation amendment material will be placed into the UST source-area excavation prior to backfill placement. The same material would be injected as a solution into the in-situ remediation hardware, if needed for future additional groundwater treatment, depending on groundwater monitoring results.

The excavation resulting from this task and the fill removal will be backfilled with clean site soils and clean imported crushed stone. Up to 2 feet of clean imported topsoil cover will be placed across this area at completion of the work

3. Petroleum Plume Area: This area contains an estimated 107 cy (160 tons) of impacted soil requiring removal and disposal. The overlying non-impacted soil/fill material (approximately 400 cy, or 600 tons) will be removed, staged and then re-used as excavation backfill material.

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The petroleum-impacted soil in the plume area will be excavated, direct loaded and disposed off-site as a non-hazardous waste. As with the UST source area, and to the extent practicable, the petroleum-impacted, upper portions of bedrock (estimated to be approximately 214 cy (428 tons) within the soil removal footprint will be, excavated and disposed offsite as a non-hazardous waste.

As in the UST source area, this area will also have #2 crushed stone placed and remediation piping installed at the bottom. Up to 720 pounds of ORC-A will be placed into the plume area excavation prior to backfill placement. The same material would be injected as a solution into the in-situ remediation hardware, if needed for future additional groundwater treatment, depending on groundwater monitoring results.

As with the UST source area, if significant groundwater accumulates during excavation, it will be pumped into the frac tank for holding and eventual discharge under a temporary discharge permit.

Post-excavation soil sampling will be completed in accordance with DER-10. Soil samples will be tested for with appropriate Part 375 and CP-51 VOCs. The resulting excavation will be backfilled with staged clean site soils and/or clean imported crushed stone. Up to 2 feet of clean imported topsoil cover will be placed across this area at completion of the work.

4. Upon completion of the field program, ICs will be implemented in the form of environmental "flags" in the City's Building Information System (BIS), and an EMP will be developed for the Site to provide guidance and requirements for management of these materials in the event of future disturbance. Future occupied structures on the Site will require an SSDS incorporated into the design.

VII. Project Schedule

It is currently anticipated that the Remedial Actions will commence in July 2020, and the field program is anticipated to last approximately into August 2020. One year of quarterly groundwater monitoring will be performed following completion of the remedial excavation program (beginning approximately three months after the remedial excavation program is complete), with the potential for a second year of monitoring, if required.

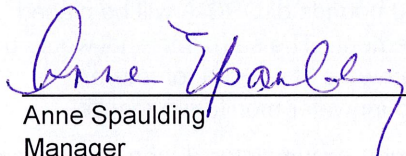
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VIII. Signature of City of Rochester Representative

The following individual is an authorized representative of the City of Rochester as the USEPA Cooperative Agreement Recipient.

