AMENDED RECORD OF DECISION

Crown Dykman
City of Glen Cove, Nassau County, New York
Site Number 130054

May 2021

Prepared by the:

Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT – AMENDED RECORD OF DECISION

Crown Dykman
City of Glen Cove, Nassau County
Site No. 130054
May 2021

Statement of Purpose and Basis

The Amended Record of Decision (AROD) presents the selected remedy for the Crown Dykman site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the site and the public's input on the Proposed Amendment to the ROD presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the AROD.

Description of Selected Remedy

The elements of the amended remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. Demolition of the on-site building and excavation of soil contaminated with chlorinated VOC DNAPL from the Source Area.

3. Implementation of an in-situ chemical oxidation of the excavation area and the VOC plume area with the highest concentrations of chlorinated VOCs located in the southwestern portion of the site.

4. Implementation of an LNAPL recovery system along the southwestern side of the building and the western property boundary.

5. Continued operation of the soil vapor extraction system/sub-slab depressurization system to remediate the soil contamination and mitigate potential soil vapor intrusion until the building is demolished for Source Area Excavation and Disposal.

6. Continued operation of the components of the remedy until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

7. To maximize the net environmental benefit, green remediation and sustainability efforts will be considered in the design and implementation of the remedy to the extent practicable, including;

    - encourage low carbon technologies
    - conserve natural resources

8. Imposition of an institutional control in the form of an environmental easement for the controlled property that:
    (a) requires 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).
    (b) allows 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.
    (c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or County DOH;
    (d) prohibits agriculture or vegetable gardens on the controlled property;
    (e) requires compliance with the Department approved Site Management Plan;

9. Since the remedy results in contamination remaining at the site that does not allow for unrestricted use, 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 assure the following institutional and/or engineering controls remain in place and effective:

    Institutional Controls: The Environmental Easement discussed in Paragraph 9 above.
    Engineering Controls: The soil vapor extraction/sub-slab depressurization system discussed in Paragraphs 5 and 6 above.

    This plan includes, but may not be limited to:
        i) Soil Management Plan which details the provisions for management of future excavations in areas of remaining contamination;
        ii) descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
        iii) provisions for the management and inspection of the identified engineering controls;
        iv) maintenance of proper cover;
        v) maintaining site access controls and Department notification; and

vi) 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 not be limited to:

i) monitoring of groundwater and soil vapor to assess the performance and effectiveness of the remedy;
ii) a schedule of monitoring and frequency of submittals to the Department;
iii) provision to evaluate the potential for vapor intrusion for any buildings developed or changes to the existing building on the site, including provision for mitigation of any impacts identified; and

(c) an Operation and Maintenance (O&M) Plan to assure continued operation, maintenance, monitoring, inspection, and reporting of for any mechanical or physical components of the remedy. The plan includes, but is not limited to:

i) compliance monitoring of treatment systems to assure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
ii) maintaining site access controls and Department notification; and
iii) providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The NYSDOH concurs that the amendment to the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of public health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

May 24, 2021
Date

Michael J. Ryan, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION AMENDMENT
CROWN DYKMAN SITE

City of Glen Cove / Nassau County / Registry No. 130054 May 2021

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

SECTION 1: PURPOSE AND SUMMARY OF THE RECORD OF DECISION AMENDMENT

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is amending the Record of Decision (ROD) for the above referenced site. The disposal of hazardous wastes at this site, as more fully described in the original ROD document and Section 6 of this document, has caused the contamination of various environmental media. The amendment is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This amendment identifies the new information which has led to this amendment and discusses the reasons for the preferred remedy.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375 Environmental Remediation Programs. 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.

On March 30, 2010, the New York State Department of Environmental Conservation (Department) signed a Record of Decision (ROD) which selected a remedy to clean up the Crown Dykman Site. The 2010 ROD required in-situ chemical oxidation (ISCO) of the groundwater plume area with the highest concentrations of the chlorinated volatile organic compounds (VOCs). The results of the pre-design investigations and ISCO pilot programs have determined that while chemical oxidation is an effective remedial solution for VOCs in the groundwater, the presence of dense non-aqueous phase liquid (DNAPL) beneath and adjacent to the building foundation is acting as a continuing source of groundwater contamination and will undermine the effectiveness of the remedy. A focused feasibility study to address the NAPL was completed and the Department has selected the excavation of the DNAPL source followed by in-situ chemical oxidation as the amended remedy.

SECTION 2: CITIZEN PARTICIPATION

The Department sought input from the community on this ROD Amendment. This was an opportunity for public participation in the remedy selection process. Public comments were received and responses to each are contained within the Responsiveness Summary incorporated within this document. The information here is a summary of what can be found in greater detail in reports that have been placed in the Administrative Record for the site. The public is encouraged to review the reports and documents, which are available at the following repositories:

Glen Cove Public Library
4 Glen Cove Avenue
Glen Cove, NY 11542
(516) 676-2130
Hours:
Monday through Saturday: 9 AM to 5 PM
Sunday: Closed

To limit the community spread of COVID-19, Governor Cuomo issued Executive Order 202.15 suspending in-person public meetings related to proposed site remedies. The NYSDEC remains committed to providing the public with ample opportunity to provide input on proposed remedies in your community.

An extended 30-day public comment period was set from March 24, 2021 through April 23, 2021to provide an opportunity for the public to comment on the proposed changes.

Written comments could also have been sent to the DEC Project Manager at the time, listed below:

Brianna L. Scharf
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
brianna.scharf@dec.ny.gov

A record of any comments received is summarized and addressed in the Responsiveness Summary section of this final version of the ROD Amendment. This ROD Amendment is the Department's final selection of the remedy for the 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

The Crown Dykman site is located at 66 Herb Hill Road, Glen Cove, New York (Figures 1 and 2). The site is bordered to the west by the Li Tungsten Parcel B USEPA Superfund site and to the south by the former Li Tungsten Parcel A USEPA Superfund site and the Glen Cove Creek. To the north of the site, within the Konica Minolta property, is the Powers Chemco site.

Site Features: The site is the former location of Dykman Laundry and Cleaners. The property, approximately 175 by 250 feet in area, contains a one-story cinder block and brick building. The building currently houses a commercial (water-based) cleaner located in the rear of the building. An auto repair

facility located in the front of the building has recently closed.

Past Use(s) of the Site: The Crown Dykman site was occupied by Dykman Laundry from 1932 thru 1975. Crown Uniform Services (Crown Uniform) utilized the premises to dry clean and service uniforms from 1975 until they went out of business in 1983. Crown Uniform originally used a petroleum-based Stoddard solvent to launder the uniforms; however, the Stoddard solvent was later replaced by tetrachloroethene (PCE). Since the closing of Crown Uniform, several other businesses have occupied the building.

In 1987 the site was originally investigated by the Nassau County Department of Health during the excavation of an on-site pit. The sampling event found tetrachloroethene (PCE), 1,1,1-trichloroethane, toluene, and xylene. In the early 1990s, several underground solvent tanks and a gasoline tank were removed. Based on results from samples collected during the tank removal, the Nassau County Department of Health sent a letter of violation to the site owner and requested a remedial investigation. A preliminary investigation was completed in 1992 by the owner of the site, Herb Hill Associates.

In August 1992, the Department first identified the site as Class 2a site. A 2a site was a temporary classification assigned to a site that had inadequate and/or insufficient data for inclusion in any of the other classifications in the Registry of Inactive Hazardous Waste Disposal Sites in New York.

As a result of identified hazardous waste disposal, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in November 1992. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

Several investigations and an Interim Remedial Measure (IRM) had been completed by the property owner prior to the completion of the 2009 Remedial Investigation and Feasibility Study (RI/FS).

- Preliminary Site Assessment completed in 1991
- Initial RI/FS completed in 1997
- Additional Site Investigations completed in 1999
- Soil removal IRM completed in 2005. This soil removal IRM removed approximately 2,200 tons of contaminated soil from beneath the southeastern portion building slab. Post excavation sampling indicated that residual PCE contamination remained beneath the slab along the footings of the southeastern wall at concentrations ranging from non-detect to 290 parts per million.

A Record of Decision (ROD) was signed in March 2010 requiring in-situ chemical oxidation of the plume area with the highest concentrations of chlorinated VOCs, implementation of a light non-aqueous phase liquid (LNAPL) recovery system and continued operation of the soil vapor extraction system/sub-slab depressurization system at the onsite building.

Site Geology and Hydrogeology: Soils present at the site are similar to those present throughout the Herb Hill and Garvies Point Road area. The vadose zone consists of silt or silt and fine-grained sand, while the saturated zone consists of sand underlain by an extensive and thick clay layer, which was observed off-site at 12- to 16-feet below ground surface.

Water levels are approximately 1 to 10 feet below ground surface in the vicinity of the site. Groundwater generally flows in a south-southwest direction towards Glen Cove Creek.

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. The Crown Dykman site is currently zoned for commercial use and is located in an area of restricted residential use. An Environmental Easement has been placed on the property restricting the use of the property to commercial.

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.

PRPs documented to date, include:

- Herbhill Associates
- Crown Uniform Services
- Flipse Auto
- Proyarq 4-5, Inc.

The PRPs identified above include business entities that are dissolved with unknown successors or whereabouts unknown. The Department and Herbhill Associates entered into an Order on Consent and Administrative Settlement in relation to the Site dated March 5, 2014 (the "Order"). The goals of the Order included, among other things, Herbhill Associates payment to the Department the sum of $947,000 to reimburse the State's past and future expenses related to the Inactive Hazardous Waste Disposal Site Remedial Program for the site.

SECTION 6: SITE CONTAMINATION

6.1: 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.

Nature and Extent of Contamination:

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides and emerging contaminants. Based upon investigations conducted to date, the primary contaminants of concern for the site include trichloroethene (TCE), tetrachloroethene (PCE), 1,2-Dichloroethene (1,2-DCE) and vinyl chloride.

