Groundwater Remediation and Soil Vapor Sampling Work Plan

580 Gerard Former Post Office Vehicle Repair Site
580-610 Gerard Avenue,
Bronx, New York
NYSDEC BCP Site No. C203142

February 6, 2023

Prepared for:

SB Gerard Avenue LLC

Prepared by:

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3523.0001Y120/CV

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Certification

I, Brian Morrissey, P.E., certify that I am currently a NYS registered Professional Engineer and that this Groundwater Remediation and Soil Vapor Sampling Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Brian Morrissey, P.E.	2/6/2023	Brian P. Morrissey
NYS Professional Engineer #062617	Date	Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

1. Introduction

Roux Environmental Engineering and Geology, D.P.C. (Roux), on behalf of SB Gerard Avenue LLC (the Volunteer), has prepared this Groundwater Remediation and Soil Vapor Sampling Work Plan (Work Plan) for the property identified as 580 Gerard Former Post Office Vehicle Repair Site, located at 580-610 Gerard Avenue in the Borough of Bronx, City and State of New York (Site). The Site location is shown on Figure 1. The Site is identified as Block 2353, Lot 1 on the New York City Tax Map.

The Volunteer applied to the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) and was accepted as a volunteer in December 2020. The Volunteer entered into a Brownfield Cleanup Agreement (BCA) with the NYSDEC on January 21, 2021 to investigate and remediate a 0.732[1] -acre property. BCP Site number C203142 was assigned. Two BCA Amendments to slightly reduce the acreage of the Site were filed on October 18, 2021 (signed on January 28, 2022) and August 18, 2022 (Department execution is still pending) and the Site acreage was ultimately reduced to 0.68 acres.

The Remedial Investigation Report / Remedial Action Work Plan (RIR/RAWP) was submitted to the NYSDEC in May 2022 and summarizes the Scope of Work (SOW) and data collected during the June, July, and December 2021 Remedial Investigation (RI) and provides an evaluation of a Track 1 Unrestricted Use cleanup and a Track 2 Restricted Residential cleanup alternative, their associated costs, and the recommended and preferred remedy.

The RIR/RAWP was approved by the NYSDEC on June 15, 2022 and field activities commenced on September 27, 2022. This Work Plan provides a final design for the *in-situ* groundwater treatment portion of the proposed remedy and additional soil vapor sampling, as described in the RIR/RAWP.

1.1 Work Plan Organization

This Work Plan contains the following sections:

- Section 2 – Describes the Site, results of the RI activities and summary of the most recent sampling;
- Section 3 – Describes each element of the groundwater treatment remedial design;
- Section 4 – Describes the monitoring program;
- Section 5 – Describes the additional soil vapor sampling; and
- Section 6 – Provides an implementation schedule.

[1] The acreage in the original BCA was 0.716 acres, which was ultimately determined to be slightly incorrect and was corrected in the first BCA Amendment when the first acreage reduction occurred.

2. Background

The following sections provide a brief summary of background information and results of the RI work conducted at the Site. Further details can be found in the RIR/RAWP.

2.1 Site Location and Description

The Site is located in the County and Borough of the Bronx, New York and is identified as Block 2353, Lot 1, on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (Figure 1) shows the Site location. The Site is situated on an approximately 0.68-acre area. Adjacent properties include a one-story warehouse and garage building to the north; a one-story warehouse and garage building to the south; residential apartment buildings to the east; and a two-story commercial building and parking lot to the west.

2.2 Redevelopment Plan

The Site is a rectangular-shaped parcel of land that is currently being redeveloped into a new residential and commercial mixed-use building with a full basement. The basement will be used for vehicle parking with access to the utility and mechanical rooms. The proposed building will be approximately 204,476 square feet and will include 30% affordable housing residential rental units. In total, this proposed development will comprise a total of 197 multifamily rental units, approximately 5,000 square feet of retail commercial space, and an estimated 70 parking spaces.

2.3 Local Geology and Stratigraphy

Based on the environmental and geotechnical soil borings completed, the Site consists of historic fill material (brown to dark brown fine to coarse sand with varying amounts of silt, gravel, cobble, brick, slag, and concrete) ranging in thickness of up to 7 to 14 feet throughout most of the Site, and deeper in the southern portion of the Site. This fill layer was underlain by native soil consisting of brown to reddish brown fine to medium sand with varying amounts of course sand, silt, gravel, and cobble. Refusal was encountered at depths ranging from 9 to 30 feet throughout the Site.

During ongoing excavation, bedrock surface was encountered at a depth of approximately 15 feet in the southeastern portion of the Site.

2.4 Site Hydrogeologic Setting

The depth to groundwater in the monitoring wells was between approximately 21 and 24 feet measured from top of casing (ft toc). Water-level measurements were collected on July 15, 2021 and July 16, 2021 as part of the RI. Based on this data, groundwater beneath the Site flows to the north-northwest toward the Harlem River. However, the variable nature of bedrock elevation at the Site may influence the occurrence and flow of groundwater.

2.5 Volatile Organic Compounds in Soil and Groundwater

During the RI, VOCs were detected at concentrations above NYSDEC Protection of Groundwater Soil Cleanup Objectives (SCOs) in soil and were also detected in groundwater above the Ambient Water Quality

Standards and Guidance Values (AWQSGVs), as discussed below. This data indicates soil impacts in this localized area of the Site are likely from a groundwater source:

- 1,2,4-Trimethylbenzene was detected at concentrations exceeding its NYSDEC Protection of Groundwater SCO in two soil samples, with a maximum concentration of 96 milligrams per kilogram (mg/kg) in RXSB-06/23-25. 1,2,4-Trimethylbenzene was detected at a concentration exceeding its NYSDEC AWQSGV in one sample, with a concentration of 360 microgram per liter (µg/L) in monitoring well RXMW-04.
- 1,3,5-Trimethylbenzene (mesitylene) was detected at concentrations exceeding its NYSDEC Protection of Groundwater SCO in two soil samples, with a maximum concentration of 40 mg/kg in RXSB-06/23-25. 1,3,5-Trimethylbenzene was detected at a concentration exceeding its NYSDEC AWQSGV in one sample, with a concentration of 140 µg/L in monitoring well RXMW-04.
- N-butylbenzene was detected at concentrations exceeding its NYSDEC Protection of Groundwater SCO in one soil sample with a concentration of 22 mg/kg in RXSB-06/23-25. N-butylbenzene was detected at a concentration exceeding its NYSDEC AWQSGV in two samples, with a maximum concentration of 29 µg/L in monitoring well RXMW-04.
- N-propylbenzene was detected at concentrations exceeding its NYSDEC Protection of Groundwater SCO in one soil sample with a concentration of 15 mg/kg in RXSB-06/23-25. N-propylbenzene was detected at a concentration exceeding its NYSDEC AWQSGV in one sample, with a concentration of 55 µg/L in monitoring well RXMW-04.

A summary of the groundwater exceedances is presented on Figure 2.

2.6 Volatile Organic Compounds in Soil Vapor

During the RI, trichloroethylene (TCE) was detected in one soil vapor sample (RXSV-03) at a concentration of 47 µg/m^3 with no known source. On December 21, 2021, an additional soil vapor sample (RXSV-07) was collected to the east of RXSV-03 along the property boundary to identify the potential for off-site migration. TCE was not detected in soil vapor sample RXSV-07.

2.7 Areas of Concern

Due to the TCE concentration detected in RXSV-03 during the RI with no known source, additional soil vapor sampling will be conducted to evaluate whether additional vapor mitigation measures are necessary. Further details of the soil vapor sampling are provided in Section 5.

3. *In-Situ* Groundwater Treatment Design

The proposed remedy as described in the RIR/RAWP includes the following groundwater treatment elements for the Track 1 Unrestricted Use remedy:

1. Dewatering during excavation of soil within the petroleum VOC hotspot area, if necessary.
2. *In situ* treatment for groundwater in the petroleum VOC hotspot area following completion of excavation and dewatering activities.

The proposed treatment area is shown on Figure 3.

3.1 Dewatering/Water Treatment Activities

A temporary dewatering system designed by Earth Construction Services will be required to assist with the remedial hotspot excavation. Wellpoints will be installed around the perimeter of the proposed excavation area that extend below the groundwater table. The wellpoints will be spaced at 6 feet on center. The proposed wellpoints will be 2-inches in diameter with 3 feet of screen and ten to fifteen feet of riser or to top of bedrock, whichever is shallower. Each wellpoint will be sanded with appropriately sized filter sand in order to maximize the capacity of the wellpoint. The dewatering system will be installed at a temporary subgrade of 2 feet above the groundwater table.

The wellpoints will be installed via self-jetting methods with high pressure water from a jet pump. The wellpoints will each have their own swing hose with ball valve that will be connected to a header pipe placed around the perimeter of the excavation at-grade. This header is continuous and needs to be connected at all times to maintain vacuum. Two 6-inch diesel sound-attenuated diesel wellpoint pumps will be provided, one operating and one for standby, which will be placed at about 2 feet above the measured groundwater table. One sump well will be included to locally control groundwater at the top of the rock.

