PROPOSED REMEDIAL ACTION PLAN

Former Gulf Oil Terminal
State Superfund Project
Oceanside, Nassau County
Site No. 130165
February 2021

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 at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. 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 New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

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:

Oceanside Library
30 Davison Avenue
Oceanside, NY 11572
(516)766-2360

A public comment period has been set from:

February 26, 2021 to March 29, 2021

Written comments may be sent through March 29, 2021 to:

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Division of Environmental Remediation
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Albany, NY 12233-7015
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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 7.2-acre Former Chevron/Gulf Petroleum Terminal property is located at 1 Industrial Place, Oceanside, Town of Hempstead, Nassau County. The site is bordered to the west by Long Island Railroad tracks, to the north by a former petroleum terminal, to the west by Hampton Road and Industrial Place and to the south by a surface water body called Barnum's Channel.

Site Features: The site is relatively flat and is comprised mainly of paved parking for a wholesale warehouse facility, approximately 20% of which is on-site. In addition, an operating gas station is located on the southern portion of the site. Limited landscaping exists mainly along the western side of the site.

Current Zoning/Use: The site is currently active and is zoned for commercial use. The surrounding parcels are currently used for a combination of commercial and industrial. The nearest residential area is approximately 0.25 miles to the northeast across Daly Boulevard.

Past Uses of the Site: The Former Chevron/Gulf site operated from 1932 until the 1990s as a petroleum storage terminal. The site previously held nine large-quantity aboveground storage tanks (ASTs) containing fuel oil, kerosene and gasoline; two small 550-gallon ASTs containing fuel oil for the on-site garage and office building; three underground storage tanks (USTs) containing fuel oil (one 550-gallon, one 1,000-gallon and one 5,000-gallon); one 1,000-gallon UST containing waste oil; a loading rack; a retention pond; a maintenance garage; and an office complex. Four of the nine large ASTs were demolished prior to 2000, with the remaining five large ASTs reportedly demolished in 2003. The two 550-gallon ASTs containing fuel oil for the maintenance garage and the office building were demolished in 2005.

Site Geology and Hydrogeology: Subsurface soil conditions encountered during previous environmental and geotechnical investigations determined the site lithology to consist of the following: sand fill from the ground surface to approximately eight feet below ground surface (bgs); meadow mat (silt with fibrous organics and trace clay) to approximately 15 feet bgs; underlying sand (coarse to fine sand, trace to some fine gravel) to approximately 85 feet bgs; and Gardiners Clay (clay, silt and lenses of sand).

Groundwater has historically been observed at elevations ranging between two to five feet above mean sea level (three to five feet bgs). Groundwater flow in the shallow fill material is generally toward the south in the direction of Barnum Island Channel. Groundwater flow in the lower sand unit (below the meadow mat) is strongly influenced by the tidal cycle and the flow direction changes by as much as 180 degrees. However, the groundwater flow direction in the lower sand unit is generally to the west.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

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

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

Chevron U.S.A., Inc. (Formerly Gulf Oil)

A Brownfield Cleanup Agreement (C130165) was signed by the Department with Lowe's Home Centers, Inc. as the volunteer on May 11, 2007. Subsequently, due to disagreements between Lowe's Home Centers, Inc. and Chevron U.S.A., Inc., the Brownfield Cleanup Agreement was terminated on June 13, 2008. The Department subsequently listed the site as Class 2 on the NYS Registry of Inactive Hazardous Waste Disposal Sites on September 8, 2008.

The Department and Chevron U.S.A., Inc., entered into a Consent Order on December 23, 2009. The Order obligates the responsible party to implement a full remedial program.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information;
- Geophysical survey to determine the lateral extent of wastes;
- Test pits, soil borings, and monitoring well installations;
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor;
- Sampling of surface water and sediment; and
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern,

the data from the RI were compared to media specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html.

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

methylene chloride	1,2,4-trimethylbenzene
trichloroethene (TCE)	toluene
benzene	mercury
ethylbenzene	arsenic
n-propyl benzene	cis-1,2-dichloroethene (cis-DCE)
xylene (mixed)	trans 1, 2 dichloroethene (trans-DCE)
naphthalene	phenol
butylbenzene	tetrachloroethene (PCE)
methyl tert-butyl ether (MTBE)	vinyl chloride

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

- groundwater
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Soil Excavation - October 2002

In October 2002 Chevron, under the Department's Spills Program, completed four excavations to remove previously observed light non-aqueous phase liquid (LNAPL) impacted soil and areas of elevated petroleum hydrocarbon-contaminated soil. The four excavation areas included: the area surrounding the former vapor recovery unit (VRU)/small aboveground storage tank (AST) pad, an area west of the former garage building, an area southeast of the former truck loading racks, and an area southeast of the former garage building, at the former turbine pump area.

The excavations were completed to a depth of eight feet below the current ground surface. Approximately 438 tons of soil was excavated for off-site disposal. Clean fill meeting the Department's Technical Administrative Guidance Manual (TAGM) 4046 criteria was used to backfill the excavations. Benzene, toluene, ethylbenzene and xylene (BTEX) and naphthalene were detected in post-excavation soil samples at concentrations above the Department's protection of groundwater soil cleanup objectives (SCOs) in each of the four excavations.

ISCO Pilot Tests (2002-2004)

Two pilot tests for *in-situ* chemical oxidation (ISCO) were completed between 2002 and 2004. The first test consisted of a 20% sodium permanganate solution surrounding the former VRU. Confirmatory groundwater sampling was completed in March 2003. A significant decrease was noted in chlorinated volatile organic compound (CVOC) concentrations, including TCE, cis-1,2-DCE, methylene chloride, and vinyl chloride.

The second pilot test was completed in 2004 near the former turbine pump area using a modified Fenton's reagent. The intent of this test was to treat poly-nuclear aromatic hydrocarbons (PAHs) at the site. Both temporary injection wells and Geoprobe injections were used. Confirmatory samples in 2004 indicated that the test was ineffective in reducing PAH concentrations. However, the 2017 Feasibility Study found that the modified Fenton's reagent had greatly (but not completely) reduced the impacts to groundwater during the 13 years following the pilot test.

Soil Excavations (2013-2014)

In the Fall 2013 and early 2014, an IRM was completed in the former VRU area. The VRU area measured approximately 60 feet by 65 feet and was excavated to a final depth that varied from 13 to 18 feet bgs. The main contaminants near the VRU were MTBE and vinyl chloride. The excavation was partially backfilled using a cement-bentonite slurry, which mitigated the need for dewatering and maintained adequate hydraulic pressure to prevent water infiltration and geotechnical failure of the minimal remaining clay zone above the lower sand. Approximately 3,464 tons of soil were excavated for off-site disposal. The cement-bentonite slurry was left in place upon completion of the excavation for stabilization. The remainder of the open excavation was backfilled with approximately six inches of clean stone to match the existing grade.