Soil: PCE was identified in soils at concentrations up to 24,000 parts per million (ppm) along the southwestern corner of the onsite building, exceeding the soil cleanup objectives (SCOs) for commercial use (150 ppm). Concentrations of TCE have also been measured in soil on site above its commercial SCO of 200 ppm. Soil contamination has been detected at up to 5 ft below ground surface and extends to at least 10 feet below ground surface within the source area, located beneath the southern corner of the on-

site building.

Groundwater: PCE, TCE, 1,2-DCE, and vinyl chloride were detected in groundwater at the southwest corner of the site at maximum concentrations of 140,000 parts per billion (ppb), 17,000 ppb, 50,000 ppb, and 2,500 ppb, respectively. These concentrations exceed the groundwater standard of 5 ppb (PCE, TCE, 1,2-DCE) and 2 ppb (vinyl chloride). Measurable amounts of petroleum light non-aqueous-phase liquid (LNAPL) have been intermittently found along the western side of the property. However, LNAPL has not been detected at the site since 2014.

Previous off-site groundwater sampling results indicated that the chlorinated solvent contamination extends off-site to the south and the west entering the northern portion of Li Tungsten Parcel A (to the south) and the eastern portion of Li Tungsten Parcel B (to the west). PCE concentrations have been detected at concentrations up to 2,800 ppb, 830 ppb, 3,100 ppb and 180 ppb for PCE, TCE, 1,2-DCE and vinyl chloride, respectively (analytical data collected between 2007 and 2013).

For PFAS, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported at concentrations of up to 310 parts per trillion (ppt) and 1,800 ppt respectively, exceeding the 10 ppt screening levels for groundwater for each. Based on the pattern of detections, an up-gradient source of PFAS is contributing a degree of PFAS in groundwater.

1,4-dioxane was reported at concentrations of up to 0.69 parts per billion (ppb), which does not exceed the screening level of 1 ppb in groundwater.

Soil Vapor: During the 2009 RI, elevated levels of PCE, TCE and 1,2-DCE were found in the sub-slab vapor, while an elevated level of PCE was found in the indoor air at concentrations of 94.3 micrograms per cubic meter ($\mu g/m^3$). The identified contamination has been addressed by the soil vapor extraction/sub-slab depressurization system interim remedial measure (IRM).

Surface water: Impacts to surface water were evaluated in the 2009 RI based on the potential for contaminated groundwater to migrate to the creek. Site related impacts were not found. Sediment was not evaluated in the RI.

The Fish and Wildlife Impact Analysis (FWIA), which is included in the 2009 RI report, presents a detailed discussion of the existing and potential impacts the site poses to fish and wildlife receptors. The FWIA did not identify any current or potential impacts to ecological resources.

6.2: Interim Remedial Measures

An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the ROD. Two IRMs have been completed at the site.

2005 Soil Removal IRM: The soil removal IRM removed approximately 2,200 tons of contaminated soil from beneath the southeastern portion building slab. Post-excavation sampling indicated that residual PCE contamination remained beneath the slab along the footings of the southeastern wall at concentrations ranging from non-detect to 290 parts per million, as detailed in the May 2005 construction completion report.

2008/2009 Sub-Slab Depressurization System IRM: Based on the results of the RI it was determined that

VOC soil contamination located near the foundation footings and beneath the slab of the building was impacting soil vapor. In order to address potential human exposure (via inhalation) to volatile organic compounds associated with soil vapor intrusion, a sub-slab depressurization system was installed at the south western corner of the site building in 2008/2009 as described in the December 2009 Feasibility Study and February 2019 Focused Feasibility Study. System operation and component details are presented in the Operation and Maintenance Manual, dated 2009 and prepared by National Environmental Systems Inc. (NES).

6.3: Summary of Human Exposure Pathways

Exposure to contaminated groundwater and residual soil contamination is not expected because public water serves the area and the soils are covered with building or pavement. Operation of a soil vapor extraction system will reduce the potential for exposure from soil vapor intrusion into structures on and near the site.

SECTION 7: SUMMARY OF ORIGINAL REMEDY AND AMENDMENT

7.1 Original Remedy

Source Area In-Situ Oxidation (ISCO) and Natural Attenuation: This remedy consisted of in-situ chemical oxidation of the source area located in the southwestern portion of the site, implementation of a LNAPL recovery system along the southwestern side of the onsite building and continued operation of the soil vapor extraction system/sub-slab depressurization system.

7.2 Elements of the Remedy Already Performed

Operation of the on-site soil vapor extraction system/sub-slab depressurization has continued during pre-design pilot tests.

Three rounds of ISCO injections were completed between 2012 and 2015. A total of 23,936 gallons of sodium permanganate were injected into twelve locations upgradient, downgradient and within the source area footprint using both direct-injection and purpose-built injection wells. The results of the pre-design investigations and ISCO pilot programs have determined that while chemical oxidation is an effective remedial solution for VOCs in the groundwater, the presence of DNAPL adjacent to the building foundation is acting as a continuing source of groundwater contamination and will undermine the effectiveness of the remedy.

LNAPL has not been detected since 2014; therefore, the LNAPL extraction system was never implemented.

7.3 New Information

The 2010 ROD included a provision to complete an in-situ chemical oxidation pilot study to determine the necessary injection parameters to complete the remedial design. Between 2012 and 2018 the Department completed three different in-situ pilot studies to determine the necessary injection parameters and to test different methods of injection. The results of the pilot studies concluded that in-situ chemical oxidation is an effective remedial technology for the dissolved-phase groundwater plume; however, due to the presence of significant heterogeneity, preferential pathways, and a shallow groundwater gradient,

the chemical oxidant injections could not effectively reduce the concentrations of the primary groundwater contaminants along the southwestern onsite building foundation where the highest concentrations of PCE in the groundwater were identified. Subsequent soil investigations in this area determined that a DNAPL source was likely present along the building's southwestern foundation. Therefore, it was concluded that while chemical oxidation of the dissolved phase plume is an effective remedy, due to the location of the DNAPL source area an alternate remedy to address the source area would be necessary.

A focused feasibility study (FFS) completed in 2019 evaluated six remedial alternatives to address the source area. Based on the FFS evaluation the following remedy is:

- Demolition of the Onsite Building
- Source Area Excavation and Disposal
- Direct chemical oxidant application within the excavation footprint and plume located within southwestern corner of the site to treat any residual soil contamination within the saturated zone.

The changes to the original remedy based on this study are presented below.

7.4 Changes to the Original Remedy

A summary of the changes to the original ROD are shown in the following table:

SUMMARY OF REMEDY CHANGES

Crown Dykman (No. 130054) Record of Decision Amendment

Media:	2010 ROD	Amended ROD
Groundwater	(1) Implementation of an in-situ chemical oxidation (ISCO) of the plume area with the highest concentrations of chlorinated VOCs located in the southwestern portion of the site. (2) Implementation of a LNAPL recovery system along the southwestern side of the building and the western property boundary. (3) Monitoring of ground water (GW) parameters and quality to assess effectiveness of the ISCO remedy. (4) Long-term monitoring; (5) Environmental Easement to restrict GW use	(1) In-situ chemical oxidation (ISCO) within the excavation area (2) Monitoring of groundwater parameters and quality to assess effectiveness of the remedy. (3) No implementation of the LNAPL recovery system. (4) No other changes to the groundwater remedy via this amendment. *See attached Figure 4 for the amended remedy*
Soil	(1) Continued operation of the soil vapor extraction system/sub-slab depressurization to remediate the remaining soil contamination and mitigate the potential for soil vapor intrusion. (2) Environmental easement to limit use of property to industrial/commercial use to restrict exposure unless otherwise approved by the Department; (3) Use of a Site Management Plan (SMP) to maintain Institutional Controls/Engineering Controls (ICs/ECs) at the site.	(1) Demolition of the on-site building (2) Source Area Excavation and Disposal (3) No other changes to the soil remedy via this amendment. *See attached Figure 4 for the amended remedy*
Soil Vapor/Indoor Air	(1) Continued operation of the soil vapor extraction system/sub-slab depressurization to remediate the remaining soil contamination and mitigate the potential for soil vapor intrusion. (2) Monitoring of the soil vapor extraction system/sub-slab depressurization system to evaluate performance.	(1) Continued operation of the sub-slab depressurization system to remediate the soil contamination and mitigate potential soil vapor intrusion until the building is demolished for Source Area Excavation and Disposal. (2) The Site Management Plan will include a provision for evaluation of the potential for soil vapor intrusion in any future buildings developed onsite, including provision for implementing actions recommended to address exposures related to soil vapor intrusion

SECTION 8: EVALUATION OF CHANGES

8.1 Remedial Goals

Goals for the cleanup of the site were established in the original ROD. The goals selected for this site are:

Public Health Protection

Groundwater

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

Soil

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

Soil Vapor

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

Environmental Protection

Groundwater

- Restore the groundwater aquifer to meet ambient groundwater quality criteria, to the extent feasible.
- Prevent discharge of contaminated groundwater to surface water.

Soil

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

8.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the original Feasibility Study.

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

1. Protection of Public Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment. Source Area Excavation and Disposal provides protection of public health and the environment by eliminating the continuing source area. Implementation of an in-situ chemical oxidation (ISCO) injection program remains a component of the remedy to address the plume area following source removal.

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.

To determine whether the contaminants identified in the groundwater and soil are present at levels of concern, the data from the RI and subsequent monitoring events were compared to media-specific SCGs. The principle SCGs for the site are listed below:

General:

- 6 NYCRR Part 375 – Environmental Remediation Programs, including the Inactive Hazardous Waste Disposal Site Remedial Program
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes

Soil:

- 6 NYCRR Part 375 – Soil Cleanup Objectives
- 6 NYCRR Part 376 – Land Disposal Restrictions
- NYSDEC Division of Solid and Hazardous Materials TAGM 3028 "Contained-in" Criteria for Environmental Media (8/97)

Water:

- 6 NYCRR Part 700-705, Water Quality Regulations for Surface Water and Groundwater
- NYSDEC Division of Water TOGS 1.1.1 – Ambient Water Quality Standards and Groundwater Effluent Limitations

Air:

- Air Guide 1 – Guidelines for Control of Toxic Ambient Air Contaminants
- NYSDOH October 2006 Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York

The amended remedy is anticipated to meet SCGs for the site, as it enhances the original remedy (implementation of an in-situ chemical oxidation (ISCO) injection program) by the addition of Source Area Excavation and Disposal.