All groundwater from the dewatering system will be directed to a Frac Tank temporarily staged on the street. From the Frac Tank, the water will be pressurized by two electric skid mounted transfer pumps through a bag filtration system (Two – 2 bag carousel filter units) which will remove fine particulate material and enter 2 – 1,000lb carbon units loaded with activated carbon (with 10-minute contact time) prior to discharge into an approved sewer location in accordance with NYCDEP protocols.

3.2 *In Situ* Groundwater Treatment

The proposed remedy includes excavation down to 27 feet bls and dewatering. Following these activities, *in situ* groundwater treatment will be implemented. An evaluation of *in situ* treatment options was conducted and the recommended groundwater treatment includes the application of an oxygen release compound (ORC) designed for *in situ* aerobic bioremediation that will enhance the biodegradation of petroleum compounds in the subsurface.

The oxygen release compound selected was ORC Advanced© manufactured by REGENESIS. ORC Advanced© is a calcium oxyhydroxide-based material that becomes hydrated upon contact with water, producing a controlled release of molecular oxygen for up to 12 months after application. Once this technology was selected, Roux worked with REGENESIS to calculate the appropriate application quantities based on Site information and groundwater concentrations. The oxygen release compound will be applied

directly to the excavation bottom at 27 feet bls prior to backfill. The recommended application of ORC Advanced© is 200 pounds and one round of application is proposed in this Work Plan.

A breakdown of the proposed application quantities is provided in Appendix A. Information sheets on ORC Advanced© are provided in Appendix B.

3.3 Application Procedures

ORC Advanced© will be applied to the excavation bottom at 27 feet bls prior to backfill . An excavator will be used to 'rake' the bottom of excavation to ensure an even spread of ORC Advanced©. Based on the proposed approximate 400 square foot excavation and REGENESIS' recommendations, a total of approximately 200 pounds of ORC Advanced© will be added to the excavation prior to backfilling activities. The contractor will be directed to flush the equipment handling the compound with clean water at the end of each workday and on completion of the application.

Health and Safety

ORC Advanced© is a reductant that has a white to pale yellow color. Care should be taken to ensure that the application is carried out in a safe manner and to prevent the ORC Advanced© from contact with skin, eyes, or potential inhalation. Dust-tight unvented chemical safety goggles must be worn when there is potential for eye contact with this reagent. Protective clothing and nitrile gloves should also be worn to prevent skin contact. Airborne dust levels will be monitored to maintain concentration of dust particulates are below the occupational exposure limit (OEL). If engineering controls do not maintain airborne concentration below recommended exposure limits, an approved respirator with dust filters must be worn.

3.4 Groundwater Monitoring Well Installation

The installation of two downgradient monitoring wells (RXMW-07 and RXMW-08) is proposed as part of the groundwater remediation monitoring. The new well locations are shown on Figure 3. These permanent monitoring wells will be constructed of 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing with 2-inch diameter, 20-slot (0.020 inches) PVC screen flush-threaded onto the PVC casing. The screened intervals of the wells will be based on field observations made during drilling, existing groundwater elevation data, and the targeted groundwater contamination zone. Preliminary groundwater levels will be measured by Roux during monitoring well installation.

At all permanent monitoring well locations, the casing will be placed down the open hole and a sand filter pack of #2 Morie sand will be placed around the screen to approximately two above the screened depth. The annulus above the filter pack will be sealed with a two-foot hydrated bentonite seal. A cement-bentonite grout will then be placed in the annulus above the bentonite seal to the surface. Surface completion of each monitoring well will consist of a locking J-plug and a protective flush mount manhole cover. All newly constructed monitoring wells will be developed using a submersible pump to equilibrate monitoring well water levels with the surrounding formation. A submersible pump will be lowered into the well and groundwater withdrawn until the well is dry or the water runs clear with a turbidity less than 50 NTU.

4. Groundwater Monitoring

To assess the performance of the *in-situ* groundwater remediation, a groundwater monitoring program will be established. The sampling, sample handling, decontamination, and field instrument calibration procedures will be performed in accordance with established procedures for the Site as outlined in the Quality Assurance Project Plan (QAPP), which is provided as Appendix G in the RIR/RAWP. The monitoring well network will include the two new proposed downgradient monitoring wells shown on Figure 3 (RXMW-07 and RXMW-08). The details of the groundwater monitoring are provided in the section below.

4.1 Groundwater Monitoring

Following contaminated soil excavation and completion of ORC Advanced© application, it is anticipated that groundwater concentrations of petroleum-related VOCs present on-Site will decrease significantly. In order to evaluate on-Site conditions and the effectiveness of the treatment, post treatment groundwater samples will be collected from monitoring wells in the network for a minimum of four quarters. The wells will be sampled and analyzed for Target Compound List (TCL) VOCs using USEPA SW846 Method 8260. Prior to sample and data collection, the monitoring wells will be purged via low flow means using a peristaltic pump. Samples and field parameter readings (dissolved oxygen, oxidation-reduction potential, pH and temperature) will be recorded as well.

All laboratory samples will be submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory for analysis. All groundwater samples will be placed in the laboratory-supplied containers, stored on ice in coolers, and transported to the laboratory under chain of custody procedures in accordance with the QAPP. The data will be reported in Category B Deliverables and TCL VOC data will be validated with a Data Usability Summary Report (DUSR) prepared. Purge water from the sampling will be containerized so that it can be characterized and properly disposed off-Site.

Post-treatment groundwater monitoring will be described in the Final Engineering Report for the Site. Groundwater monitoring will be conducted for a minimum of four quarters post treatment, at which time the Volunteer will request to discontinue sampling if concentration reductions are observed. Groundwater monitoring will discontinue if concentration reductions achieve the AWQSGVs or asymptotic levels.

Monitoring Well Network

The proposed monitoring well network for post-remedial monitoring will be:

- Downgradient groundwater monitoring wells (RXMW-07 and RXMW-08) (Figure 3).

4.2 Data Evaluation and Reporting

Progress updates during the field work will be provided to the NYSDEC in Daily Reports in accordance with the RIR/RAWP. Data from each of the ongoing monitoring events will be submitted in a brief summary report after the DUSR is received. After all the proposed groundwater monitoring rounds have been completed, the monitoring results will be evaluated to determine the effectiveness of ORC Advanced© at reducing the petroleum VOC concentrations in groundwater at the Site. The evaluation will be summarized and submitted under a separate cover during the provisional Site Monitoring phase following issuance of the COC.

5. Soil Vapor Sampling

5.1 Samples and Installation Procedure

During the RI, an elevated concentration of TCE was detected in soil vapor sample RXSV-03 as shown on Figure 3. TCE was not detected in soil vapor sample RXSV-07, which was located to the east of RXSV-03 outside of the Site boundary.

Once the bottom of excavation is reached in the vicinity of RXSV-03, one soil vapor point (RXSV-08) will be installed at the location of RXSV-03 and two soil vapor points (RXSV-09 and RXSV-10) will be installed to the north and west of RXSV-03. The soil vapor locations are shown in Figure 3. The soil vapor point installation and sampling procedures will be completed in accordance with the NYNSDOH October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

Roux will collect three soil vapor samples (RXSV-08 through RXSV-10) from a proposed depth of approximately 18 feet bls (2 feet below the bottom of excavation) which are representative of soil vapor conditions beneath the new building slab. Each soil vapor point will be installed using pre-fabricated, six-inch long stainless-steel screens, attached to Teflon-lined polyurethane tubing. The borehole will be sealed off from ambient air using a bentonite seal at the surface.

5.2 Helium Tracer Test

Following installation of each soil vapor point, the integrity of each sampling point seal will be checked via a helium gas tracer test. This step will be conducted as a quality assurance/quality control (QA/QC) measure to verify that the soil vapor sample was not compromised by inadvertent introduction of ambient air into the sample. Soil vapor will be purged from the point using an air pump calibrated to approximately 0.2 liters per minute while the sampling point will be covered at the surface with a small enclosure that is partially filled with helium. The soil vapor discharging from the air pump and the air within the enclosure will be continuously monitored for helium during purging.

5.3 Sampling and Analysis

Prior to sample collection, each soil vapor point will be purged of approximately three volumes of soil vapor using the air pump. The samples will be collected using batch certified vacuum canisters equipped with laboratory-supplied, eight-hour regulators. Samples will be submitted for laboratory analysis for the following parameters:

- VOCs via USEPA Method TO-15.

5.4 Data Evaluation and Reporting

Progress updates during the field work will be provided to the NYSDEC in Daily Reports in accordance with the RIR/RAWP. Data from the additional soil vapor sampling event will be submitted in a brief summary report after the DUSR is received. The analytical results will be evaluated to determine whether additional vapor mitigation is necessary at the Site. The evaluation will be summarized and submitted under a separate cover during the remedial action.