Three IRM Addendum areas were excavated in 2014 in accordance with a Department-issued conditional approval letter: the 100-square foot AMW-5 area was excavated to 13 feet bgs; the 150-square foot GS-2/GP-NORTH area was excavated to eight feet bgs; and the 25-square foot GP-6 area was excavated to seven feet bgs. Approximately 110 tons of soil was excavated for off-site disposal. Each excavation was backfilled with acceptable materials meeting Department criteria for clean fill. At the AMW-5 and GS-2/GP-NORTH excavations, clean stone was placed in the bottom of the excavation to bridge the saturated zone. The top of each excavation, as well as the entire GP-6 excavation, was backfilled with compacted general fill materials to match the existing grades. The post-excavation soil sampling analytical results revealed that BTEX and naphthalene were detected above the Department's commercial SCOs in each of the four excavations.

In summary, ISCO injections and excavations have reduced the sources of VOCs and chlorinated VOCs at the site, although data shows that some residual contamination remains.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for operable unit 1 (OU 01).

Nature and Extent of Contamination:

The sources of the site contamination are associated with historical petroleum terminal operations conducted from 1931 to the early 1990s, and discharges from piping associated with former ASTs, loading rack operations, turbine pump area operations, and bulkhead area loading/unloading operations that have contributed to the impact of soil and groundwater.

Prior investigations have determined that the site contains soil impacted by petroleum in the historic fill above the meadow mat and groundwater is impacted by petroleum related constituents above and below the meadow mat. In addition, soil and groundwater impacted by chlorinated VOCs have been documented in the area of the former Vapor Recovery Unit (VRU) located in the northwestern / central western portion of the site directly above and below the meadow mat. The chlorinated VOC impacts include trichloroethylene (TCE), cis-1,2dichlorethylene (cis-DCE), trans-1,2-dichloroethylene (trans-DCE) and vinyl chloride.

Soil-
Impacted soil and areas of elevated petroleum-hydrocarbon were removed. These areas included the area surrounding the former VRU/ small AST pad, an area west of the former garage building, an area southeast of the former truck loading racks and an area southeast of the former garage building.

Following the completed IRMs, petroleum-related soil impacts, at concentrations above the protection of groundwater soil cleanup objectives (SCOs), remain in the shallow fill unit at various depths ranging from four to 11 feet bgs in six areas of the site: the former turbine pump area; the former garage building area; the southwest area; the former loading rack area; the former VRU area; and along Hampton Road. Arsenic, at concentrations up to 28.1 mg/kg above the commercial use SCO of 16 mg/kg all below 6 feet and remains in isolated areas of the southwest area.

Although reduced as a result of the completed IRMs, soil impacts that remain in the meadow mat and lower sand unit are generally associated with the former VRU, which include chlorinated VOCs (TCE, cis-1,2-DCE, methylene chloride, vinyl chloride) that create concentrations in groundwater above applicable standards. Petroleum-related contaminants (benzene and MTBE)

are also present in the former VRU area at concentrations above the protection of groundwater SCOs. Soil impacts remain at various depths ranging from 12 to 30 feet bgs.

Groundwater -
Shallow and deeper groundwater at the site are impacted by VOCs and SVOCs when concentrations were compared to Ambient Water Quality Standards (AWQS) as a result of residual VOC and SVOC affects in shallow soil and the meadow mat beneath the site. The identified areas of concern are the former VRU area, the former loading rack area, the barge dock/bulkhead area, and the area west, south and southeast of the former garage building.

Deeper groundwater in the western half of the site has been impacted by a mixture of chlorinated hydrocarbons (primarily methylene chloride and TCE) and petroleum hydrocarbons consisting of gasoline fuel-related compounds (BTEX and MTBE) and diesel/fuel oil-related compounds (acenaphthene, fluorene, naphthalene, and phenanthrene) when concentrations were compared to AWQS. Concentrations of these VOCs and SVOCs remain elevated in deeper groundwater. Chlorinated hydrocarbons, primarily methylene chloride and TCE, remain elevated in the deeper groundwater beneath the VRU area. The daughter products (1,2-DCE and vinyl chloride) from biodegradation of TCE were clearly evident in the groundwater sample results from all three sampling events.

On-site groundwater at the Vapor Recovery Unit (VRU) is affected by chlorinated hydrocarbons, consisting primarily of TCE, TCE daughter products, and methylene chloride. The plume in the shallow groundwater (water table) zone has moderate dissolved phase concentrations at its core and is located southwest of the VRU extending beneath Hampton Road. The deeper groundwater plume, below the meadow mat layer, is relatively compact in size, but dissolved phase concentrations are high at its core. This plume is centered almost directly beneath the location of the former VRU.

Emerging Contaminants (EC) in groundwater at the site were sampled and analyzed for per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The results indicated that PFAS compounds ranged from ND to 322.7 ng/l and 1,4-dioxane ranged from 0.19 to 1.1 ug/l.

Results from post-remedial sampling confirms that natural attenuation is occurring.

6.4: Summary of Human Exposure Pathways

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

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater and/or soil 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. Sub-slab depressurization systems (systems that ventilates/removed the air beneath the buildings) were installed to address potential soil vapor intrusion concerns in the on-site buildings. As one of these buildings is partially off-site, the off-site concerns for soil vapor intrusion are addressed by this same system.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

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.

Soil Vapor

RAOs for Public Health Protection

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

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 that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to in the Feasibility Study as Alternative 3: Monitored Natural Attenuation (MNA), Soil Vapor Intrusion Mitigation and Institutional Controls (ICs) remedy.

The estimated present worth cost to implement the remedy is $1,056,000. The cost to construct the remedy is estimated to be $20,000 and the estimated average annual cost is $69,000.

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. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d). All remaining soil contamination is located below 4 feet and underneath the current parking lot for the site which acts as a cover system. Maintenance of the cover system will be included in the Site Management Plan (SMP).

3. Monitored Natural Attenuation (MNA)

Groundwater contamination (remaining after the soil excavation and in-situ chemical oxidation IRMs) will be addressed with MNA in the shallow fill unit and lower sand unit. Groundwater will be monitored for site related contamination and also for MNA indicators (Carbon dioxide, total chloride, sodium, total alkalinity, pH, Nitrate-nitrite, Ph, ferric iron and total iron) which will provide an understanding of the biological activity breaking down the contamination. It is anticipated that contamination will decrease by an order of magnitude in a reasonable period of time (5 to 10 years). Reports of the attenuation will be provided annually, and active remediation will be proposed if it appears that natural processes alone will not address the contamination. The contingency remedial action will depend on the information collected, but it is currently anticipated that enhanced bioremediation would be the expected contingency remedial action.

4. Soil Vapor Intrusion Mitigation

The potential soil vapor intrusion will be mitigated through the use of sub-slab depressurization (SSD) systems installed as part of the site IRMs.

5. Engineering and Institutional Controls

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 commercial use 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 DOH; and
- require compliance with the Department approved Site Management Plan.

6. Site Management Plan

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

a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in the above paragraph.

Engineering Controls: The site cover system, SSD systems and MNA discussed below.