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

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

The amended remedy, which includes Source Area Excavation and Disposal, will remove the continuing source thereby reducing the overall time needed to achieve the cleanup objectives and thereby increasing the short-term effectiveness. Although the excavation component may result in short-term increases in truck traffic and the potential for airborne exposures, the relatively small volume and short duration of the excavation, combined with standard control measures, will minimize the short-term impacts.

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

The amended remedy, which includes Source Area Excavation and Disposal, will remove the continuing source which will increase the long-term effectiveness and permanence of the remedy.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

The amended remedy enhances the reduction of mobility and volume of the wastes at the site by the removing the source area. Implementation of an in-situ chemical oxidation (ISCO) injection program remains a component of the remedy to address the plume area following source removal.

6. Implementability. The technical feasibility 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.

The original and amended remedies have moderately difficult components to implement; the Source Area Excavation and Disposal will require the demolition of the on-site building which, while time consuming, is not difficult.

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 amended remedy, although more costly to implement than the original remedy, will meet the remedial objectives in the shortest remediation time by addressing the ongoing source and reducing the long-term monitoring costs. Whereas, based on the pre-design investigations and pilot studies, the original remedy would not effectively meet the remedial objectives.

This final criterion is considered a modifying criterion and is considered after evaluating those above. It is focused upon after public comments on the ROD amendment have been received.

8. Community Acceptance. Concerns of the community regarding the changes were evaluated. A Responsiveness Summary was prepared that describes public comments received and the manner in which

the Department addressed the concerns raised. If the final remedy had differed significantly from the proposed remedy, notices to the public would have been issued describing the differences and reasons for the changes.

SECTION 9: AMENDED REMEDY

The Department has amended the Record of Decision (ROD) for the Crown Dykman Site. The changes to the selected remedy are summarized in Section 7.3 above.

The estimated present worth cost to carry out the amended remedy is $4,700,000. The estimated present worth to complete the original remedy was $1,700,000. The cost to construct the amended remedy is estimated to be $2,700,000 and the estimated average annual cost for 30 years is $68,000.

The elements of the amended remedy listed below are identified as *unchanged, completed, modified or new* when compared to the March 2010 remedy:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. (*Unchanged)*

2. Demolition of the on-site building and excavation of soil contaminated with chlorinated VOC DNAPL from the Source Area. *(New)*

3. Implementation of an in-situ chemical oxidation of the excavation area and the VOC plume area with the highest concentrations of chlorinated VOCs located in the southwestern portion of the site. *(Modified)*

4. Implementation of an LNAPL recovery system along the southwestern side of the building and the western property boundary. *(Modified)*

5. Continued operation of the soil vapor extraction system/sub-slab depressurization system to remediate the soil contamination and mitigate potential soil vapor intrusion until the building is demolished for Source Area Excavation and Disposal. *(Modified)*

6. Continued operation of the components of the remedy until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible. *(Unchanged)*

7. To maximize the net environmental benefit, green remediation and sustainability efforts will be considered in the design and implementation of the remedy to the extent practicable, including;

    - encourage low carbon technologies
    - conserve natural resources

    (Unchanged)

8. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

(a) requires 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).
(b) allows 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.
(c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or County DOH;
(d) prohibits agriculture or vegetable gardens on the controlled property;
(e) requires compliance with the Department approved Site Management Plan;

(Completed)

9. Since the remedy results in contamination remaining at the site that does not allow for unrestricted use, 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 assure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 9 above.
Engineering Controls: The soil vapor extraction/sub-slab depressurization system discussed in Paragraphs 5 and 6 above.

This plan includes, but may not be limited to:
i) Soil Management Plan which details the provisions for management of future excavations in areas of remaining contamination;
ii) descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
iii) provisions for the management and inspection of the identified engineering controls;
iv) maintenance of proper cover;
v) maintaining site access controls and Department notification; and
vi) 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 not be limited to:

i) monitoring of groundwater and soil vapor to assess the performance and effectiveness of the remedy;
ii) a schedule of monitoring and frequency of submittals to the Department;
iii) provision to evaluate the potential for vapor intrusion for any buildings developed or changes to the existing building on the site, including provision for mitigation of any impacts identified; and

(c) an Operation and Maintenance (O&M) Plan to assure continued operation, maintenance, monitoring, inspection, and reporting of for any mechanical or physical components of the remedy. The plan includes, but is not limited to:

i) compliance monitoring of treatment systems to assure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
ii) maintaining site access controls and Department notification; and
iii) providing the Department access to the site and O&M records.

(Modified)

SECTION 10: NEXT STEPS

As described above, there was a public comment period on the proposed changes to the selected remedy. At the close of the comment period, the Department evaluated the comments received and prepare a Responsiveness Summary which is incorporated into this document. This signed Amended ROD document describes the Department's final decision on the Crown Dykman site.

If you have questions or need additional information you may contact any of the following:

Project Related Questions
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Site-Related Health Questions
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Bureau of Environmental Exposure Investigation
Empire State Plaza, Corning Tower, Room 1787
Albany, NY 12237
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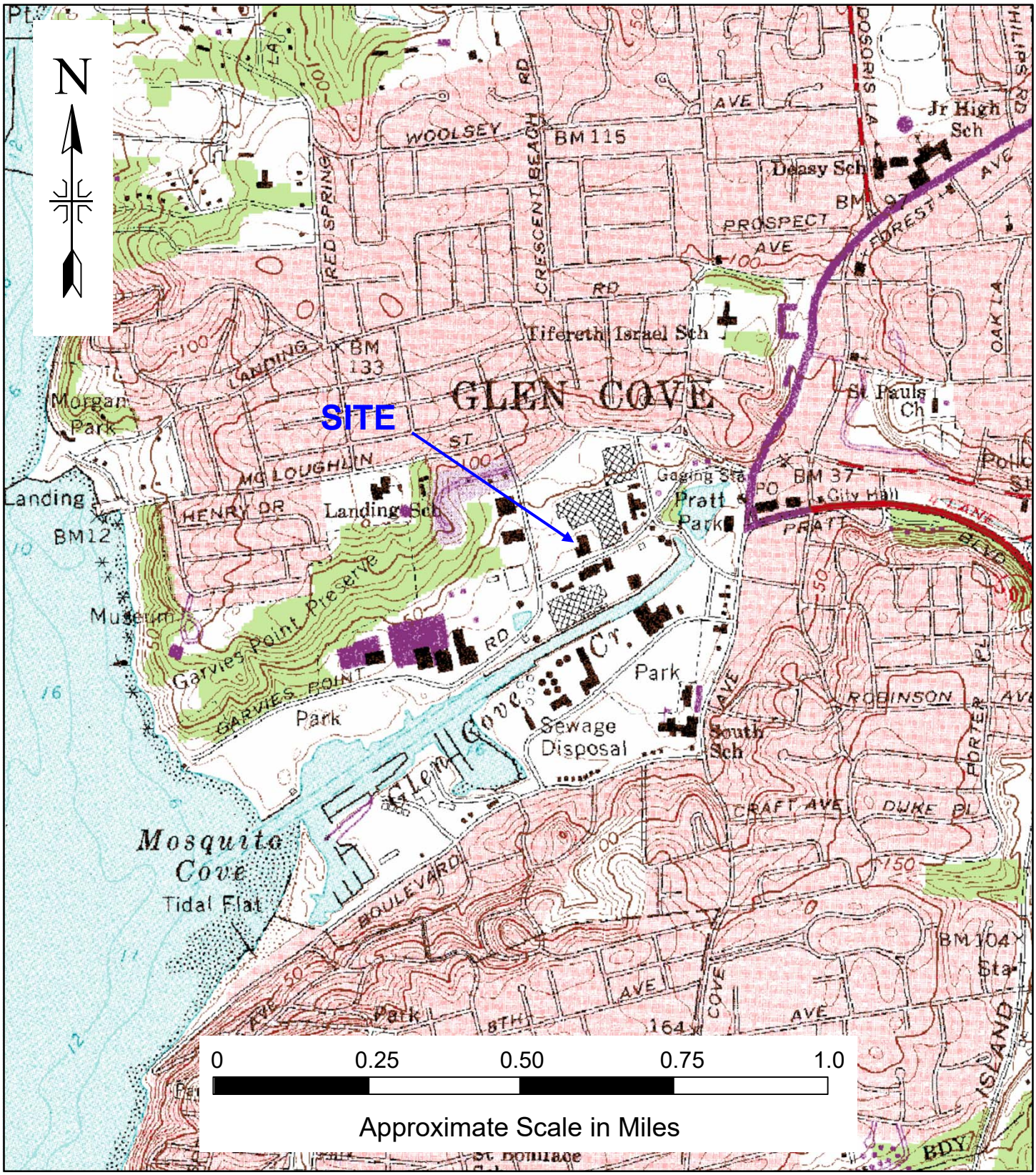
BEEI@health.state.ny.us