6. Schedule

The anticipated schedule for the *in-situ* groundwater remediation to be completed during the Remedial Action is as follows:

- *In-Situ* Excavation Application – January/February 2023
- Well Installation and Well Development – January/February 2023
- Additional Soil Vapor Sampling – January/February 2023

The anticipated schedule for the *in-situ* groundwater remediation to be completed during provisional Site Monitoring Phase is as follows:

- First Quarter Post-Treatment Monitoring Sampling Event – June 2023
- Second Quarter Post-Treatment Monitoring Sampling Event – September 2023
- Third Quarter Post-Treatment Monitoring Sampling Event – December 2023
- Fourth Quarter Post-Treatment Monitoring Sampling Event – March 2024
- Submission of Annual Monitoring Report to the NYSDEC – to be determined

The above schedule may be altered based on the excavation schedule.

TABLES

1. Summary of Volatile Organic Compounds in Groundwater
2. Summary of Volatile Organic Compounds in Soil Vapor

Notes Utilized Throughout Tables	
Groundwater Tables	
J -	Estimated Value
U -	Compound was analyzed for but not detected
T -	Indicates that a quality control parameter has exceeded laboratory limits
FD -	Duplicate
µg/L -	Micrograms per liter
ng/L -	Nanogram per liter
NYSDEC -	New York State Department of Environmental Conservation
AWQSGVs -	Ambient Water-Quality Standards and Guidance Values
--	No NYSDEC AWQSGV available
Bold data indicates that parameter was detected above the NYSDEC AWQSGVs	
Per- and Polyfluoroalkyl Substances	
MCL -	Maximum Contaminant Levels
Bold data indicates that parameter exceeded the NYSDEC Drinking Water MCL	
Undetected results reflect Minimum Detection Limits	
Soil Vapor/Ambient Air	
J	Estimated value
D -	Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte
U -	Indicates that the compound was analyzed for but not detected
J -	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
UJ -	The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
ug/m3 -	Micrograms per cubic meter
Bold data indicates that parameter was detected	

Table 1. Summary of Volatile Organic Compounds in Groundwater
580 Gerard Former Post Office Vehicle Repair Shop Site - NYSDEC BCP Site No. C203142
580-610 Gerard Avenue, Bronx, New York

Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units	RXMW-1	RXMW-2	RXMW-03	RXMW-03	RXMW-04	RXMW-05	RXMW-06
Sample Designation:			RXMW-1	RXMW-2	RXMW-03	RXMW-03	RXMW-04	RXMW-05	RXMW-06
Sample Date:			07/16/2021	07/16/2021	07/15/2021	07/15/2021	07/15/2021	07/15/2021	07/15/2021
Normal Sample or Field Duplicate:			N	N	N	FD	N	N	N
1,1,1-Trichloroethane (TCA)	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	**5**	UG/L	1 U	1 U	1 U	1 U	**360**	1 U	0.63 J
1,2-Dibromo-3-Chloropropane	0.04	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (Ethylene Dibromide)	0.0006	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene (Mesitylene)	**5**	UG/L	1 U	1 U	1 U	1 U	**140**	1 U	1.2
1,3-Dichlorobenzene	3	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	50	UG/L	5 U	5 U	5 U	5 U	5 UT	5 UT	5 UT
Acetone	50	UG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	UG/L	1 U	1 U	1 U	1 U	1 UT	1 UT	1 UT
Carbon Disulfide	60	UG/L	1 U	0.87 J	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	**7**	UG/L	4.3	2.3	1.8	1.7	1 U	**7.5**	6.5
Chloromethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U

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580 Gerard Former Post Office Vehicle Repair Shop Site - NYSDEC BCP Site No. C203142
580-610 Gerard Avenue, Bronx, New York

Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units	RXMW-1	RXMW-2	RXMW-03	RXMW-03	RXMW-04	RXMW-05	RXMW-06
Sample Designation:			RXMW-1	RXMW-2	RXMW-03	RXMW-03	RXMW-04	RXMW-05	RXMW-06
Sample Date:			07/16/2021	07/16/2021	07/15/2021	07/15/2021	07/15/2021	07/15/2021	07/15/2021
Normal Sample or Field Duplicate:			N	N	N	FD	N	N	N
Cis-1,2-Dichloroethylene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	--	UG/L	1 U	1 U	1 U	1 U	46	1 U	1 U
Dibromochloromethane	50	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene (Cumene)	**5**	UG/L	1 U	1 U	1 U	1 U	**24**	1 U	1 U
m,p-Xylene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	--	UG/L	5 UT	5 UT	5 U	5 U	5 U	5 U	5 U
Methyl Ethyl Ketone (2-Butanone)	50	UG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	--	UG/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane	--	UG/L	1 U	1 U	1 U	1 U	140	1 U	44
Methylene Chloride	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N-Butylbenzene	**5**	UG/L	1 U	1 U	1 U	1 U	**29**	1 U	**8.3**
N-Propylbenzene	**5**	UG/L	1 U	1 U	1 U	1 U	**55**	1 U	1 U
O-Xylene (1,2-Dimethylbenzene)	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Sec-Butylbenzene	**5**	UG/L	1 U	1 U	1 U	1 U	**9.8**	1 U	2.9
Styrene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
T-Butylbenzene	5	UG/L	1 U	1 U	1 U	1 U	0.74 J	1 U	1 U
Tert-Butyl Methyl Ether	10	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethylene (PCE)	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	--	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethylene (TCE)	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	5	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	2	UG/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	5	UG/L	2 U	2 U	1 U	1 U	1 U	1 U	1 U

Table 2. Summary of Volatile Organic Compounds in Soil Vapor
580 Gerard Former Post Office Vehicle Repair Shop Site - NYSDEC BCP Site No. C203142
580-610 Gerard Avenue, Bronx, New York