This site management plan includes, but may not be limited to:
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any newly occupied buildings on the site or additions/modifications to the current partially off-site wholesale warehous facility, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 2 above will be placed in any areas where the upper one foot 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 Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of the groundwater monitoring and frequency of submittals to the Department;
- Specific monitoring requirements and success criteria will be determined during the remedial design;
- monitoring for vapor intrusion for any buildings on the site, including the partially off-site wholesale warehouse facility, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical

components of the remedy. The plan includes, but is not limited to:

- procedures for operating and maintaining the remedy;
- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

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 for soil arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), per- and polyfluoroalkyl substances (PFAS) and inorganics (metals and cyanide). The contaminants in groundwater are arranged into two categories; VOCs and SVOCs. 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.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, and soil. 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 were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas identified at the site include:

- Numerous above and below-ground storage tanks;
- A loading rack;
- A retention pond; and
- A Vapor Recovery Unit (VRU).

Light non-aqueous phase liquid (LNAPL), consisting of a mixture of No. 2 and No. 4 fuel oil, kerosene, and gasoline, had previously been detected in a monitoring well near the bulkhead at the southern portion of the site at a thickness up to 2.28 feet. LNAPL was also encountered near the former VRU and the former garage building. The observed occurrences of LNAPL and shallow soil impacts were addressed through a series of interim remedial measures. Measurable thicknesses of LNAPL have not been observed at the site since 2004.

Previous investigations indicate that the primary source of contamination at the site impacts from the historical petroleum terminal operations which occurred from 1931 to the early 1990s, which includes the operation of the former VRU. Soil impacts from terminal operations and historical fill exist primarily in six areas of the site: the former turbine pump area; the former garage building

area; the southwest area which includes a former one-story block building, a former two-story brick building, and a former one-story brick office building; the former loading rack area; the former VRU area; and the former oil/water separator (OWS) area. Certain waste/source areas identified at the site were addressed by the IRM(s) described in Section 6.2.

Groundwater

Groundwater samples were collected from wells to assess the groundwater conditions both on- and off-site. The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), per- and polyfluoroalkyl substances (PFAS) and metals to determine the nature and extent of contamination related to past operations at the site. PCBs and pesticides were not analyzed in groundwater due to the scarcity of these contaminants in site soils. The investigation results indicate that contamination in the groundwater at the site exceeds the SCGs for VOCs, SVOCs and metals.

The primary groundwater contaminants are chlorinated solvents, which are present in groundwater beneath the northeastern portion of the site and extend off-site to the north-northwest. Figure 3 provides a generalized representation of the area of groundwater contamination that exceeds drinking water standards. SVOCs and metals have been reported above SCGs but are a lesser concern due to their location, nature, relatively low concentration, and/or low occurrence frequency.

Table 1 – Groundwater

Detected Constituents	Concentration Range Detected (ppb)	SCG (ppb)	Frequency Exceeding SCG
VOC NYS CLASS GA			
Acetone	10.0 - 56.0	50	1/63
Benzene	1.0 - 19.0	1	25/63
Cis-1,2-Dichloroethylene	2.0 - 81.0	5	5/63
Ethylbenzene	1.0 - 7.2	5	2/63
Isopropyl benzene (Cumene)	1.0 - 16.0	5	5/63
Methylene Chloride	1.0 - 120.0	5	5/63
Tert-Butyl Methyl Ether	1.0 - 350.0	10	45/63
Toluene	1.0 - 18.0	5	5/63
Trans-1,2-Dichloroethene	1.0 - 28.0	5	5/63
Trichloroethylene (TCE)	1.0 - 140.0	5	3/63
Vinyl Chloride	1.0 - 600.0	2	24/63
Xylenes (Total)	2.0 - 20.0	5	9/63

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary

contaminants of concern which drive the remediation of groundwater to be addressed by the remedy selection process are: benzene, MTBE, and vinyl chloride.

Soil

Soil impacts from terminal operations exist primarily in five areas of the site: the former turbine pump area; the former garage building area; the southwest area which includes a former one-story block building, a former two-story brick building, and a former one-story brick office building; the former loading rack area; and the former VRU area. Isolated soil impacts also exist along Hampton Road.

A total of 227 soil samples have been collected for analysis at this site. Of the 227 soil samples, 162 samples were collected from the shallow fill unit, 10 samples were collected from the meadow mat, and 55 samples were collected from the lower sand unit.

Table 2- Soil

Detected Constituents	Concentration Range Detected (ppm)	375 SOIL – Unrestricted Use (ppm)	Frequency Exceeding Unrestricted Use SCG	375 SOIL – Commercial Use (ppm)	Frequency Exceeding Restricted Use SCG	375 SOIL – Protection of groundwater (ppm)	Frequency Exceeding Restricted Use SCG
Metals PART 375							
Arsenic	0.400-28.1	13	10/87	16	6/87	16	6/87
Chromium, Total	0.700-51.5	30	7/87	400	0/87	19	13/87
Lead	0.500-200	63	4/87	1000	0/87	450	0/87
Mercury	0.0100-11.1	0.18	6/87	2.8	1/87	0.73	2/87
Nickel	0.430-31.4	30	1/87	310	0/87	130	0/87
Selenium	0.600-8.10	3.9	72/87	1500	0/87	4	70/87
Silver	0.480-3.32	2	1/87	1500	0/87	8.3	0/87
Zinc	0.740-123	109	2/87	10000	0/87	2480	0/87
Pesticides/PCBs PART 375							
Hexachlorobenzene	0.0600-9.10	0.33	35/88	6	1/88	3.2	5/88
SVOC PART 375							
2-Methylphenol (O-Cresol)	0.180-9.10	0.33	36/88	500	0/88	0.33	36/88
4-Methylphenol (P-Cresol)	0.0200-18.0	0.33	84/88	500	0/88	0.33	84/88
Benzo(A)Anthracene	0.0100-8.90	1	10/88	5.6	1/88	1	10/88
Benzo(A)Pyrene	0.0100-11.0	1	10/88	1	10/88	22	0/88
Benzo(B)Fluoranthene	0.0100-11.0	1	10/88	5.6	1/88	1.7	8/88
Benzo(K)Fluoranthene	0.0300-9.10	0.8	23/88	56	0/88	1.7	11/88
Chrysene	0.0100-8.50	1	10/88	56	0/88	1	10/88