ARCADIS Design & Consultancy for natural and built assets

Figure 1
Site Location

Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York



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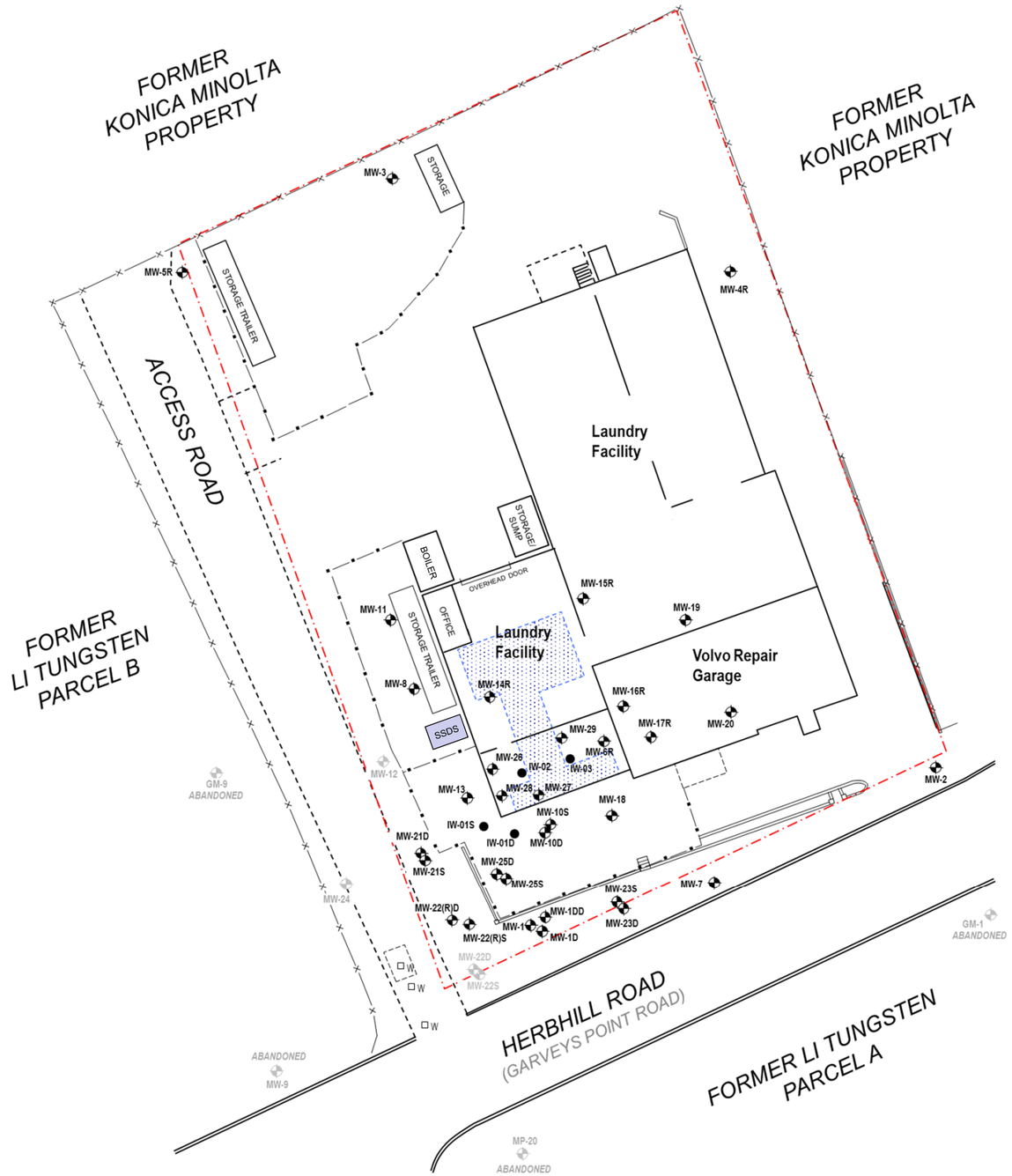


LEGEND

- CHAIN-LINK FENCE
- WOOD-PICKET FENCE
- PROPERTY BOUNDARY (SURVEY)
- MW-9 GROUNDWATER MONITORING WELL
- MW-8 MISSING/ DAMAGED GROUNDWATER MONITORING WELL
- 2005 IRM EXCAVATION AREA/ SVE SYSTEM SUB-SLAB PIPING

0 30 60

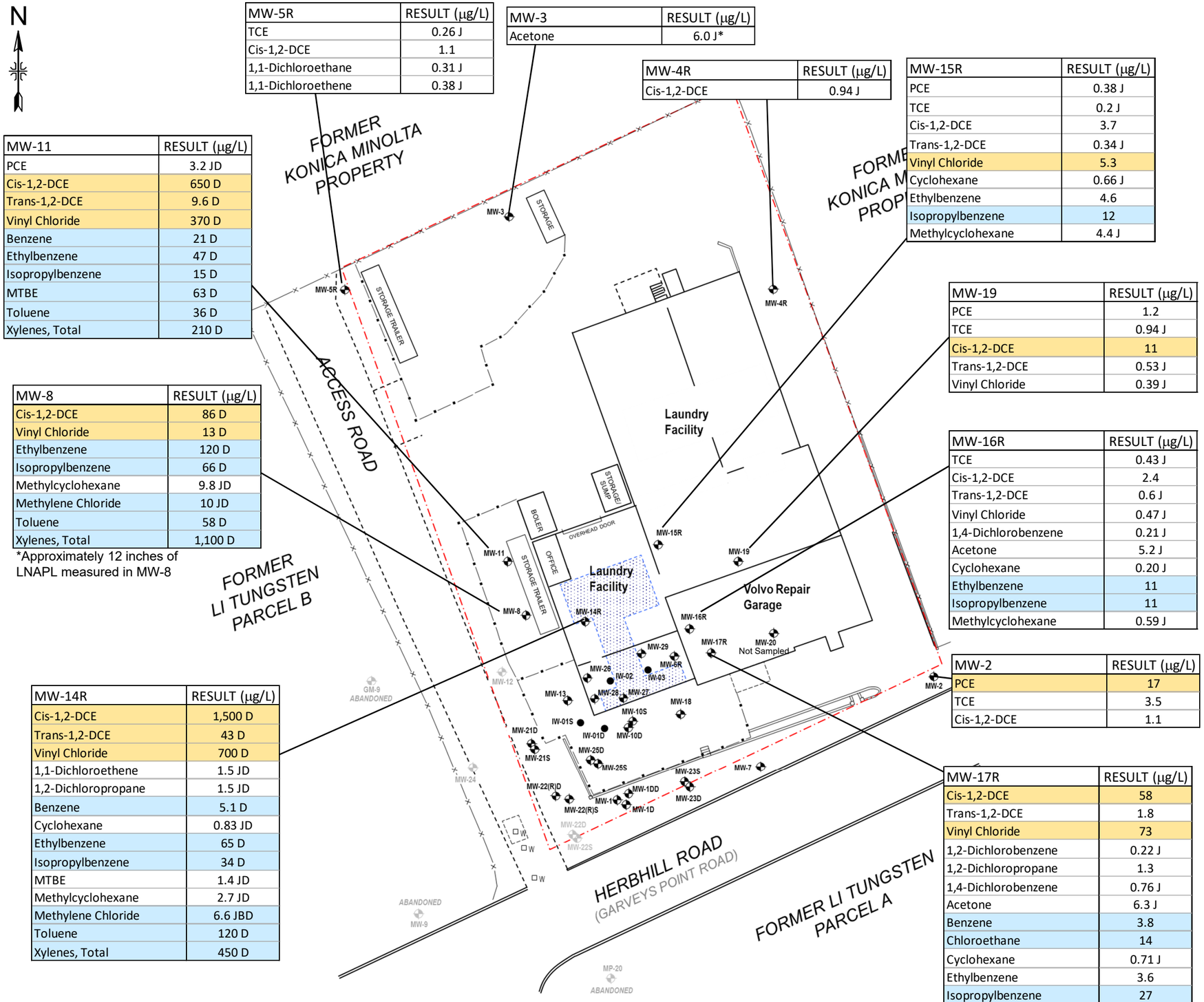
Approximate Scale in Feet

Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York

Site Plan

ARCADIS Design & Consultancy for natural and built assets

2
FIGURE



MW-5R	RESULT (µg/L)
TCE	0.26 J
Cis-1,2-DCE	1.1
1,1-Dichloroethane	0.31 J
1,1-Dichloroethene	0.38 J

MW-3	RESULT (µg/L)
Acetone	6.0 J*

MW-4R	RESULT (µg/L)
Cis-1,2-DCE	0.94 J

MW-15R	RESULT (µg/L)
PCE	0.38 J
TCE	0.2 J
Cis-1,2-DCE	3.7
Trans-1,2-DCE	0.34 J
Vinyl Chloride	5.3
Cyclohexane	0.66 J
Ethylbenzene	4.6
Isopropylbenzene	12
Methylcyclohexane	4.4 J

MW-11	RESULT (µg/L)
PCE	3.2 JD
Cis-1,2-DCE	650 D
Trans-1,2-DCE	9.6 D
Vinyl Chloride	370 D
Benzene	21 D
Ethylbenzene	47 D
Isopropylbenzene	15 D
MTBE	63 D
Toluene	36 D
Xylenes, Total	210 D

MW-19	RESULT (µg/L)
PCE	1.2
TCE	0.94 J
Cis-1,2-DCE	11
Trans-1,2-DCE	0.53 J
Vinyl Chloride	0.39 J

MW-8	RESULT (µg/L)
Cis-1,2-DCE	86 D
Vinyl Chloride	13 D
Ethylbenzene	120 D
Isopropylbenzene	66 D
Methylcyclohexane	9.8 JD
Methylene Chloride	10 JD
Toluene	58 D
Xylenes, Total	1,100 D

*Approximately 12 inches of LNAPL measured in MW-8

MW-16R	RESULT (µg/L)
TCE	0.43 J
Cis-1,2-DCE	2.4
Trans-1,2-DCE	0.6 J
Vinyl Chloride	0.47 J
1,4-Dichlorobenzene	0.21 J
Acetone	5.2 J
Cyclohexane	0.20 J
Ethylbenzene	11
Isopropylbenzene	11
Methylcyclohexane	0.59 J