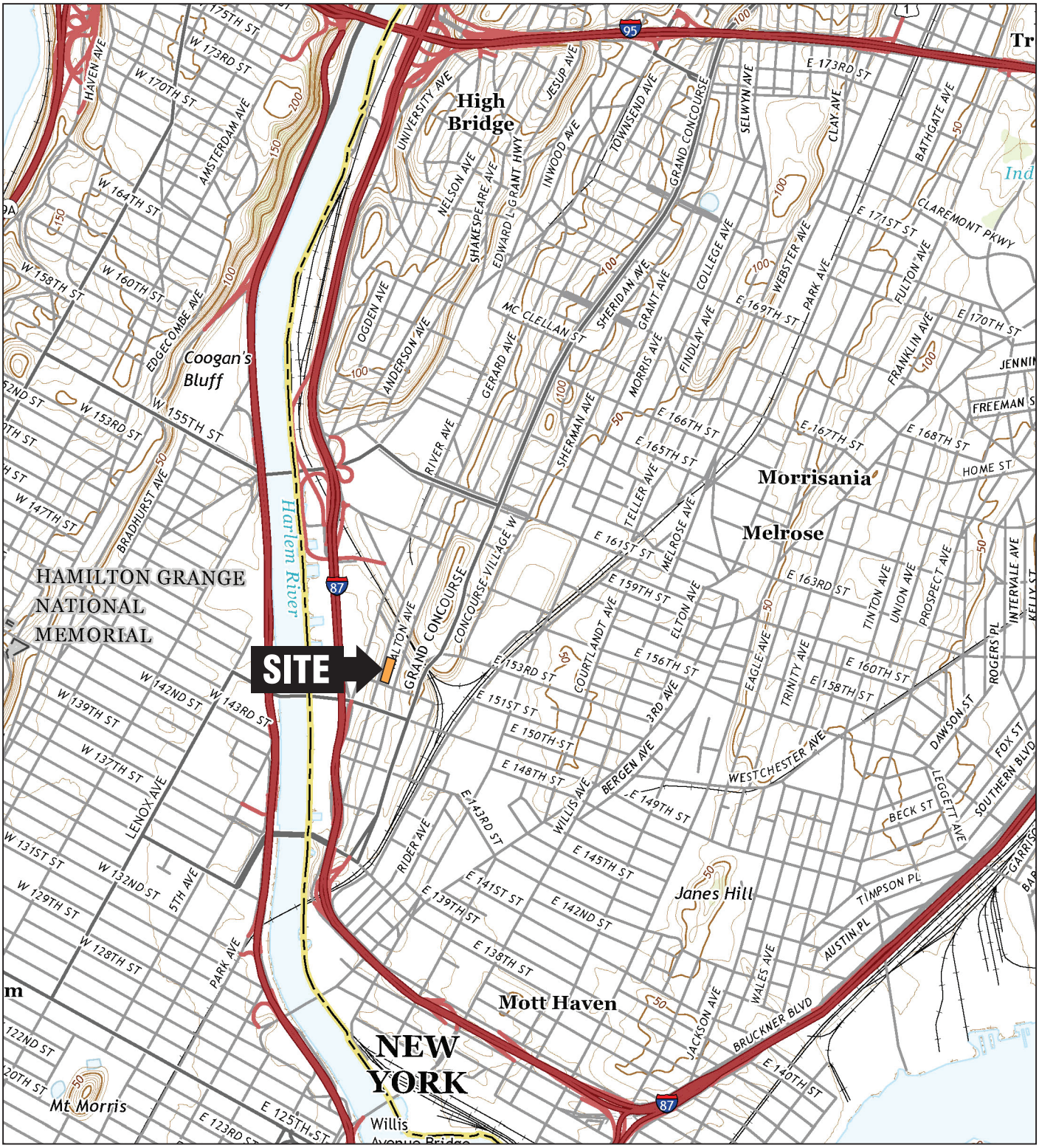
Sample Designation:		RXSS-01	RXSS-02	RXSS-03	RXSS-04	RXSV-01	RXSV-02	RXSV-03	RXSV-04	RXSV-05	RXSV-06	RXSV-07
Sample Date:		07/15/2021	07/15/2021	07/15/2021	12/21/2021	07/16/2021	07/15/2021	07/15/2021	07/15/2021	07/16/2021	07/16/2021	12/21/2021
Parameter	Units											
1,1,1-Trichloroethane (TCA)	UG/M3	1.1 U	1.1 U	1.1 U	0.79 U	11 U	**0.56 J**	1.1 U	**1.6**	11 U	**3.8 J**	0.81 U
1,1,2,2-Tetrachloroethane	UG/M3	1.4 U	1.4 U	1.4 U	0.99 U	14 U	1.4 U	1.4 U	1.4 U	14 U	14 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	1.5 U	**0.54 J**	1.5 U	1.1 U	15 U	1.5 U	1.5 U	1.5 U	15 U	15 U	1.1 U
1,1,2-Trichloroethane	UG/M3	1.1 U	1.1 U	1.1 U	0.79 U	11 U	1.1 U	1.1 U	1.1 U	11 U	11 U	0.81 U
1,1-Dichloroethane	UG/M3	0.81 U	0.81 U	0.81 U	0.58 U	8.1 U	0.81 U	0.81 U	0.81 U	8.1 U	8.1 U	0.6 U
1,1-Dichloroethene	UG/M3	0.2 U	0.2 U	0.2 U	0.14 U	2 U	0.2 U	0.2 U	0.2 U	2 U	2 U	0.15 U
1,2,4-Trichlorobenzene	UG/M3	3.7 U	3.7 U	3.7 U	1.1 U	37 U	3.7 U	3.7 U	3.7 U	37 U	37 U	1.1 U
1,2,4-Trimethylbenzene	UG/M3	**4.1**	**1.9**	**3.3**	**48 D**	9.8 U	**5**	0.98 U	**5.1**	**5.1 J**	9.8 U	**18 D**
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	1.5 U	1.5 U	1.5 U	1.1 U	15 U	1.5 U	1.5 U	1.5 U	15 U	15 U	1.1 U
1,2-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	0.87 U	12 U	1.2 U	1.2 U	1.2 U	12 U	12 U	0.9 U
1,2-Dichloroethane	UG/M3	0.81 U	**2**	0.81 U	0.58 U	8.1 U	0.81 U	0.81 U	0.81 U	8.1 U	8.1 U	0.6 U
1,2-Dichloropropane	UG/M3	0.92 U	0.92 U	0.92 U	0.67 U	9.2 U	0.92 U	0.92 U	0.92 U	9.2 U	9.2 U	0.69 U
1,2-Dichlorotetrafluoroethane	UG/M3	1.4 U	1.4 U	1.4 U	1 U	14 U	1.4 U	1.4 U	1.4 U	14 U	14 U	1 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	0.98 U	**0.67 J**	0.98 U	**18 D**	9.8 U	**1.7**	0.98 U	**3.8**	**20**	9.8 U	**5.4 D**
1,3-Butadiene	UG/M3	0.44 U	0.44 U	0.44 U	0.99 U	4.4 U	0.44 U	0.44 U	0.44 U	4.4 U	4.4 U	0.99 U
1,3-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	0.87 U	12 U	1.2 U	1.2 U	1.2 U	12 U	12 U	0.9 U
1,4-Dichlorobenzene	UG/M3	1.2 U	1.2 U	1.2 U	0.87 U	12 U	1.2 U	1.2 U	1.2 U	12 U	12 U	0.9 U
1,4-Dioxane (P-Dioxane)	UG/M3	18 U	18 U	18 U	1 U	180 U	18 U	18 U	18 U	180 U	180 U	1.1 U
2,2,4-Trimethylpentane	UG/M3	**0.37 J**	**1.7**	**0.47 J**	NA	**3.3 J**	**14**	**1.7**	**11**	**1200**	**9.3**	NA
2-Chlorotoluene	UG/M3	1 U	1 U	1 U	NA	10 U	1 U	1 U	1 U	10 U	10 U	NA
2-Hexanone	UG/M3	2 U	2 U	2 U	1.2 U	20 U	**1.9 J**	2 U	**1.2 J**	20 U	20 U	**1.6 D**
4-Ethyltoluene	UG/M3	0.98 U	**0.51 J**	0.98 U	**32 D**	9.8 U	**0.66 J**	0.98 U	**3.8**	**6.3 J**	9.8 U	**23 D**
Acetone	UG/M3	**17**	**49**	**20**	**50 D**	120 U	**11 J**	**36**	**13**	120 U	**55 J**	**7.5 D**
Allyl Chloride (3-Chloropropene)	UG/M3	1.6 U	1.6 U	1.6 U	2.3 U	16 U	1.6 U	1.6 U	1.6 U	16 U	16 U	2.3 U
Benzene	UG/M3	0.64 U	**0.95**	**0.93**	**3.1 D**	6.4 U	**0.9**	0.64 U	**1.5**	6.4 U	6.4 U	**9.7 D**
Benzyl Chloride	UG/M3	1 U	1 U	1 U	0.75 U	10 U	1 U	1 U	1 U	10 U	10 U	0.77 U
Bromodichloromethane	UG/M3	1.3 U	1.3 U	1.3 U	0.97 U	13 U	1.3 U	1.3 U	**0.9 J**	13 U	**31**	1 U
Bromoform	UG/M3	2.1 U	2.1 U	2.1 U	1.5 U	21 U	2.1 U	2.1 U	2.1 U	21 U	21 U	1.5 U
Bromomethane	UG/M3	0.78 U	0.78 U	0.78 U	0.56 U	7.8 U	0.78 U	0.78 U	0.78 U	7.8 U	7.8 U	0.58 U
Butane	UG/M3	**3.8**	**110 D**	**3.4**	NA	12 U	**3.2**	**6.6**	**3.7**	**21**	**14**	NA
Carbon Disulfide	UG/M3	**5.1**	**7.5**	**3.4**	**1.1 D**	16 U	**2.6**	**1.1 J**	**5.6**	**11 J**	16 U	**0.84 D**
Carbon Tetrachloride	UG/M3	**0.51**	**0.46**	0.22 U	0.23 U	2.2 U	0.22 U	0.22 U	0.22 U	2.2 U	2.2 U	0.23 U
Chlorobenzene	UG/M3	0.92 U	0.92 U	0.92 U	0.66 U	9.2 U	0.92 U	0.92 U	0.92 U	9.2 U	9.2 U	0.69 U
Chlorodifluoromethane	UG/M3	**4.2**	**1.7 J**	1.8 U	NA	**10 J**	1.8 U	**3.2**	**1.6 J**	18 U	18 U	NA
Chloroethane	UG/M3	1.3 U	1.3 U	1.3 U	0.38 U	13 U	1.3 U	1.3 U	1.3 U	13 U	13 U	0.39 U
Chloroform	UG/M3	**0.33 J**	**0.33 J**	0.98 U	0.7 U	9.8 U	**2.4**	**17**	**54**	**34**	**400**	0.73 U
Chloromethane	UG/M3	1 U	**1.6**	1 U	**0.42 D**	10 U	1 U	1 U	1 U	10 U	10 U	0.31 U
Cis-1,2-Dichloroethylene	UG/M3	0.2 U	0.2 U	0.2 U	0.14 U	2 U	0.2 U	**0.64**	0.2 U	2 U	2 U	0.15 U
Cis-1,3-Dichloropropene	UG/M3	0.91 U	0.91 U	0.91 U	0.65 U	9.1 U	0.91 U	0.91 U	0.91 U	9.1 U	9.1 U	0.68 U
Cyclohexane	UG/M3	**1.7**	**3.5**	**2.1**	**1 D**	6.9 U	**7.9**	**21**	**4.9**	**38**	**5.6 J**	**8.7 D**
Cymene	UG/M3	1.1 U	1.1 U	1.1 U	NA	11 U	1.1 U	1.1 U	1.1 U	**2.2 J**	11 U	NA
Dibromochloromethane	UG/M3	1.7 U	1.7 U	1.7 U	1.2 U	17 U	1.7 U	1.7 U	1.7 U	17 U	17 U	1.3 U
Dichlorodifluoromethane	UG/M3	**3.1**	**2.9**	**2.3 J**	**2.4 D**	25 U	**2.7**	**2.5**	**2.2 J**	25 U	25 U	**2.1 D**