Dibenzo (A, H) Anthracene	0.0100-9.10	0.33	34/88	0.56	29/88	1000	0/88
Dibenzofuran	0.0200-9.10	7	1/88	350	0/88	210	0/88
Indenol (1,2,3-C, D) Pyrene	0.0300-9.10	0.5	18/88	5.6	2/88	8.2	1/88
Naphthalene	0.0200-29.0	12	1/88	500	0/88	12	1/88
Pentachlorophenol	0.340-18.0	0.8	30/88	6.7	4/88	0.8	30/88
Phenol	0.0300-9.10	0.33	36/88	500	0/88	0.33	36/88
VOC PART 375							
1,1-Dichloroethane	0.00480-0.570	0.27	3/98	240	0/98	0.27	3/98
1,1-Dichloroethene	0.00160-0.570	0.33	3/98	500	0/98	0.33	3/98
1,2-Dichloroethane	0.00480-0.570	0.02	36/98	30	0/98	0.02	36/98
Acetone	0.00490-2.90	0.05	42/98	500	0/98	0.05	42/98
Benzene	0.000500-0.610	0.06	29/98	44	0/98	0.06	29/98
Chloroform	0.000450-0.570	0.37	3/98	350	0/98	0.37	3/98
Cis-1,2-Dichloroethylene	0.000790-110	0.25	12/98	500	0/98	0.25	12/98
Ethylbenzene	0.000510-10.0	1	6/98	390	0/98	1	6/98
Methyl Ethyl Ketone (2-Butanone)	0.00340-2.90	0.12	33/98	500	0/98	0.12	33/98
Methylene Chloride	0.00280-24.0	0.05	35/98	500	0/98	0.05	35/98
Tert-Butyl Methyl Ether	0.000600-9.00	0.93	6/98	500	0/98	0.93	6/98
Toluene	0.000540-2.70	0.7	3/98	500	0/98	0.7	3/98
Trans-1,2-Dichloroethene	0.00480-3.30	0.19	10/98	500	0/98	0.19	10/98
Trichloroethylene (TCE)	0.00310-5.00	0.47	3/98	200	0/98	0.47	3/98
Vinyl Chloride	0.00130-15.0	0.02	37/98	13	1/98	0.02	37/98

Soil Vapor

Rather than investigating soil vapor contamination during the Remedial Investigation the PRP chose to install and operate vapor mitigation systems (sub-slab depressurization systems) in the two buildings at the site.

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. All alternatives include the sub-slab depressurization systems previously installed in the current site buildings with the required maintenance and monitoring except for alternative 1.

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.

Alternative 2: No Further Action with Vapor Mitigation, Cover System and Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to maintain the effectiveness of the IRM. This alternative maintains the engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Institutional Controls:

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

- 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 commercial use 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 DOH; and
- require compliance with the Department approved Site Management Plan.

Present Worth:.....*$311,000*
Capital Cost:.....*$45,000*
Annual Costs:.....*$20,217*

Alternative 3: Monitored Natural Attenuation, Vapor Mitigation, Cover System and Institutional Controls

This alternative would include the Institutional Controls discussed in Alternative 2 above, along with Monitored Natural Attenuation to address contaminants in groundwater.

Monitored Natural Attenuation (MNA):
Groundwater contamination will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and for MNA indicators which will provide an understanding of the biological activity breaking down the contamination. It is anticipated that contamination will decrease by an order of magnitude in a reasonable period of time (5 to 10 years). Reports of the attenuation will be provided as detailed in the Site Management Plan (SMP), and active remediation will be proposed if it appears that natural processes alone will not address the contamination. The contingency remedial action will depend on the information collected, but it is currently anticipated that enhanced bioremediation would be the expected contingency remedial action. This alternative also maintains the engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs. The site cover system consists of the paved parking lot and the slabs of the site buildings.

Present Worth: *$1,055,971*
Capital Cost: *$20,000*
Annual Costs: *$68,690*

Alternative 4: ISCO, Monitored Natural Attenuation (MNA), Vapor Mitigation, Cover System, and Institutional Controls

This alternative would include the institutional control discussed in Alternative 2 and the cover system and monitored natural attenuation discussed in Alternative 3, along with in-situ chemical oxidation to more aggressively treat groundwater. This alternative also maintains the engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

In-Situ Chemical Oxidation (ISCO):
ISCO would be implemented to treat contaminants in groundwater. A chemical oxidant would be injected into the subsurface to destroy the contaminants in the saturated zone and capillary fringe soils and groundwater *via* injection wells**.** The estimated total injection would consist of approximately 1,671,000 pounds of 35% hydrogen peroxide and 820,000 pounds of sodium persulfate. Approximately 1,000,000 gallons of water would be required to mix the chemicals and disperse chemicals through the aquifer. If post-ISCO sampling shows that COCs persist in groundwater at levels unacceptable to the Department, then MNA would be used to confirm the natural attenuation of those groundwater COCs to levels acceptable to the Department.

MNA:
Groundwater would be monitored for site related contamination and for MNA indicators which will provide an understanding of the biological activity breaking down the contamination. It is anticipated that contamination would decrease by an order of magnitude in a reasonable period of time (5 to 10 years). Reports of the attenuation will be provided as specified in the SMP, and active remediation would be proposed if it appears that natural processes alone will not address the contamination. The contingency remedial action would depend on the information collected, but it is currently anticipated that enhanced bioremediation would be the expected contingency remedial action.

Cover System:
The site cover system consists of building slabs, paved areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use in Part 375-6.8(b).

Present Worth:.....*$11,700,000*
Capital Cost:.....*$40,000*
Annual Costs:.....*$764,000*

Alternative 5: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative would include: Soil Excavation, Groundwater Extraction & Treatment, and Enhanced Bioremediation.

Soil Excavation:
Excavation and off-site disposal of all on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8**.** If an unrestricted use cleanup is achieved, a Cover System would not be a required element of the remedy.

Groundwater Extraction & Treatment:
Groundwater extraction and treatment would be implemented to treat remaining contamination in groundwater. The groundwater extraction system would be designed and installed so that the capture zone is sufficient to cover the areal and vertical extent of the area of concern. The extraction system would create a depression of the water table so that contaminated groundwater is directed toward the extraction wells within the plume area. Groundwater would be extracted from the subsurface in the shallow fill unit and lower sand unit. The extraction system would be designed to minimize the drawdown of the water table in order to reduce smearing of non-aqueous phase liquid in the area of drawdown. Extracted groundwater would be treated to acceptable levels for discharge to the sanitary system, re-injection, or off-site disposal. The groundwater treatment system would be housed in either a prefabricated building or trailer.

Enhanced Bioremediation:

In-situ enhanced biodegradation would be employed to treat contaminants in groundwater in areas where extraction is not feasible. The biological breakdown of contaminants through a direct metabolic oxidation of petroleum compounds or co-metabolic degradation of chlorinated solvents eventually yielding the innocuous byproducts of carbon dioxide and water.

Present Worth: $43,600,000
Capital Cost: *$542,000*
Annual Costs: *$2,800,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1: No Further Action	0	0	0
2: No Further Action & Site Management	45,000	20,200	311,000
3: Cover System, MNA, Vapor Mitigation and ICs	20,000	69,000	1,056,000
4: Cover System, ISCO, MNA, Vapor Mitigation and ICs	40,000	764,000	11,800,000
5: Unrestricted Use	542,000	2,800,000	43,600,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Monitored Natural Attenuation (MNA) with a Cover System and Institutional Controls (ICs) as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by through continuous monitoring of groundwater contaminant levels, the implementation of an Environmental Easement, and maintenance of the existing cover system. The elements of this remedy are described in Section 7. The ongoing monitoring of the selected remedy is depicted in Figure 4.