MW-2	RESULT (µg/L)
PCE	17
TCE	3.5
Cis-1,2-DCE	1.1

MW-14R	RESULT (µg/L)
Cis-1,2-DCE	1,500 D
Trans-1,2-DCE	43 D
Vinyl Chloride	700 D
1,1-Dichloroethene	1.5 JD
1,2-Dichloropropane	1.5 JD
Benzene	5.1 D
Cyclohexane	0.83 JD
Ethylbenzene	65 D
Isopropylbenzene	34 D
MTBE	1.4 JD
Methylcyclohexane	2.7 JD
Methylene Chloride	6.6 JBD
Toluene	120 D
Xylenes, Total	450 D

MW-17R	RESULT (µg/L)
Cis-1,2-DCE	58
Trans-1,2-DCE	1.8
Vinyl Chloride	73
1,2-Dichlorobenzene	0.22 J
1,2-Dichloropropane	1.3
1,4-Dichlorobenzene	0.76 J
Acetone	6.3 J
Benzene	3.8
Chloroethane	14
Cyclohexane	0.71 J
Ethylbenzene	3.6
Isopropylbenzene	27
MTBE	12
Methylcyclohexane	2.4 J
Toluene	0.18 J

LEGEND

- CHAIN-LINK FENCE
- WOOD-PICKET FENCE
- PROPERTY BOUNDARY (SURVEY)
- MW-9 — GROUNDWATER MONITORING WELL
- MW-8 — MISSING/ DAMAGED GROUNDWATER MONITORING WELL
- 2005 IRM EXCAVATION AREA/ SVE SYSTEM SUB-SLAB PIPING

Notes:

J – Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

B – Compound was found in laboratory blank and sample (indicates potential laboratory contaminant)

D – Result is based on dilution of the sample.

ug/L – Micrograms per liter.

Primary Contaminant/CVOC exceeding respective NYS Class GA Standard or Guidance Value

Other detected VOC exceeding respective NYS Class GA Standard or Guidance Value

0 30 60

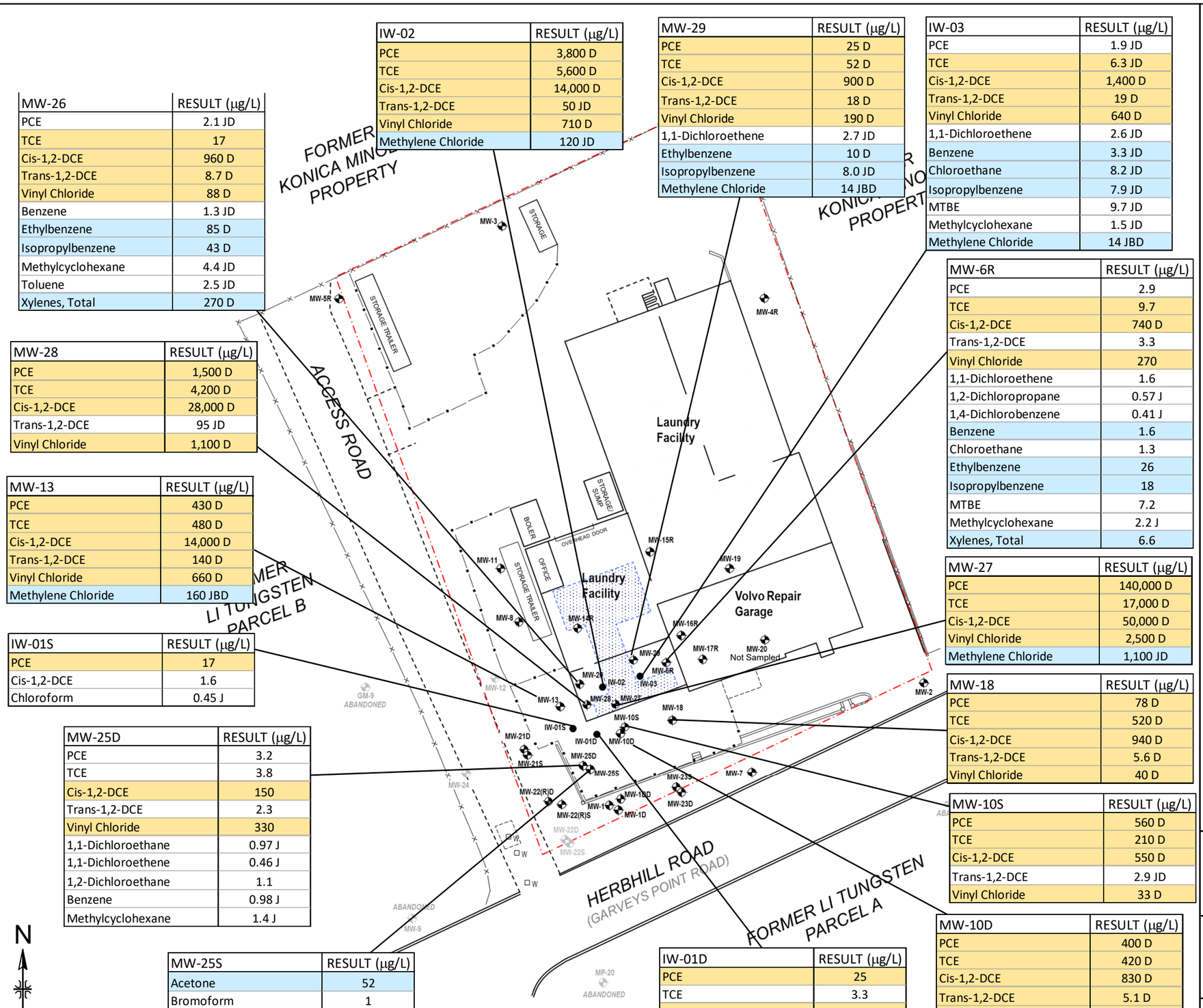
Approximate Scale in Feet

Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York

Summary of VOC Detections in Groundwater Samples – October-November 2017; Upgradient Area Wells

ARCADIS Design & Consultancy for natural and built assets

3A
FIGURE



MW-26	RESULT (µg/L)
PCE	2.1 JD
TCE	17
Cis-1,2-DCE	960 D
Trans-1,2-DCE	8.7 D
Vinyl Chloride	88 D
Benzene	1.3 JD
Ethylbenzene	85 D
Isopropylbenzene	43 D
Methylcyclohexane	4.4 JD
Toluene	2.5 JD
Xylenes, Total	270 D

IW-02	RESULT (µg/L)
PCE	3,800 D
TCE	5,600 D
Cis-1,2-DCE	14,000 D
Trans-1,2-DCE	50 JD
Vinyl Chloride	710 D
Methylene Chloride	120 JD

MW-29	RESULT (µg/L)
PCE	25 D
TCE	52 D
Cis-1,2-DCE	900 D
Trans-1,2-DCE	18 D
Vinyl Chloride	190 D
1,1-Dichloroethene	2.7 JD
Ethylbenzene	10 D
Isopropylbenzene	8.0 JD
Methylene Chloride	14 JBD

IW-03	RESULT (µg/L)
PCE	1.9 JD
TCE	6.3 JD
Cis-1,2-DCE	1,400 D
Trans-1,2-DCE	19 D
Vinyl Chloride	640 D
1,1-Dichloroethene	2.6 JD
Benzene	3.3 JD
Chloroethane	8.2 JD
Isopropylbenzene	7.9 JD
MTBE	9.7 JD
Methylcyclohexane	1.5 JD
Methylene Chloride	14 JBD

MW-28	RESULT (µg/L)
PCE	1,500 D
TCE	4,200 D
Cis-1,2-DCE	28,000 D
Trans-1,2-DCE	95 JD
Vinyl Chloride	1,100 D

MW-6R	RESULT (µg/L)
PCE	2.9
TCE	9.7
Cis-1,2-DCE	740 D
Trans-1,2-DCE	3.3
Vinyl Chloride	270
1,1-Dichloroethene	1.6
1,2-Dichloropropane	0.57 J
1,4-Dichlorobenzene	0.41 J
Benzene	1.6
Chloroethane	1.3
Ethylbenzene	26
Isopropylbenzene	18
MTBE	7.2
Methylcyclohexane	2.2 J
Xylenes, Total	6.6

MW-13	RESULT (µg/L)
PCE	430 D
TCE	480 D
Cis-1,2-DCE	14,000 D
Trans-1,2-DCE	140 D
Vinyl Chloride	660 D
Methylene Chloride	160 JBD

MW-27	RESULT (µg/L)
PCE	140,000 D
TCE	17,000 D
Cis-1,2-DCE	50,000 D
Vinyl Chloride	2,500 D
Methylene Chloride	1,100 JD

IW-01S	RESULT (µg/L)
PCE	17
Cis-1,2-DCE	1.6
Chloroform	0.45 J

MW-18	RESULT (µg/L)
PCE	78 D
TCE	520 D
Cis-1,2-DCE	940 D
Trans-1,2-DCE	5.6 D
Vinyl Chloride	40 D

MW-25D	RESULT (µg/L)
PCE	3.2
TCE	3.8
Cis-1,2-DCE	150
Trans-1,2-DCE	2.3
Vinyl Chloride	330
1,1-Dichloroethane	0.97 J
1,1-Dichloroethene	0.46 J
1,2-Dichloroethane	1.1
Benzene	0.98 J
Methylcyclohexane	1.4 J

MW-10S	RESULT (µg/L)
PCE	560 D
TCE	210 D
Cis-1,2-DCE	550 D
Trans-1,2-DCE	2.9 JD
Vinyl Chloride	33 D

MW-25S	RESULT (µg/L)
Acetone	52
Bromoform	1
Chloroform	1.6

IW-01D	RESULT (µg/L)
PCE	25
TCE	3.3
Cis-1,2-DCE	39
Acetone	29
Chloroform	1

MW-10D	RESULT (µg/L)
PCE	400 D
TCE	420 D
Cis-1,2-DCE	830 D
Trans-1,2-DCE	5.1 D
Vinyl Chloride	4.3 JD
1,1-Dichloroethene	2.2 JD

LEGEND

- CHAIN-LINK FENCE
- WOOD-PICKET FENCE
- PROPERTY BOUNDARY (SURVEY)
- MW-9 GROUNDWATER MONITORING WELL
- MW-8 MISSING/ DAMAGED GROUNDWATER MONITORING WELL
- 2005 IRM EXCAVATION AREA/ SVE SYSTEM SUB-SLAB PIPING

Notes:

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D – Result is based on dilution of the sample.

ug/L – Micrograms per liter.