Table 2. Summary of Volatile Organic Compounds in Soil Vapor
580 Gerard Former Post Office Vehicle Repair Shop Site - NYSDEC BCP Site No. C203142
580-610 Gerard Avenue, Bronx, New York

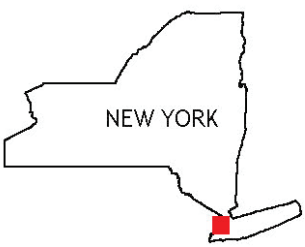
Sample Designation:		RXSS-01	RXSS-02	RXSS-03	RXSS-04	RXSV-01	RXSV-02	RXSV-03	RXSV-04	RXSV-05	RXSV-06	RXSV-07
Sample Date:		07/15/2021	07/15/2021	07/15/2021	12/21/2021	07/16/2021	07/15/2021	07/15/2021	07/15/2021	07/16/2021	07/16/2021	12/21/2021
Parameter	Units											
Ethyl Acetate	UG/M3	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	1.1 U
Ethylbenzene	UG/M3	**1.1**	**2.4**	**1.2**	**3.6 D**	8.7 U	**1.7**	0.87 U	**3**	8.7 U	8.7 U	**29 D**
Hexachlorobutadiene	UG/M3	2.1 U	2.1 U	2.1 U	1.5 U	21 U	2.1 U	2.1 U	2.1 U	21 U	21 U	1.6 U
Isopropanol	UG/M3	**3 J**	**18**	**6.5 J**	**4.4 J-**	120 U	12 U	**8.8 J**	12 U	120 U	120 U	**1.2 UJ**
Isopropylbenzene (Cumene)	UG/M3	0.98 U	**0.32 J**	0.98 U	NA	9.8 U	**0.55 J**	0.98 U	**0.58 J**	**6.8 J**	9.8 U	NA
m,p-Xylene	UG/M3	**4.7**	**9.3**	**4.6**	NA	22 U	**5.6**	2.2 U	**28**	**25**	**14 J**	NA
Methyl Ethyl Ketone (2-Butanone)	UG/M3	**3.5**	**8.7**	**3.9**	**12 D**	15 U	**2.6**	**0.97 J**	**2.1**	15 U	15 U	**5.4 D**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	2 U	2 U	2 U	**0.95 D**	20 U	**1.1 J**	2 U	2 U	20 U	20 U	0.61 U
Methyl Methacrylate	UG/M3	2 U	2 U	2 U	0.59 U	20 U	2 U	2 U	2 U	20 U	20 U	0.61 U
Methylene Chloride	UG/M3	1.7 U	**4.4**	1.7 U	1 U	17 U	1.7 U	1.7 U	1.7 U	17 U	17 U	**3.1 D**
M-P-Xylene	UG/M3	NA	NA	NA	**16 D**	NA	NA	NA	NA	NA	NA	**81 D**
Naphthalene	UG/M3	2.6 U	**1.8 J**	2.6 U	NA	26 U	**1.6 J**	2.6 U	2.6 U	26 U	26 U	NA
N-Butylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	NA	11 U	1.1 U	1.1 U	1.1 U	11 U	11 U	NA
N-Heptane	UG/M3	**2**	**19**	**2.3**	**4.2 D**	8.2 U	**4.4**	**1.1**	**3.4**	**210**	**7 J**	**25 D**
N-Hexane	UG/M3	**12**	**12**	**11**	**2.3 D**	18 U	**4.2**	**4.8**	1.8 U	**31**	18 U	**23 D**
N-Propylbenzene	UG/M3	0.98 U	**0.45 J**	0.98 U	NA	9.8 U	**0.59 J**	0.98 U	**0.65 J**	**6.3 J**	9.8 U	NA
O-Xylene (1,2-Dimethylbenzene)	UG/M3	**2.1**	**3.5**	**2.3**	**8.1 D**	8.7 U	**3.9**	0.87 U	**6.4**	**23**	8.7 U	**29 D**
Propylene	UG/M3	NA	NA	NA	**3.3 D**	NA	NA	NA	NA	NA	NA	**1.8 D**
Sec-Butylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	NA	11 U	1.1 U	1.1 U	1.1 U	11 U	11 U	NA
Styrene	UG/M3	**2.4**	**2**	**2.2**	0.61 U	8.5 U	0.85 U	0.85 U	0.85 U	8.5 U	8.5 U	0.64 U
T-Butylbenzene	UG/M3	1.1 U	1.1 U	1.1 U	NA	11 U	1.1 U	1.1 U	1.1 U	11 U	11 U	NA
Tert-Butyl Alcohol	UG/M3	**21**	**16**	**18**	NA	150 U	15 U	15 U	15 U	150 U	150 U	NA
Tert-Butyl Methyl Ether	UG/M3	0.72 U	0.72 U	0.72 U	0.52 U	7.2 U	0.72 U	0.72 U	0.72 U	7.2 U	7.2 U	0.54 U
Tetrachloroethylene (PCE)	UG/M3	**4.4**	1.4 U	**7.8**	**3.6 D**	**19**	**65**	**11**	**56**	**34**	**86**	**13 D**
Tetrahydrofuran	UG/M3	15 U	15 U	15 U	0.85 U	150 U	15 U	15 U	15 U	150 U	150 U	0.88 U
Toluene	UG/M3	**8.5**	**25**	**10**	**5.4 D**	**6.5 J**	**4.7**	**1.7**	**15**	7.5 U	**45**	**110 D**
Trans-1,2-Dichloroethene	UG/M3	0.79 U	0.79 U	0.79 U	0.57 U	7.9 U	0.79 U	0.79 U	0.79 U	7.9 U	7.9 U	0.59 U
Trans-1,3-Dichloropropene	UG/M3	0.91 U	0.91 U	0.91 U	0.65 U	9.1 U	0.91 U	0.91 U	0.91 U	9.1 U	9.1 U	0.68 U
Trichloroethylene (TCE)	UG/M3	0.2 U	0.2 U	0.2 U	**0.23 D**	2 U	0.2 U	**47**	0.2 U	2 U	2 U	0.2 U
Trichlorofluoromethane	UG/M3	**2**	**1.4**	**2**	**1.3 D**	11 U	**2.1**	**2.4**	**2**	11 U	11 U	**1.5 D**
Vinyl Acetate	UG/M3	NA	NA	NA	0.51 U	NA	NA	NA	NA	NA	NA	0.53 U
Vinyl Bromide	UG/M3	0.87 U	0.87 U	0.87 U	0.63 U	8.7 U	0.87 U	0.87 U	0.87 U	8.7 U	8.7 U	0.65 U
Vinyl Chloride	UG/M3	0.2 U	0.2 U	0.2 U	0.18 U	2 U	0.2 U	0.2 U	0.2 U	2 U	2 U	0.19 U

FIGURES

1. Site Location Map
2. Groundwater Sample Exceedances of the AWQSGVs
3. Site Plan



QUADRANGLE LOCATION



SOURCE:
USGS; 2019, Central Park, NY-NJ
7.5 Minute Topographic Quadrangle

N

0 2000'

Title:

SITE LOCATION MAP

580 GERARD AVENUE
BRONX, NEW YORK

Prepared for:

SB GERARD AVENUE LLC

ROUX

Compiled by: N.P.	Date: 12OCT22
Prepared by: B.H.C..	Scale: AS SHOWN
Project Mgr: N.P.	Project: 3523.0001Y000
File: 3523.0001Y120.01.CDR	

FIGURE 1

\3523\Y0001Y120\3523.0001Y120.01.CDR

RXMW-01	07/16/2021
Metals, Total	
Iron	**682**
Magnesium	**38100**
Sodium	**222000**
Metals, Dissolved	
Magnesium	**38500**
Sodium	**225000**
PFAS	
Perfluorooctanoic acid (PFOA)	**14.8**