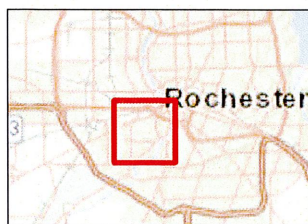
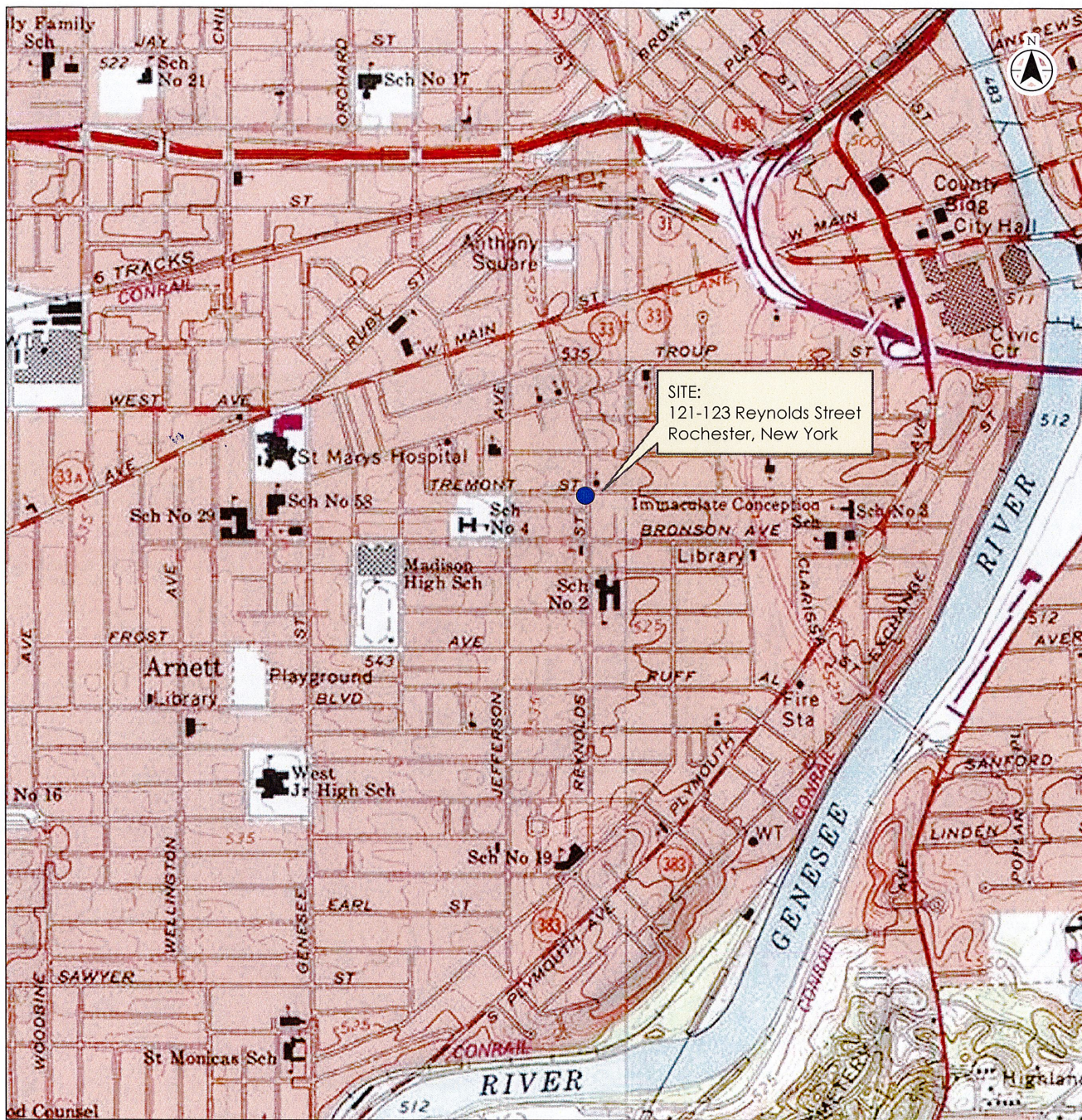


Anne Spaulding
Manager
Division of Environmental Quality
City of Rochester, New York

5/11/2020
Date

Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Generalized Remedial Site Plan



Legend:
 ● Site Location

0 1,000 2,000 4,000
 Feet
 1:24,000 (at original document size of 8.5x11)



Project Location: 121-123 Reynolds Street, Rochester, New York
 Site Location Map: REVA
 Prepared by: AJK on 2017-10-12
 Technical Review by: KD on 2017-10-13
 Independent Review by: MPS on 2017-10-13

Client/Project: City of Rochester
 USEPA Action Memorandum
 Petroleum Impacted Soil and Groundwater

Figure No.
 1

Site Location Map

Notes
 1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Topo imagery provided by ESRI Online Services and USGS 7.5 Minute Quad of Rochester West, NY, dated 1995.
 4. Key Map Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community
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