- Primary Contaminant/CVOC exceeding respective NYS Class GA Standard or Guidance Value
- Other detected VOC exceeding respective NYS Class GA Standard or Guidance Value

0 30 60

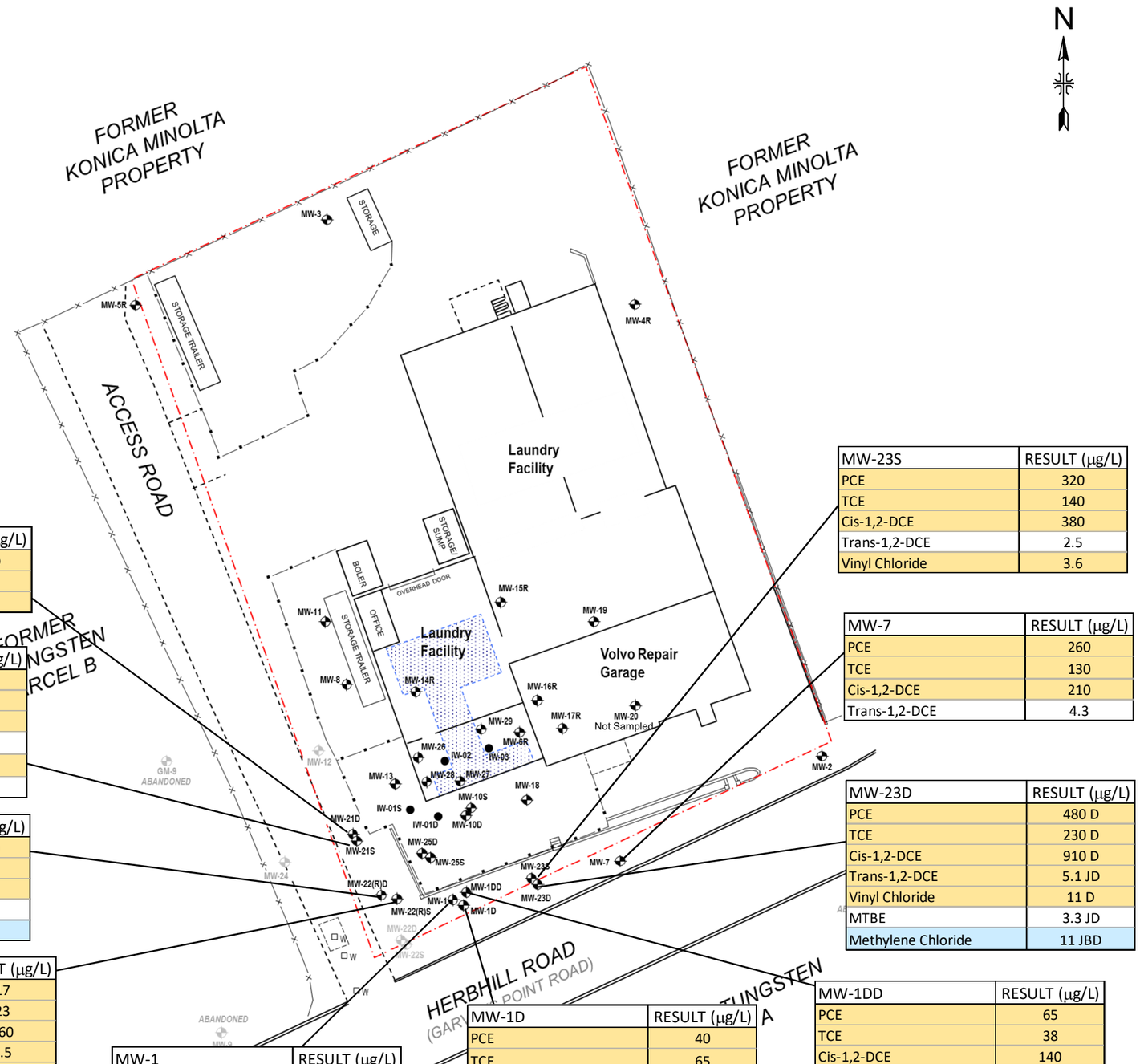
Approximate Scale in Feet

Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York

Summary of VOC Detections in Groundwater Samples – October-November 2017; Source Area Wells

ARCADIS Design & Consultancy for natural and built assets

3B
FIGURE



MW-21D	RESULT (µg/L)
Cis-1,2-DCE	1,800 D
Trans-1,2-DCE	28 D
Vinyl Chloride	50 D

MW-21S	RESULT (µg/L)
PCE	58
TCE	22
Cis-1,2-DCE	57
Trans-1,2-DCE	0.32 J
Vinyl Chloride	8.3
Chloroform	0.39 J

MW-22(R)D	RESULT (µg/L)
Cis-1,2-DCE	2,200 D
Trans-1,2-DCE	33 D
Vinyl Chloride	66 D
Cyclohexane	4.7 JD
Methylene Chloride	33 JBD

MW-22(R)S	RESULT (µg/L)
PCE	17
TCE	23
Cis-1,2-DCE	260
Trans-1,2-DCE	5.5
Vinyl Chloride	61
1,1-Dichloroethane	0.36 J
1,1-Dichloroethene	0.32 J
1,2-Dichloroethane	0.25 J
Benzene	0.47 J
Methylcyclohexane	0.29 J

MW-1	RESULT (µg/L)
PCE	11
TCE	11
Cis-1,2-DCE	45
Trans-1,2-DCE	0.3 J
Vinyl Chloride	3.1

MW-1D	RESULT (µg/L)
PCE	40
TCE	65
Cis-1,2-DCE	350
Trans-1,2-DCE	3.6
Vinyl Chloride	4.8
1,1-Dichloroethane	0.33 J
1,1-Dichloroethene	0.77 J
Chloroform	0.27 J

MW-1DD	RESULT (µg/L)
PCE	65
TCE	38
Cis-1,2-DCE	140
Trans-1,2-DCE	1.3
Vinyl Chloride	4.1

MW-23S	RESULT (µg/L)
PCE	320
TCE	140
Cis-1,2-DCE	380
Trans-1,2-DCE	2.5
Vinyl Chloride	3.6

MW-7	RESULT (µg/L)
PCE	260
TCE	130
Cis-1,2-DCE	210
Trans-1,2-DCE	4.3

MW-23D	RESULT (µg/L)
PCE	480 D
TCE	230 D
Cis-1,2-DCE	910 D
Trans-1,2-DCE	5.1 JD
Vinyl Chloride	11 D
MTBE	3.3 JD
Methylene Chloride	11 JBD

LEGEND

- CHAIN-LINK FENCE
- WOOD-PICKET FENCE
- PROPERTY BOUNDARY (SURVEY)
- MW-9 GROUNDWATER MONITORING WELL
- MW-8 MISSING/ DAMAGED GROUNDWATER MONITORING WELL
- 2005 IRM EXCAVATION AREA/ SVE SYSTEM SUB-SLAB PIPING

Notes:

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D – Result is based on dilution of the sample.

ug/L – Micrograms per liter.

Primary Contaminant/CVOC exceeding respective NYS Class GA Standard or Guidance Value

Other detected VOC exceeding respective NYS Class GA Standard or Guidance Value

0 30 60

Approximate Scale in Feet

Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York

Summary of VOC Detections in Groundwater Samples – October-November 2017; Down-Gradient Area Wells

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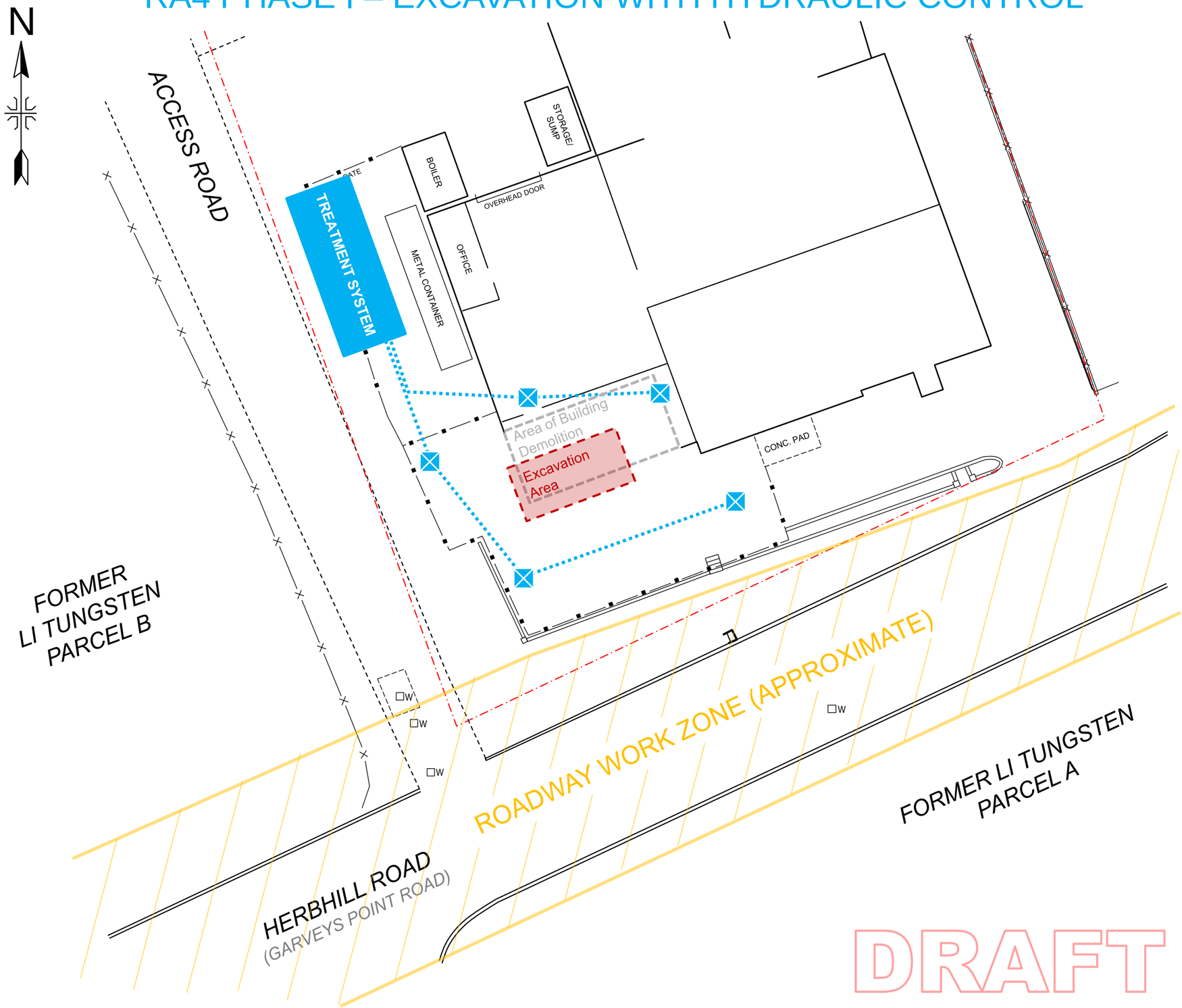
3C
FIGURE