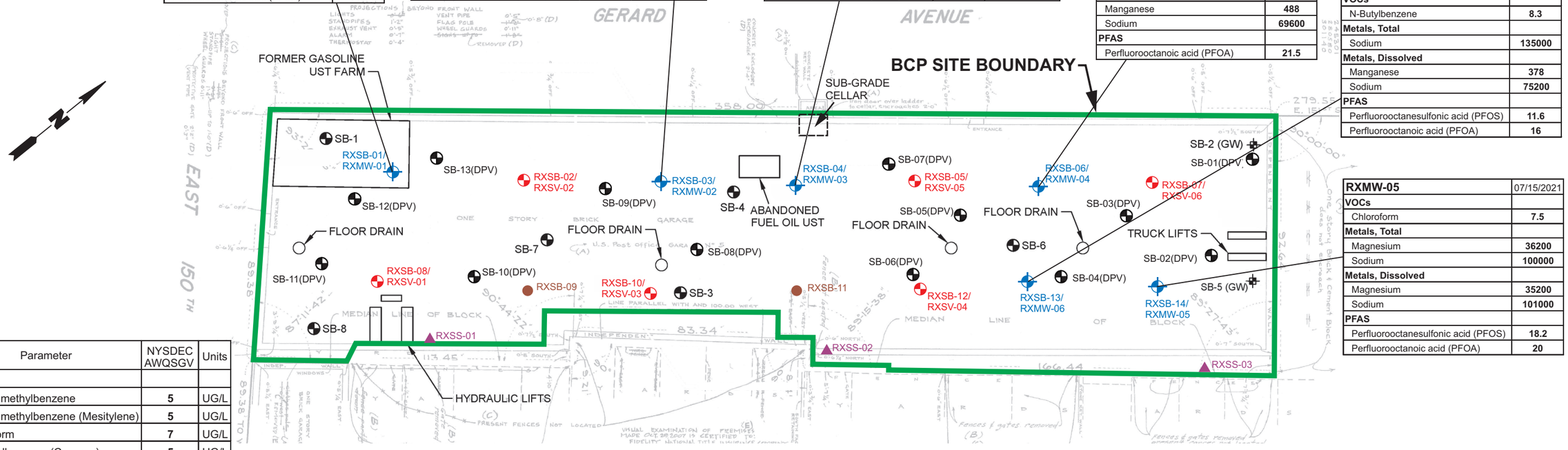
RXMW-02	07/16/2021	07/16/2021 DUP
Metals, Total		
Magnesium	**38500**	NS
Sodium	**139000**	NS
Metals, Dissolved		
Magnesium	**40700**	NS
Sodium	**140000**	NS
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**10.4**	**11.3**
Perfluorooctanoic acid (PFOA)	**22.9**	**22.7**

RXMW-03	07/15/2021	07/15/2021 DUP
Metals, Total		
Magnesium	**42600**	**41000**
Sodium	**213000**	**198000**
Metals, Dissolved		
Magnesium	**39300**	**41100**
Sodium	**195000**	**200000**
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**10.7**	NS
Perfluorooctanoic acid (PFOA)	**14.3**	NS

RXMW-04	07/15/2021
VOCs	
1,2,4-Trimethylbenzene	**360**
1,3,5-Trimethylbenzene (Mesitylene)	**140**
Isopropylbenzene (Cumene)	**24**
N-Butylbenzene	**29**
N-Propylbenzene	**55**
Sec-Butylbenzene	**9.8**
Metals, Total	
Iron	**410**
Manganese	**534**
Sodium	**72400**
Metals, Dissolved	
Manganese	**488**
Sodium	**69600**
PFAS	
Perfluorooctanoic acid (PFOA)	**21.5**

RXMW-06	07/15/2021
VOCs	
N-Butylbenzene	**8.3**
Metals, Total	
Sodium	**135000**
Metals, Dissolved	
Manganese	**378**
Sodium	**75200**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**11.6**
Perfluorooctanoic acid (PFOA)	**16**

RXMW-05	07/15/2021
VOCs	
Chloroform	**7.5**
Metals, Total	
Magnesium	**36200**
Sodium	**100000**
Metals, Dissolved	
Magnesium	**35200**
Sodium	**101000**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**18.2**
Perfluorooctanoic acid (PFOA)	**20**



Parameter	NYSDEC AWQSGV	Units
VOCs		
1,2,4-Trimethylbenzene	**5**	UG/L
1,3,5-Trimethylbenzene (Mesitylene)	**5**	UG/L
Chloroform	**7**	UG/L
Isopropylbenzene (Cumene)	**5**	UG/L
N-Butylbenzene	**5**	UG/L
N-Propylbenzene	**5**	UG/L
Sec-Butylbenzene	**5**	UG/L
SVOCs	NE	UG/L
Metals, Total		
Iron	**300**	UG/L
Magnesium	**35000**	UG/L
Manganese	**300**	UG/L
Sodium	**20000**	UG/L
Metals, Dissolved		
Iron	**300**	UG/L
Magnesium	**35000**	UG/L
Manganese	**300**	UG/L
Sodium	**20000**	UG/L
PCBs	ND	UG/L
Pesticides	ND	UG/L
Parameter	NYSDEC Drinking Water MCL	Units
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**10**	NG/L
Perfluorooctanoic acid (PFOA)	**10**	NG/L

µg/L - Micrograms per liter
ng/L - Nanograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGV - Ambient Water-Quality Standards and Guidance Values
NYSDEC Drinking Water MCL - Maximum Contaminant Levels (PFAS only)
-- - Not detected above NYSDEC AWQSGV
J - Estimated value
DUP - Duplicate Sample
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
PCBs - Polychlorinated Biphenyls
PFAS - Per- and Polyfluoroalkyl Substances
NE - No exceedances
ND - No detection
NS - Not sampled

TYPICAL DATA BOX INFORMATION

SAMPLE ID → **RXMW-1** | 07/16/2021 ← SAMPLE DATE

ANALYTES	CONCENTRATIONS
Metals, Total	
Iron	**682**
Magnesium	**38100**
Sodium	**222000**
Metals, Dissolved	
Magnesium	**38500**
Sodium	**225000**
PFAS	
Perfluorooctanoic acid (PFOA)	**14.8**

LEGEND

RXSB-09 ● RI SOIL BORING LOCATION AND DESIGNATION

RXSB-01/ RXMW-01 ⊕ RI SOIL BORING AND GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

RXSB-01/ RXSV-01 ◔ RI SOIL BORING AND SOIL VAPOR SAMPLE LOCATION AND DESIGNATION

RXSS-01 ▲ RI SUB-SLAB VAPOR SAMPLE LOCATION AND DESIGNATION

SB-1 ◔ PREVIOUS SOIL BORING SAMPLE LOCATION AND DESIGNATION

SB-2 (GW) ✚ PREVIOUS SOIL/GROUNDWATER SAMPLE LOCATION AND DESIGNATION

NOTES

1. BCP - BROWNFIELD CLEANUP PROGRAM
2. RI - REMEDIAL INVESTIGATION

40' 0 40'

SOURCE:

1. PLAN BASED ON MAP PREPARED BY EARL B. LOVELL - S.P. BELCHER, INC

Title:

GROUNDWATER SAMPLE EXCEEDANCES OF AWQSGVs

580 GERARD AVENUE
BRONX, NEW YORK

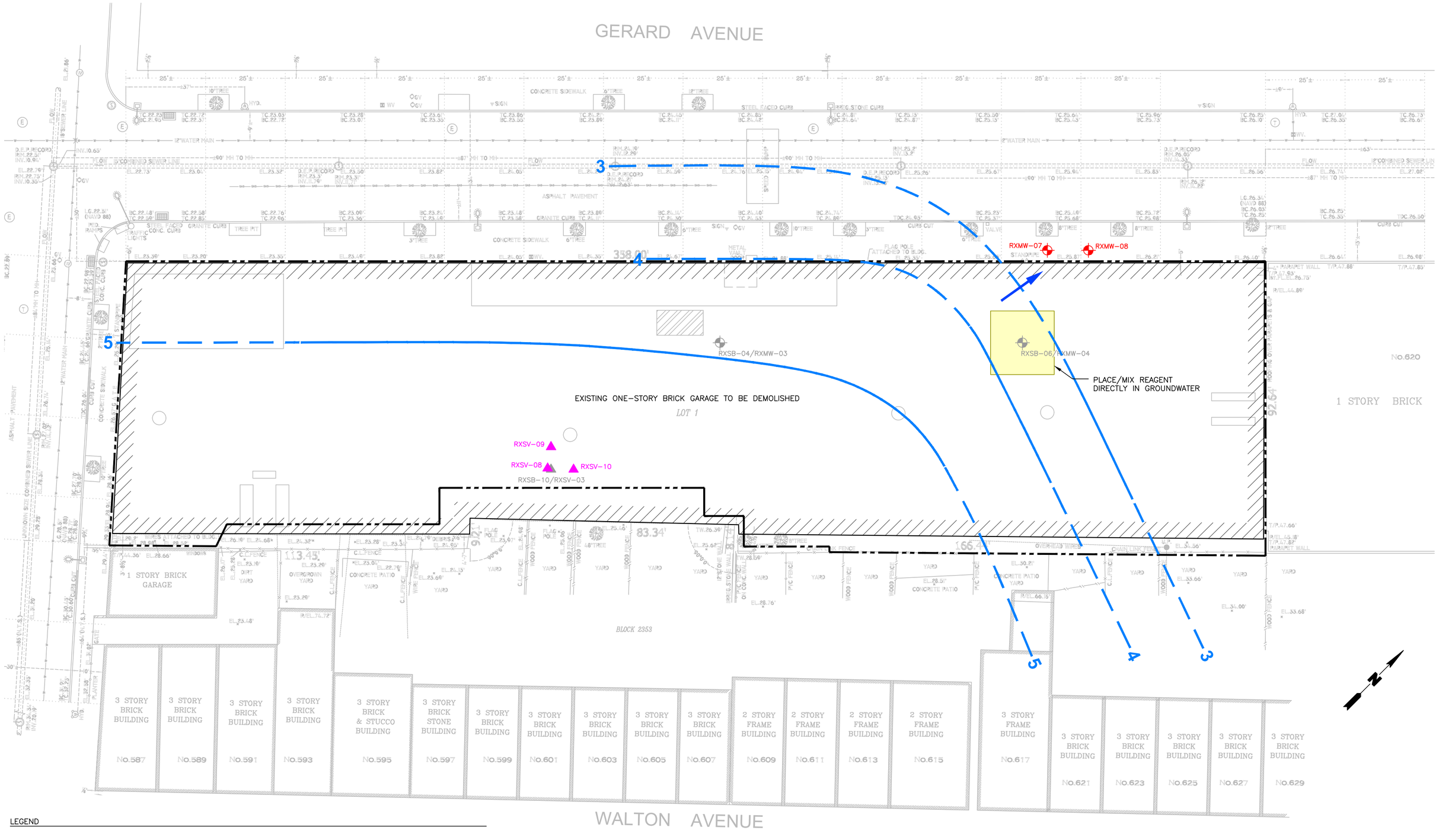
Prepared for:

SB GERARD AVENUE LLC

ROUX

Compiled by: N.P.	Date: 12OCT22	FIGURE	
Prepared by: B.H.C..	Scale: AS SHOWN	2	
Project Mgr: N.P.	Project: 3523.0001Y000		
File: 3523.0001Y120.02.CDR			

3523Y0001Y120\3523.0001Y120.02.CDR



LEGEND

- BCP SITE BOUNDARY
- EXISTING BUILDING
- IN-SITU CHEMICAL OXIDATION AREA/VOC HOT SPOT EXCAVATION AREA TO 27 FT BLS
- RXSB-04/RXMW-03 — RI SOIL BORING AND GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- RXMW-08 — PROPOSED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- RXSB-10/RXSV-03 — RI SOIL BORING AND SOIL VAPOR SAMPLE LOCATION AND DESIGNATION
- RXSV-08 — PROPOSED SOIL VAPOR SAMPLE LOCATION AND DESIGNATION
- 3 — LINE OF EQUAL GROUNDWATER ELEVATION IN FEET (DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION

BCP	BROWNFIELD CLEANUP PROGRAM
BLS	BELOW LAND SURFACE
NYSDEC	NEW YORK STATE DEPARTMENT OF ENNRIONMENTAL CONSERVATION
RI	REMEDIAL INVESTIGATION
UUSCOs	PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES
VOCs	VOLATILE ORGANIC COMPOUNDS

20' 0 20'

NOTES

1. IN THE HOT SPOT EXCAVATION AREA, SIDEWALL SAMPLES WILL BE COLLECTED AT A RATE OF 1 SAMPLE PER 30 LINEAR FEET. BOTTOM CONFIRMATION SAMPLES WILL BE COLLECTED AT A RATE OF 1 SAMPLE PER 900 SQUARE FEET IF BEDROCK IS NOT ENCOUNTERED.
2. BACKFILL WILL MEET NYSDEC UUSCOS. FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE (I.E. STONE, GRAVEL, ETC.) DO NOT REQUIRE SAMPLING.
3. TEMPORARY DEWATERING FOR HOT SPOT EXCAVATION, CONSTRUCTION OF ELEVATOR PITS, FOOTINGS, AND OTHER FOUNDATION COMPONENTS SHALL COMPLY WITH FEDERAL, STATE, AND LOCAL RULES AND REGULATIONS. EXTRACTED GROUNDWATER SHALL EITHER BE CONTAINERIZED FOR OFF-SITE LICENSED OR PERMITTED DISPOSAL OR TREATED ON-SITE AND DISCHARGED TO THE CITY SEWER SYSTEM UNDER APPROPRIATE PERMITS.

Title:

SITE PLAN

580 GERARD AVENUE
BRONX, NEW YORK

Prepared for:

SB GERARD AVENUE LLC

ROUX

Compiled by: N.P.	Date: 06FEB23	FIGURE 3
Prepared by: B.H.C.	Scale: AS SHOWN	
Project Mgr: J.L.	Project: 3523.0001Y000	
File: 3523.0001Y120.03.DWG		

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APPENDICES

A. REGENESIS Application Calculations
B. REGENESIS Material Information Sheets

APPENDIX A

REGENESIS Application Calculations

REGENESIS

Technology-Based Solutions for the Environment

PROJECT NAME

580 Gerard

PREPARED FOR

Roux Associates
Nick Palumbo
npalumbo@rouxinc.com

PREPARED BY

REGENESIS

Elliot Maker
emaker@regenesis.com

October 14, 2022

Project Summary

REGENESIS appreciates the opportunity to provide Roux Associates this remedial design and cost estimate for this project. Included within is a brief summary of our proposed solution, our understanding of your project goals, the technologies proposed, and a table summarizing the design.

Proposed Solution

Based on this evaluation, we provide this preliminary design and cost estimate for use of Oxygen Release Compound Advanced® (ORC Advanced) to treat residual petroleum hydrocarbons following excavation of source area contaminants. The excavation treatment area along with technical specifications regarding the proposed design are contained on the attached plan view site map. Below we provide a summary of pertinent information pertaining to the treatment area, basic design elements and product costing.

Project Goals

- Reduce source area dissolved phase petroleum hydrocarbon mass post excavation activities.

Technologies Proposed

- ORC Advanced®

Click above to access product specification sheets

Technical Resources

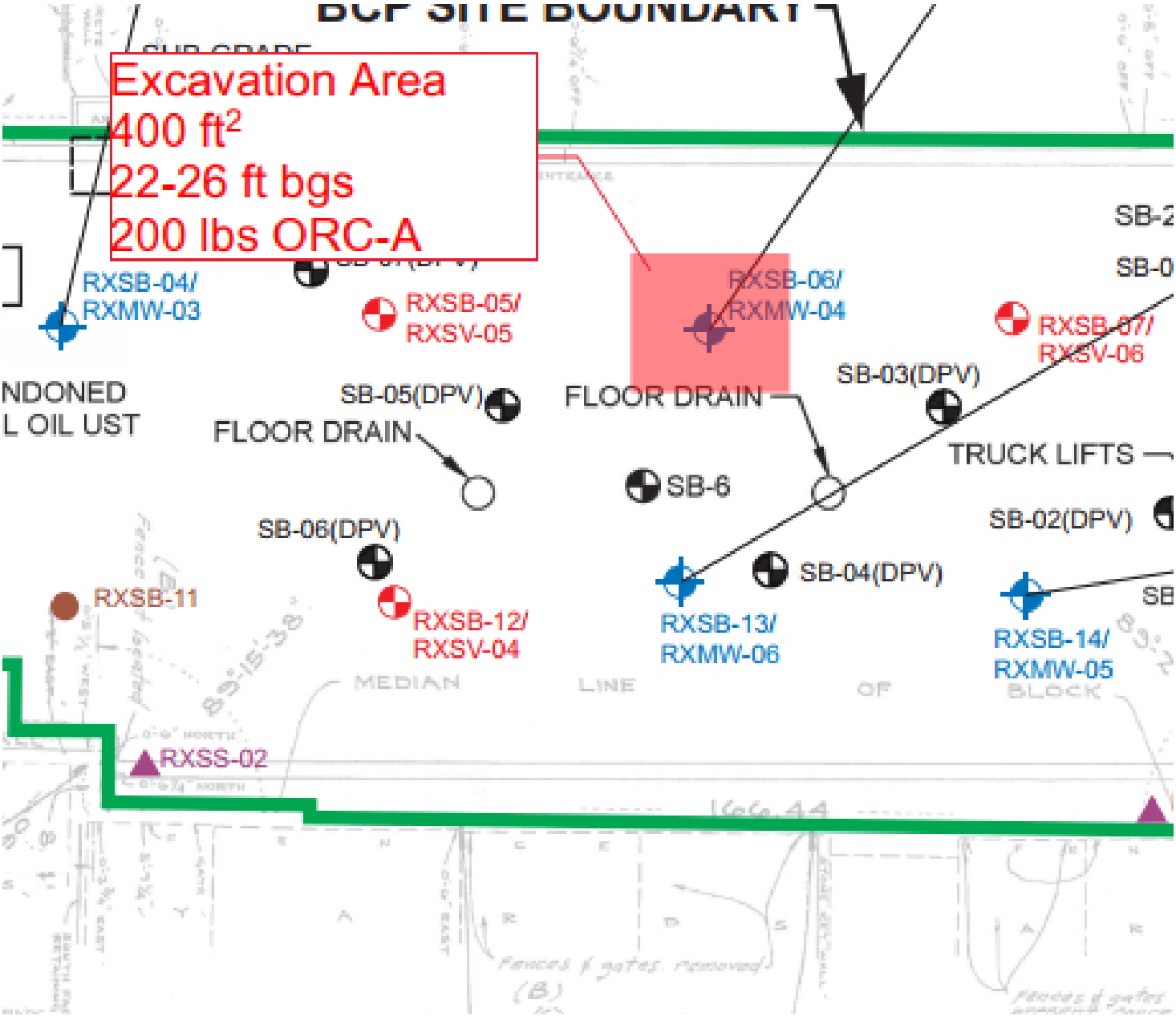
- ORC Advanced Application Instructions
- ORC Advanced Technical Bulletin: Compatibility with Underground Storage Structures and Pipes
- ORC Advanced Pellets SDS