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 FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied 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. A site that does not meet this first criterion, it will no longer be considered as a viable alternative and not discussed further.

The proposed remedy (Alternative 3) would satisfy this criterion by eliminating contact with soil and consumption of groundwater through the site cover and environmental easement and protecting the environment by treating groundwater using monitored natural attenuation.

Alternative 1 would not be protective of public health and the environment because potential exposures to contaminants would not be prevented. Alternative 2 would use the site cover and vapor mitigation, along with institutional controls, for protection of public health, but would not be protective of the environment because groundwater would continue to be untreated. Alternatives 1 and 2 will not be considered further in this evaluation as they do not meet criterion 1. Alternatives 3 and 4 would provide overall protection for human health; however, protectiveness of the environment would require MNA monitoring to confirm natural attenuation of contaminants in groundwater to levels acceptable to the Department. Alternative 5 would be protective of human health and the environment by completely removing contamination in the soil and groundwater.

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.

Alternative 3 would eventually achieve SCGs through MNA and the SCGs for soil would be met through the installation of a site cover. Alternative 4 will similarly achieve SCGs through more aggressive groundwater treatment and the installation of a site cover. Alternative 5 will comply with SCGs by removing all contaminated soil from the site and treating contaminated groundwater.

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

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 3 effectively protects human health through the site cover and would rely on site contaminants attenuating to non-toxic byproducts through natural attenuation processes in the underlying impacted media to be effective in the long term. Alternative 4 has comparable long-term effectiveness and permanence, except treatment would reduce the area relying on COCs attenuating to non-toxic byproducts through natural attenuation processes. Alternative 5 will be effective over the long-term by completely removing the contamination in the soil and groundwater.

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.

Alternative 3 relies on MNA and will reduce toxicity, mobility, or volume of contaminants over the long term. Alternative 4 would provide an overall reduction of toxicity, mobility, and volume of COCs in soil and groundwater through active treatment. Alternative 5 will best reduce the toxicity, mobility, or volume of contaminants through physical removal.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 3 and 4 are effective in the short-term in preventing human exposures to site COCs in the subsurface due to existing site features effectively leaving the contaminants beneath the cover system in the underlying impacted media as each alternative is implemented. With Alternatives 3 and 4, potential risks associated with site contaminants would additionally be controlled by the site cover and environmental easement, with only minor short-term impacts during construction. Alternative 4 would pose additional risks to workers handling the oxidants needed for the in-situ treatment. Alternative 5 would reduce potential risks associated with site contaminants in the long term; however, there would be impacts to the community during

excavation activities associated with truck traffic transporting asphalt debris, soil, and clean backfill from/to the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternative 1 is readily implementable. Alternatives 2 and 3 are also easily implemented. Alternative 4 is moderately difficult to implement due to disruption to the store business operations. Store operations would have to be disrupted during injections, or injections would have to occur at night when the store is closed. Alternative 5 is not technically feasible under current site conditions. There would be substantial disruption to store retail operations potentially requiring closure during implementation.

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 Alternatives 1 and 2 are considered low. The costs of emplacing an EE associated with Alternative 2 are slightly higher than Alternative 1. The cost of Alternative 3 is higher than Alternative 2 due to the monitoring well installation costs and monitoring costs associated with this alternative. The cost of Alternative 4 is significantly higher than the costs associated with Alternative 3, with the addition of the cost of chemical oxidants, application equipment, and post-ISCO sampling for evaluating the effectiveness of treatment. The cost of Alternative 5 is much higher than the costs associated with any of the other alternatives considered.

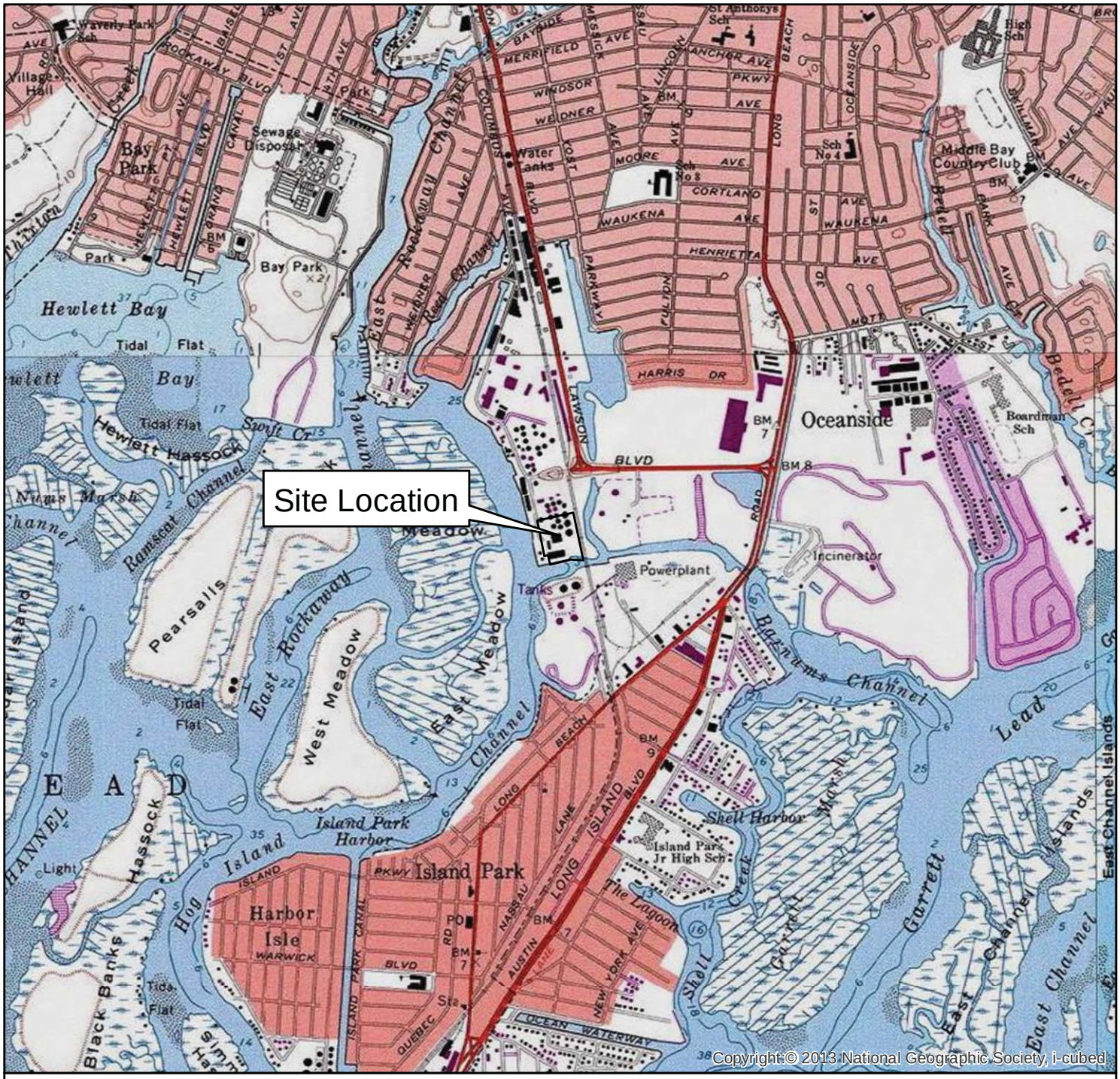
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