RA4 PHASE I – EXCAVATION WITH HYDRAULIC CONTROL



LEGEND

- CHAIN-LINK FENCE
- WOOD-PICKET FENCE
- PROPERTY BOUNDARY (SURVEY)
- GROUNDWATER MONITORING WELL
- INJECTION WELL
- EXTRACTION WELL
- SYSTEM PIPING
- TREATMENT ZONE/SOURCE AREA

0 25 50

APPROXIMATE SCALE IN FEET (1" = 25')

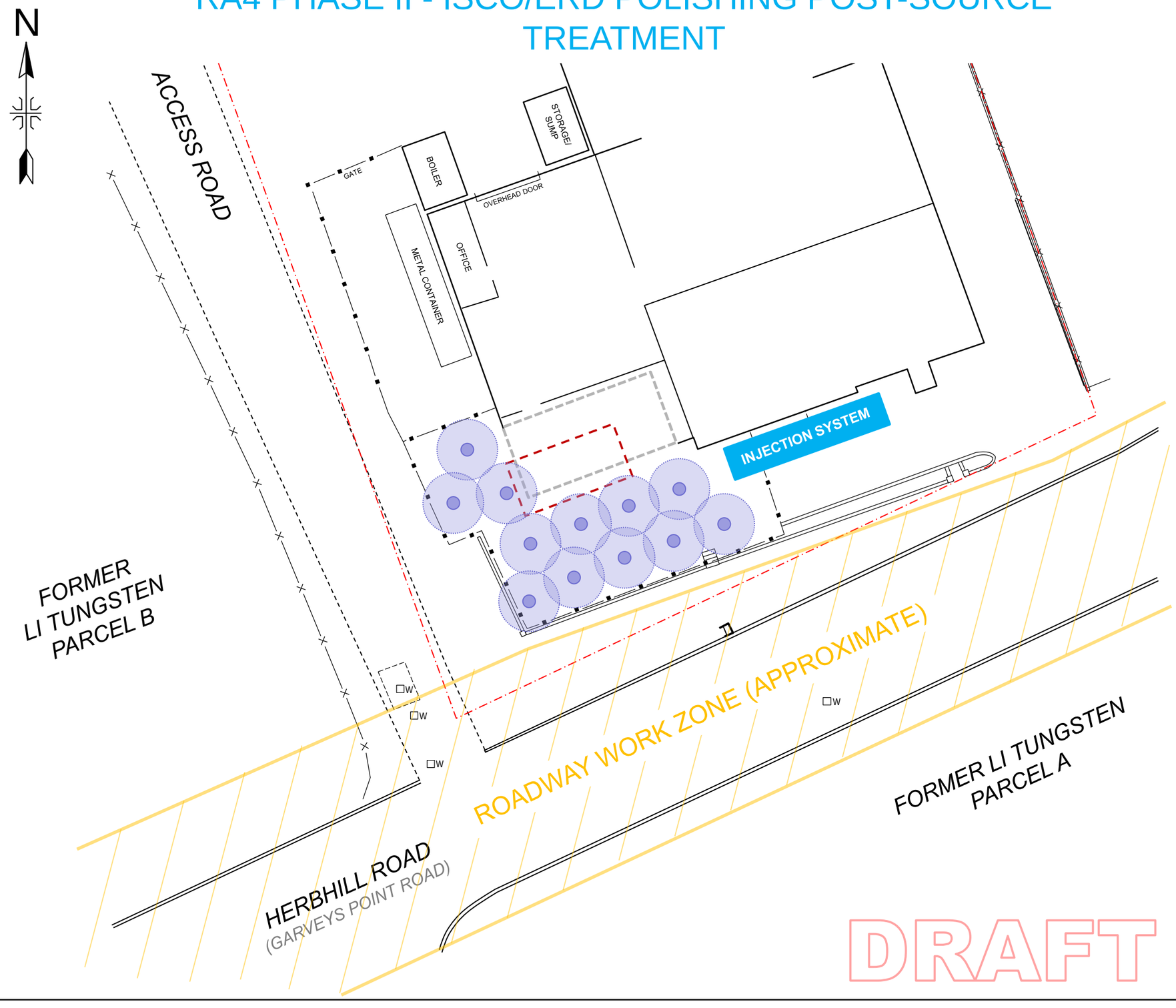
Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York

RA4 Conceptual Layout – Phase I;
Source Area Excavation With Dewatering

ARCADIS Design & Consultancy for natural and built assets

4a
FIGURE

RA4 PHASE II - ISCO/ERD POLISHING POST-SOURCE TREATMENT



LEGEND

- CHAIN-LINK FENCE
- WOOD-PICKET FENCE
- PROPERTY BOUNDARY (SURVEY)
- GROUNDWATER MONITORING WELL
- ISCO/ERD INJECTION WELL
- TREATMENT ZONE/SOURCE AREA

0 25 50

APPROXIMATE SCALE IN FEET (1" = 25')

Focused Feasibility Study
Crown Dykman (NYSDEC Site No.130054)
Glen Cove, New York

RA4 Conceptual Layout – Phase II; Downgradient ISCO Polishing – Sodium Permanganate Injections

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4b
FIGURE

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the supplemental investigations that have been completed after the original 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 Standards, Criteria, and Guidance (SCGs) for the site. The contaminants are arranged in four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals). 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.

Groundwater

During the 2009 RI, groundwater samples were collected to assess the on-site and off-site conditions. In general, the depth to groundwater ranges from five to ten feet below ground surface (bgs). Groundwater contaminants of concern (COCs) identified during the 2009 RI include the chlorinated solvent VOC tetrachloroethene (PCE) and its degradation compounds trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE) and vinyl chloride. Subsequent groundwater sampling confirms that groundwater contamination is centered in the southwest portion of the site from the water table to depths exceeding 35 feet bgs (Figures 3A, 3B, and 3C). Previous off-site sampling results indicated that the chlorinated solvent contamination extends off-site to the south and the west, entering the northern portion of Li Tungsten Parcel A (to the south) and the eastern portion of Li Tungsten Parcel B (to the west). In addition to the chlorinated solvents, benzene, toluene, ethylbenzene, and xylene (BTEX) and other petroleum-related compounds have been detected in the southern and western portion of the site exceeding their respective SCGs. Measurable amounts of petroleum light non-aqueous phase liquid (LNAPL) have been found in the southwestern area of the site indicating a petroleum release at the site, however current LNAPL trends in the onsite wells indicate that measurable levels of LNAPL are no longer present.

Table 1 – Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCS			
1,1,1-Tricholorethane	ND - 43	5	3/211
1,1,2-Trichlorethane	ND - 78	1	2/211
1,1-Dicholoethane	ND - 9.9	5	4/211
1,1-Dichloroethene	ND – 24	5	3/211
1,2-Dichloroethane	ND - 6.6	0.6	8/211
1,2-Dichloropropane	ND - 2.6	1	10/211
Acetone	ND – 100	50	3/203
Benzene	ND – 37	1	28/211

Chloroethane	ND -14.0	5	5/211
Cis-1,2-Dichloroethylene	ND - 140,000	5	165/211
Ethylbenzene	ND -130	5	32/38
Isopropylbenzene (Cumene)	ND – 88	5	38/211
Methylene Chloride	ND - 1,300	5	23/211
Tert-Butyl Methyl Ether	ND – 200	10	12/211
Tetrachloroethylene (PCE)	ND - 150,000	5	124/211
Toluene	ND – 120	5	17/211
Trans-1,2-Dichloroethene	ND – 450	5	63/211
Trichloroethylene (TCE)	ND - 22,000	5	117/211
Vinyl Chloride	ND - 4,500	2	142/211
Xylenes, Total	ND-1,300	5	31/205

Table 2- Groundwater (PFAS)

Detected Constituents	Concentration Range Detected (ppt)[c]	Screening Level (DWQC Recommended MCL[d])
PFAS		
PFOS	4.4-1700	10 ppt
Perfluorooctanoic Acid (PFOA)	6.8-310	10 ppt

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
c- ppt: parts per trillion, which is equivalent to nanograms per liter, ng/L, in water
d- DWQC Recommended MCL: New York State Drinking Water Quality Council recommended Maximum Contaminant Level

The primary groundwater contaminants continue to be PCE, TCE, 1, 2-DCE, and vinyl chloride associated with the former laundry, and benzene, toluene, ethylbenzene, and xylene (BTEX) associated with gasoline and heating fuel used at the site. As noted on Figures 3A, 3B, and 3C, the primary groundwater contamination is located in the southwestern portion of the site.