Design Summary

Project Info		
580 Gerard Avenue		
Bronx, NY		
Dissolved Plume		
Prepared For:		
Nicholas Palumbo (Roux Associates)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	400
Top Treat Depth	ft	22.0
Bot Treat Depth	ft	26.0
Vertical Treatment Interval	ft	4.0
Treatment Zone Volume	ft^3	1,600
Treatment Zone Volume	cy	59
Soil Type	---	sand
Porosity	cm^3/cm^3	0.33
Effective Porosity	cm^3/cm^3	0.20
Treatment Zone Pore Volume	gals	3,950
Treatment Zone Effective Pore Volume	gals	2,394
Fraction Organic Carbon (foc)	g/g	0.002
Soil Density	g/cm^3	1.7
Soil Density	lb/ft^3	108
Soil Weight	lbs	1.7E+05
Recommended Weight of ORC Advanced/Wt. of Soil	%	0.0
ORC Advanced Required	lbs	200

Technical Approach

Petroleum hydrocarbon plumes are typically depleted in oxygen, which limits the ability of naturally occurring microorganisms to degrade petroleum hydrocarbons. Oxygen Release Compound (ORC) Advanced supplies a controlled release of oxygen for 9-12 months in the target treatment zone to create and support the geochemical environment necessary for aerobic biodegradation of contaminants.ORC Advanced is specifically engineered for use in excavations. They may be spread with mechanical equipment or by hand. Regardless of the methods used to emplace the ORC Advanced, the product should be spread evenly across the excavation area both horizontally and vertically within the saturated zone targeted for treatment. Regenesis can assist with further site-specific application design information, as needed, upon notification that our proposed remedy is chosen for implementation.



580 Gerard

Roux Associates

October 14, 2022

Figure 1-Injection Location Map

REGENESIS

Technology-Based Solutions for the Environment

Pricing

Below is the cost estimate to provide the remediation technologies and execute the design provided in this proposal. Please also see the assumptions and qualifications section.

Description	Price	Qty	Subtotal
ORC Advanced® Bags (40 lb)	$9.87	200	$1,974
Subtotal			$1,974
Estimated Shipping and Tax (18%)			+$355.32
Total			**$2,329.32**

COST ESTIMATE DISCLAIMER: The cost listed assumes conditions set forth within the proposed scope of work and assumptions and qualifications. Changes to either could impact the final cost of the project. This may include final shipping arrangements, sales tax, or application-related tasks such as product storage and handling, access to water, etc. If items listed need to be modified, please contact Regenesis for further evaluation.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgments provided by those who completed the earlier environmental site assessment(s), and in reliance upon REGENESIS' prior experience on similar project sites. The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints, or other limits on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the government.

PROFESSIONAL JUDGEMENT: In generating this estimate, REGENESIS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon the known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to effect the remediation of the site.

Acknowledgement

This scope and associated costs are budgetary and should not be considered final. Listed below are the next steps to secure a final design and cost estimate from REGENESIS.

Steps to Final Design and Scope of Work

1. Signature notifying REGENESIS to proceed with final design.
2. REGENESIS technical team contacts Roux Associates to review final scope of work and provide detailed design and cost estimate
3. Provide Detailed Remediation Services Scope of Work, if applicable.
4. Confirm Implementation Schedule
5. Submit Detailed Design and Cost Estimate to Roux Associates for review and final approval

Signature below confirms signee accepts this preliminary scope of work and would like REGENESIS to proceed with a detailed design and cost estimate.

SIGNATURE
Nick Palumbo

Not yet accepted

Roux Associates | Nick Palumbo, Staff Engineer

Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

Detailed Design Table

Project Info		
580 Gerard Avenue		
Bronx, NY		
Dissolved Plume		
Prepared For:		
Nicholas Palumbo (Roux Associates)		
Target Treatment Zone (TTZ) Info	**Unit**	**Value**
Treatment Area	ft^2	400
Top Treat Depth	ft	22.0
Bot Treat Depth	ft	26.0
Vertical Treatment Interval	ft	4.0
Treatment Zone Volume	ft^3	1,600
Treatment Zone Volume	cy	59
Soil Type	---	sand
Porosity	cm^3/cm^3	0.33
Effective Porosity	cm^3/cm^3	0.20
Treatment Zone Pore Volume	gals	3,950
Treatment Zone Effective Pore Volume	gals	2,394
Fraction Organic Carbon (foc)	g/g	0.002
Soil Density	g/cm^3	1.7
Soil Density	lb/ft^3	108
Soil Weight	lbs	1.7E+05
Recommended Weight of ORC Advanced/Wt. of Soil	%	0.0
ORC Advanced Required	lbs	200
Estimated Degradation Capacity as TPH	lbs	10.00
ORC Advanced® Pellets Application Design Summary		
Application Method	--	**Excavation Application**
Excavation Width	ft	20
Excavation Length	ft	20
Areal Extent (square ft)	sq. ft.	400
Top Application Depth (ft bgs)	ft	22
Bottom Application Depth (ft bgs)	ft	26
Estimated Saturated Treatment Thickness	ft	4
ORC Advanced to be Applied (lbs)	**lbs**	**200.00**
ORC Advanced per 1 ft lift	**lb/ft**	**50**
Prepared By:		
Elliot Maker		

APPENDIX B

REGENESIS Material Information Sheets

OXYGEN RELEASE COMPOUND

ORC Advanced® Technical Description

ORC Advanced® is an engineered, oxygen release compound designed specifically for enhanced, *in situ* aerobic bioremediation of petroleum hydrocarbons in groundwater and saturated soils. Upon contact with groundwater, this calcium oxyhydroxide-based material becomes hydrated producing a controlled release of molecular oxygen (17% by weight) for periods of up to 12 months on a single application.

Example of ORC Advanced

ORC Advanced decreases time to site closure and accelerates degradation rates up to 100 times faster than natural degradation rates. A single ORC Advanced application can support aerobic biodegradation for up to 12 months with minimal site disturbance, no permanent or emplaced above ground equipment, piping, tanks, power sources, etc are needed. There is no operation or maintenance required. ORC Advanced provides lower costs, greater efficiency and reliability compared to engineered mechanical systems, oxygen emitters and bubblers.

ORC Advanced provides remediation practitioners with a significantly faster and highly effective means of treating petroleum contaminated sites. Petroleum hydrocarbon contamination is often associated with retail petroleum service stations resulting from leaking underground storage tanks, piping and dispensers. As a result, ORC Advanced technology and applications have been tailored around the remediation needs of the retail petroleum industry and include: tank pit excavations, amending and mixing with backfill, direct-injection, bore-hole backfill, ORC Advanced Pellets for waterless and dustless application, combined ISCO and bioremediation applications, etc.

For a list of treatable contaminants with the use of ORC Advanced, view the Range of Treatable Contaminants Guide

Chemical Composition

- Calcium hydroxide oxide
- Calcium hydroxide

Properties

- Physical state: Solid
- Form: Powder
- Odor: Odorless
- Color: White to pale yellow
- pH: 12.5 (3% suspension/water)

OXYGEN RELEASE COMPOUND

ORC Advanced® Technical Description

Storage and Handling Guidelines

Storage
Store in a cool, dry place out of direct sunlight
Store in original tightly closed container
Store in a well-ventilated place
Do not store near combustible materials
Store away from incompatible materials
Provide appropriate exhaust ventilation in places where dust is formed

Handling
Minimize dust generation and accumulation
Keep away from heat
Routine housekeeping should be instituted to ensure that dust does not accumulate on surfaces
Observe good industrial hygiene practices
Take precaution to avoid mixing with combustibles
Keep away from clothing and other combustible materials
Avoid contact with water and moisture
Avoid contact with eyes, skin, and clothing
Avoid prolonged exposure
Wear appropriate personal protective equipment

Applications

- Slurry mixture direct-push injection through hollow rods or direct-placement into boreholes
- *In situ* or *ex situ* slurry mixture into contaminated backfill or contaminated soils in general
- Slurry mixture injections in conjunction with chemical oxidants like RegenOx or PersulfOx
- Filter sock applications in groundwater for highly localized treatment
- *Ex situ* biopiles

Health and Safety

Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection. Please review the ORC Advanced Safety Data Sheet for additional storage, usage, and handling requirements.

REGENESIS®

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949.366.8000