With Alternative 1, there would be no ongoing restriction of property uses. With Alternatives 2, 3, and 4 ongoing restrictions of property use would be as established in the environmental easement that are consistent with the current use and zoning. Alternatives 3 and 4 would require periodic access to the site during MNA and indoor air sampling activitiesWith Alternative 5, there would be no restrictions of property use post-remediation. The site would be returned to unrestricted use.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is considered 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 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

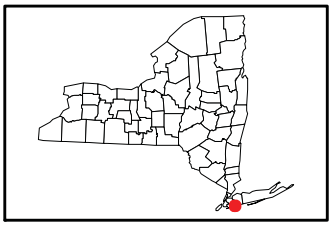


USGS US Topo 7.5 - minute map for Lawrence, NY
USGS US Topo 7.5 - minute map for Lynbrook, NY

0 1,000 2,000 4,000 Feet

1" = 2,000 feet

NEW YORK STATE | Department of Environmental Conservation



N

Former Gulf Oil Site
3705 Hampton Rd
Oceanside, NY

Site Location Map

			figure no. 1
date 02/01/2021	date		
			Figure from Chevron FS Report

initials	date	

Map Coordinate System:
NAD 1983 StatePlane New York Long Island FIPS 3104 Feet

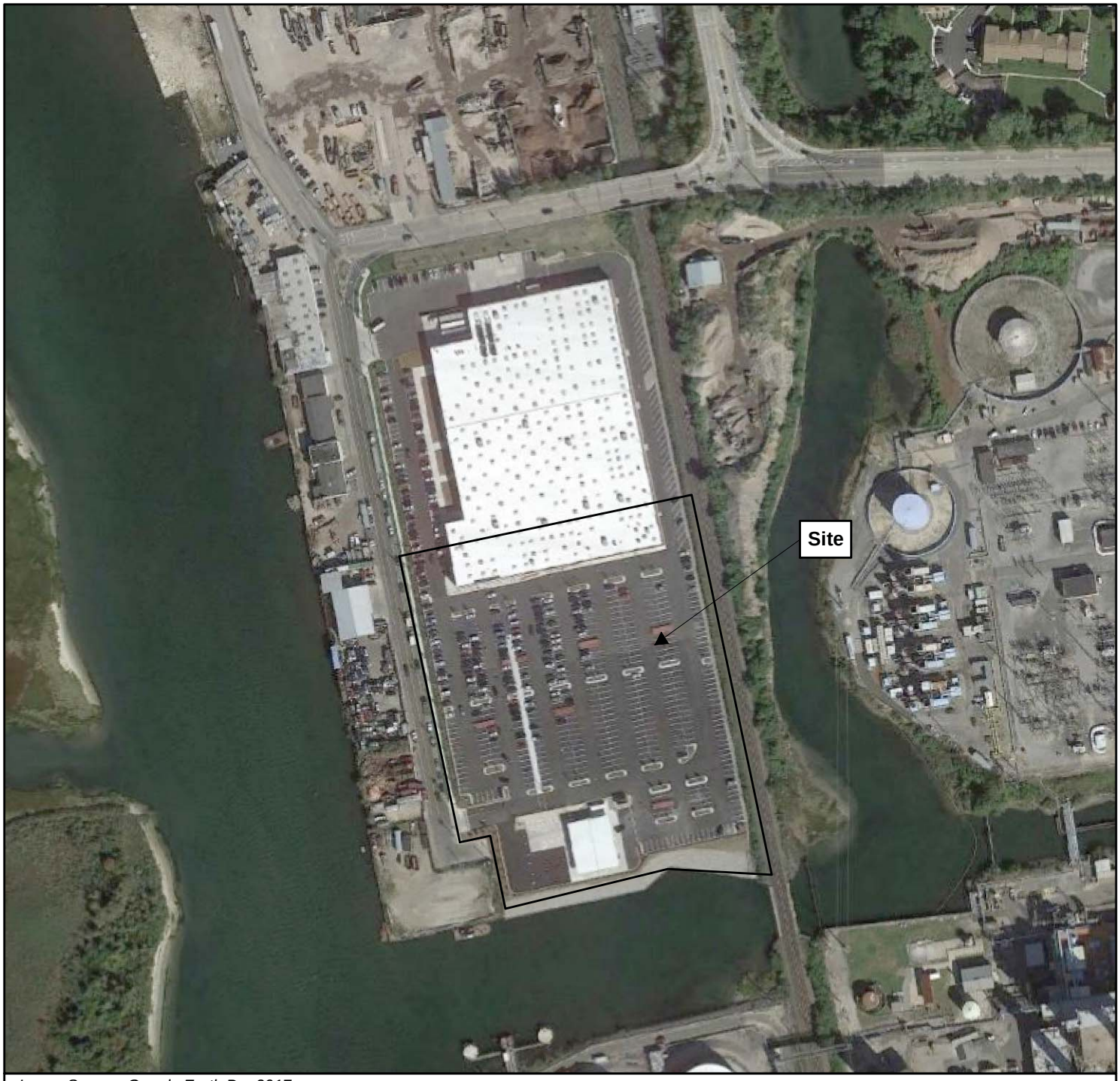


Image Source: Google Earth Pro 2017

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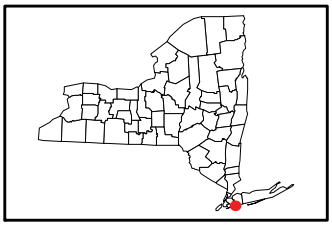
Feet

1" = 250 feet

Legend

Property Boundary

NEW YORK STATE Department of Environmental Conservation



N

Chevron Facility 6518040
3705 Hampton Rd
Oceanside, NY

Regional Site Setting

drawn JAL	checked	approved	figure no. 2
date 12/4/2017	date	date	
job no. 320967.00.17.A.695A.0410.0100			file no. Regional_Site_Setting

initials	date	revision

Map Coordinate System:
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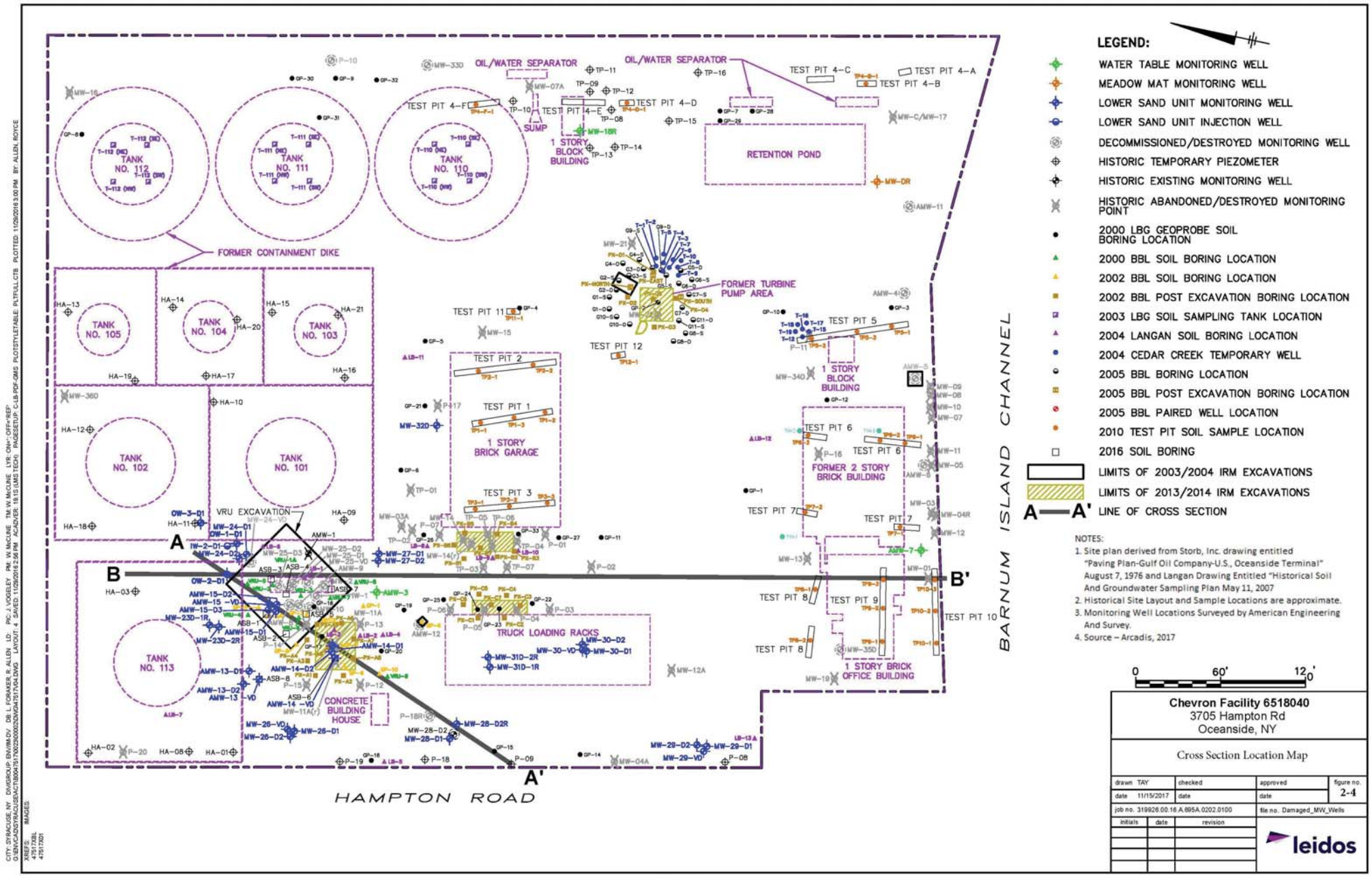
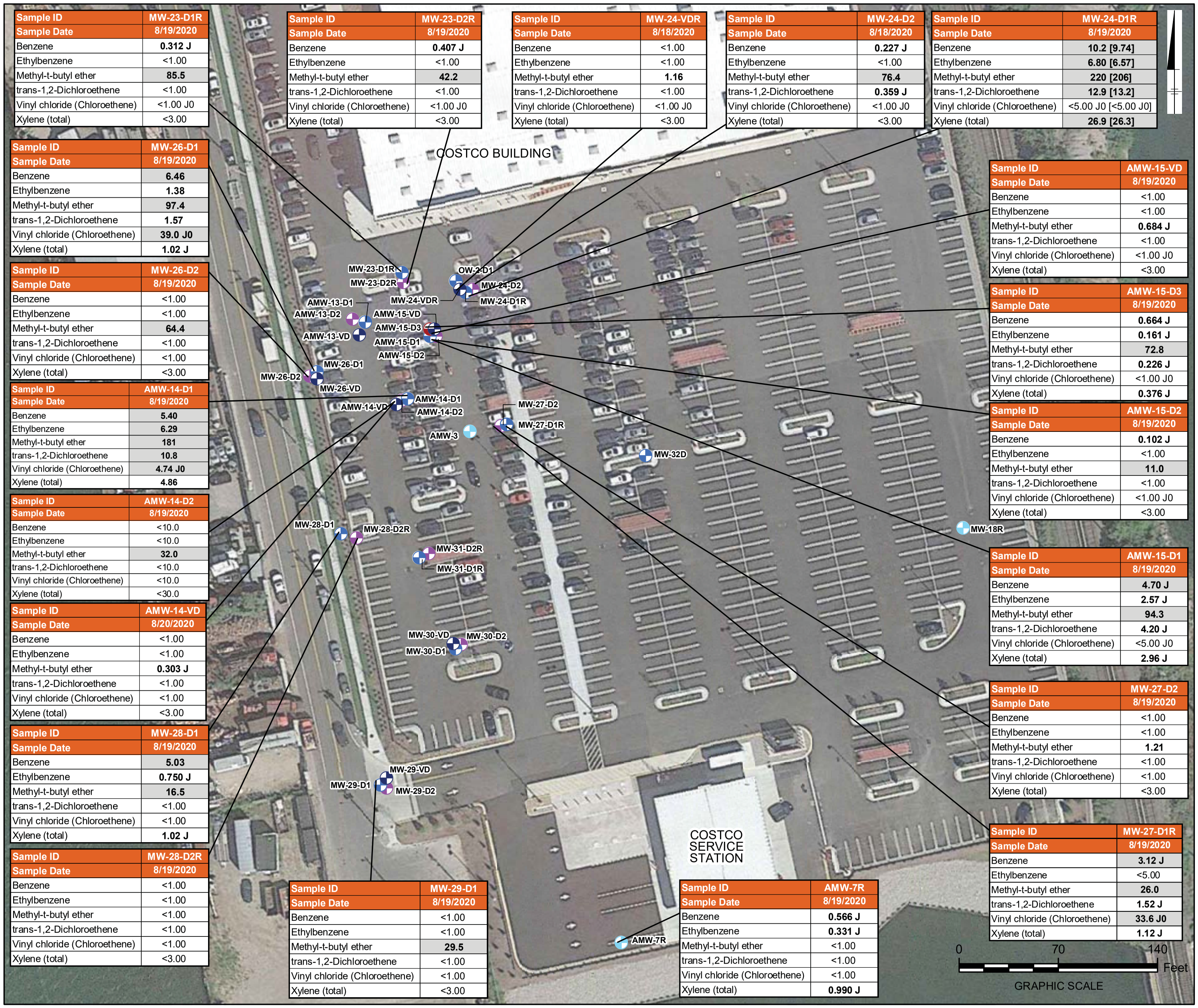


PRAP
Figure 3



Sample ID	MW-23-D1R
Sample Date	8/19/2020
Benzene	**0.312 J**
Ethylbenzene	<1.00
Methyl-t-butyl ether	**85.5**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	<3.00

Sample ID	MW-23-D2R
Sample Date	8/19/2020
Benzene	**0.407 J**
Ethylbenzene	<1.00
Methyl-t-butyl ether	**42.2**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	<3.00

Sample ID	MW-24-VDR
Sample Date	8/18/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	**1.16**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	<3.00

Sample ID	MW-24-D2
Sample Date	8/18/2020
Benzene	**0.227 J**
Ethylbenzene	<1.00
Methyl-t-butyl ether	**76.4**
trans-1,2-Dichloroethene	**0.359 J**
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	<3.00

Sample ID	MW-24-D1R
Sample Date	8/19/2020
Benzene	**10.2 [9.74]**
Ethylbenzene	**6.80 [6.57]**
Methyl-t-butyl ether	**220 [206]**
trans-1,2-Dichloroethene	**12.9 [13.2]**
Vinyl chloride (Chloroethene)	<5.00 J0 [<5.00 J0]
Xylene (total)	**26.9 [26.3]**

Sample ID	MW-26-D1
Sample Date	8/19/2020
Benzene	**6.46**
Ethylbenzene	**1.38**
Methyl-t-butyl ether	**97.4**
trans-1,2-Dichloroethene	**1.57**
Vinyl chloride (Chloroethene)	**39.0 J0**
Xylene (total)	**1.02 J**

Sample ID	MW-26-D2
Sample Date	8/19/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	**64.4**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	<3.00

Sample ID	AMW-14-D1
Sample Date	8/19/2020
Benzene	**5.40**
Ethylbenzene	**6.29**
Methyl-t-butyl ether	**181**
trans-1,2-Dichloroethene	**10.8**
Vinyl chloride (Chloroethene)	**4.74 J0**
Xylene (total)	**4.86**

Sample ID	AMW-14-D2
Sample Date	8/19/2020
Benzene	<10.0
Ethylbenzene	<10.0
Methyl-t-butyl ether	**32.0**
trans-1,2-Dichloroethene	<10.0
Vinyl chloride (Chloroethene)	<10.0
Xylene (total)	<30.0

Sample ID	AMW-14-VD
Sample Date	8/20/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	**0.303 J**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	<3.00

Sample ID	MW-28-D1
Sample Date	8/19/2020
Benzene	**5.03**
Ethylbenzene	**0.750 J**
Methyl-t-butyl ether	**16.5**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	**1.02 J**

Sample ID	MW-28-D2R
Sample Date	8/19/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	<1.00
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	<3.00

Sample ID	MW-29-D1
Sample Date	8/19/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	**29.5**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	<3.00

Sample ID	AMW-7R
Sample Date	8/19/2020
Benzene	**0.566 J**
Ethylbenzene	**0.331 J**
Methyl-t-butyl ether	<1.00
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	**0.990 J**

Sample ID	AMW-15-VD
Sample Date	8/19/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	**0.684 J**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	<3.00

Sample ID	AMW-15-D3
Sample Date	8/19/2020
Benzene	**0.664 J**
Ethylbenzene	**0.161 J**
Methyl-t-butyl ether	**72.8**
trans-1,2-Dichloroethene	**0.226 J**
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	**0.376 J**

Sample ID	AMW-15-D2
Sample Date	8/19/2020
Benzene	**0.102 J**
Ethylbenzene	<1.00
Methyl-t-butyl ether	**11.0**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00 J0
Xylene (total)	<3.00

Sample ID	AMW-15-D1
Sample Date	8/19/2020
Benzene	**4.70 J**
Ethylbenzene	**2.57 J**
Methyl-t-butyl ether	**94.3**
trans-1,2-Dichloroethene	**4.20 J**
Vinyl chloride (Chloroethene)	<5.00 J0
Xylene (total)	**2.96 J**

Sample ID	MW-27-D2
Sample Date	8/19/2020
Benzene	<1.00
Ethylbenzene	<1.00
Methyl-t-butyl ether	**1.21**
trans-1,2-Dichloroethene	<1.00
Vinyl chloride (Chloroethene)	<1.00
Xylene (total)	<3.00

Sample ID	MW-27-D1R
Sample Date	8/19/2020
Benzene	**3.12 J**
Ethylbenzene	<5.00
Methyl-t-butyl ether	**26.0**
trans-1,2-Dichloroethene	**1.52 J**
Vinyl chloride (Chloroethene)	**33.6 J0**
Xylene (total)	**1.12 J**

SITE LOCATION

LEGEND:

- SHALLOW FILL UNIT MONITORING WELLS
- D1 HORIZON MONITORING WELLS
- D2 HORIZON MONITORING WELLS
- D3 HORIZON MONITORING WELLS
- VD HORIZON MONITORING WELLS

Parameter Name	NYSDEC TOGS 1.1.1
Benzene	1 ug/L
Ethylbenzene	5 ug/L
Methyl-t-butyl ether	10 ug/L
trans-1,2-Dichloroethene	5 ug/L
Vinyl chloride (Chloroethene)	2 ug/L
Xylene (total)	5 ug/L

NOTES:
2017 IMAGERY OBTAINED FROM GOOGLE EARTH.
CONCENTRATIONS ARE IN MICROGRAMS PER LITER (UG/L)
ID = IDENTIFICATION
NYSDEC = NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
TOGS = NYSDEC TECHNICAL AND OPERATIONAL GUIDANCE SERIES AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES OF JUNE 1998
BOLDED VALUES = COMPOUND DETECTED
GREY SHADED CELLS = CONCENTRATION ABOVE THE TOGS
J = ANALYTE DETECTED AT A LEVEL LESS THAN THE REPORTING LIMIT (RL) AND GREATER THAN OR EQUAL TO THE METHOD DETECTION LIMIT (MDL). CONCENTRATIONS WITHIN THIS RANGE ARE ESTIMATED.
< = LESS THAN INDICATED REPORTING LIMIT
[ ] = DUPLICATE ANALYSIS RESULTS
J0 = THE IDENTIFICATION OF THE ANALYTE IS ACCEPTABLE, BUT THE REPORTED CONCENTRATION IS AN ESTIMATE. THE CALIBRATION MET METHOD CRITERIA.

CHEVRON FACILITY 6518040
3705 HAMPTON RD
OCEANSIDE, NY

GROUNDWATER ANALYTICAL RESULTS AUGUST 19 AND 20, 2020

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

City: SYR Div/Group: IMDV Created By: J.Rapp Last Saved By: WDBerndg
C:\BIM\OneDrive - ARCADIS\GIS\Chevron_Oceanside_NY\MXD\Site_AnalyticalData_Aug2020.mxd 11/4/2020 4:49:10 PM