Based on the current groundwater data and the findings of the 2010 RI, the disposal of hazardous waste has resulted in the contamination of groundwater. The site primary contaminants of concern, which will drive the remediation of groundwater addressed by the remedy selection process, are: PCE, TCE, 1,2-DCE, vinyl chloride, benzene, toluene, ethylbenzene, and xylene.

As part of the emerging contaminant sampling initiative PFAS and 1,4- dioxane were sampled for in 2017. Analysis of the data indicates that the site is not the source of the PFAS contamination.

Soil

Previous investigations had documented that residual PCE contamination was present near the onsite building footing. Subsequent soil sampling as part of the 2018 Pre-Design Investigation confirmed the presence of PCE at concentrations indicative of dense non-aqueous phase liquid (DNAPL) along the southwestern corner of the onsite building. The sampling effort also detected petroleum related compounds in the subsurface soil exceeding their respective SCG values.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	375 Soil – Commercial Use SCG[c] (ppm)	Frequency Exceeding Commercial use SCG	375 Soil – Protection of Groundwater SCG[d] (ppm)	Frequency Exceeding Protection of Groundwater SCG
Ethylbenzene	ND - 3.4	1.0	3/6	390	0/6	1	3/6
Cis-1,2-Dichloroethylene	ND - 80	0.25	3/6	500	0/6	0.25	3/6
Tetrachloroethylene (PCE)	0.33 - 24,000	1.3	4/6	150	2/6	1.3	4/6
Toluene	ND - 0.35	0.7	0/6	500	0/6	0.7	0/6
Trichloroethylene (TCE)	ND - 300	0.47	4/6	200	1/6	0.47	4/6
Xylenes, Total	0.25 - 20	0.26	5/6	500	0/6	1.6	4/6

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

The primary soil contaminant is PCE, associated with the former dry cleaning operations, located along the southwestern corner of the onsite building.

Based on the current findings, the presence of PCE has resulted in the contamination of soil. The site contaminant identified in soil which is considered to be the primary contaminant of concern, to be addressed by the remedy selection process is PCE.

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Crown Dykman
State Superfund Project
Town of Glen Clove, Nassau County
Site No. 130054

The proposed Amendment to the March 2010 Record of Decision for the Crown Dykman site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH). The Amendment outlined the remedial measure proposed for the contaminated soil, groundwater, and soil vapor at the Crown Dykman site.

The release of the proposed Amendment was announced by sending a notice to the public contact list and informing the public of the opportunity to comment on the proposed amended remedy.

To limit the community spread of COVID-19, Governor Cuomo issued Executive Order 202.15 suspending in-person public meetings relating to proposed site remedies. The Department remains committed to providing the public with ample opportunity to provide input on proposed remedies in your community. The public was encouraged to provide comments in writing to the Department Project Manager, during the 30-day public comment period. The public comment period for the Proposed Amendment ended on April 23, 2021.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: It is understood that there are merits of requiring an SSDS for future site redevelopment on the Crown Dykman property. We are curious if the proposed remedy contemplates the concern that soil vapor from the Crown Dykman site is impacting/has the potential to impact existing and future residential redevelopment on the neighboring properties. The AROD indicates that little action is being proposed to prevent this migration. We know that other developments on Garvies Point have had to take measures to control soil vapor migration on their sites, so we recommend that additional alternatives be contemplated to ensure neighboring properties are protected from soil vapor emanating from the Crown Dykman site.

In addition, there is no discussion of the utilities as a potential preferential pathway for the contaminants in groundwater and soil vapor. We recommend this scenario be investigated to ensure that contaminants are not traveling along the utility corridors and potentially contaminating neighboring properties. If it is discovered that a source remains in the vadose zone (such as old sewers/drywells), a perimeter SVE system should be considered to prevent contaminated vapor from migrating offsite. At a minimum, additional sampling should be performed to confirm that there is no cross-gradient migration of contaminated soil vapor to neighboring properties.

RESPONSE 1: The primary pathway for further downgradient dissolved-phase migration off the site is being addressed with source removal and application of a chemical oxidant. Future lateral migration of vapors in the vadose zone or along potential subsurface utility pathways from the former source area is not anticipated due to the removal of identified source soil and the building and slab, and the installation of a gravel layer that will provide an open pathway for soil vapor to discharge to the atmosphere. Allowance for an SSDS is included in the amended remedy if the future use of the site includes development of a structure and data indicate that one would be appropriate to protect potential receptors.

Adjacent properties, including the former Li Tungsten Parcels A and B, located south and west of the site, respectively, are protected. The Former Li Tungsten Parcels A and B are managed under a Site Management Plan (SMP) that requires groundwater and vapor intrusion evaluation for buildings developed on these properties. The institutional controls specified in the SMP for these properties include a requirement for both mitigation and monitoring where potential impacts are found. Vapor intrusion related to the Crown Dykman site is not a concern for properties located north and east of the site since contaminated groundwater from the site has not been shown to migrate in those directions.

COMMENT 2: Given the residential nature of the surrounding master planned development, we recommend that the Department consider selecting Restricted Residential Soil Cleanup Objectives (RRSCOs) as the soil remediation standard for the Crown Dykman site.

RESPONSE 2: The site location is currently zoned as commercial, and the use of the site will be restricted to commercial. This determination is based on the provision in 6 NYCRR375-1.8 (g)(5) which calls for the Department to consider the use of a site proposed for a site remedial program based on either existing zoning or the reasonably anticipated and appropriate future use of the site.

COMMENT 3: The proposed amendment indicates that the contaminants of concern are CVOCs in soil, groundwater, and soil vapor. The 2010 Record of Decision states that "Crown Uniform originally used a petroleum-based Stoddard solvent to launder uniforms; however, the Stoddard solvent was later replaced by PCE." VOCs commonly associated with Stoddard solvent, including 1,2,4- trimethylbenzene, 1,3,5-trimethylbenzene, ethyl benzene, m/p-xylene, n-butylbenzene, n-propylbenzene, o-xylene, sec-butylbenzene, and tert-butylbenzene, have been detected at elevated concentrations in soil and groundwater at the site down-gradient of a former storage tank area on the western side of the building, according to the Remedial Investigation. In addition, light non-aqueous phase liquid (LNAPL) was historically detected in one of the onsite groundwater monitoring wells. The proposed amendment does not appear to address any remediation associated with this onsite contamination. Source removal and groundwater treatment of this contamination would be beneficial to public health and the environment. Also, if not addressed, it is believed that this contamination has the potential to migrate off-site and impact the down-gradient community.

RESPONSE 3: VOCs associated with the petroleum-related LNAPL identified on-site are limited to the area directly downgradient of the former tank area, and have not been shown to migrate off-site above applicable NYS Class GA standards. However, remedial activities will be completed within the former storage tank area on the western side of the building to further evaluate the

potential presence of a source for petroleum compounds. The LNAPL that was observed historically on-site was not identified as Stoddard solvent during the 2009 remedial investigation. In addition, the presence of LNAPL during routine monitoring activities has declined over time to the extent that LNAPL is no longer observed in site wells at a measurable thickness. As presented in the 2018 Pre-Design Report, only CVOCs are present in downgradient wells above class GA standards. Currently, groundwater data do not suggest a significant risk for off-site migration of dissolved-phase petroleum-related VOCs above NYS Class GA standards.

COMMENT 4: In the "Supplemental Pre-Design Summary Report" dated July 2018, Arcadis makes the comment that "[*t]he distribution trend of groundwater data within Site monitoring wells and other sampling locations did not conclusively indicate the presence of a single point source for PFAS at the Site. The presence of significant PFAS concentrations in groundwater along the upgradient Site boundary, and in northern and western portions of the Site are indicative of an off-Site PFAS source*." Based on the information provided, we disagree that the data indicates that the PFAS in groundwater is from an upgradient source. When PFAS concentration contours are drawn, it suggests that the PFAS across the Site is emanating from the center of the Crown Dykman property (MW-8 and MW-11; immediately to the west of the Storage Trailer and on the western side of the Laundry Facility). Monitoring wells MW-8 and MW-11 had the highest levels of PFAS and the concentrations upgradient are lower.

Secondly, no PFAS soil data has been collected at the Site to our knowledge. It is difficult to say that there is not an on-site source without having soil samples from the area of the highest on-site groundwater contamination. Furthermore, there is a logical link between PFAS and drycleaners. A number of products that contained PFAS have been available to consumers through the years to make their textiles, rugs, and leathers waterproof and resistant to stains. During the dry-cleaning processes, some PFAS from these materials would enter the waste solvent solution[1]. In that scenario, anywhere where waste solvents have entered the subsurface, PFAS could be present as well. We have not seen records regarding what specific products were utilized at the Crown Dykman site, but if they performed waterproofing of these materials onsite, this may also be an additional risk factor. Therefore, it is likely that the operations at the Crown Dykman site are the source of the PFAS contamination, not an "upgradient source."

[1] "PFAS-Per-and Polyfluoroalkyl Substances." PFAS Per and Polyfluoroalkyl Substances, pfas-1.itrcweb.org/2-6-pfas-releases-to-the-environment/

RESPONSE 4: CVOCs have historically been considered the primary constituents of concern for the site. As summarized in the Supplemental Pre-Design Summary Report dated July 2018, MW-8 and MW-11 are adjacent to the western edge of the Crown Dykman site, outside of the site building. Given the natural gradient in this area, it is conceivable that the concentrations of PFAS noted in these wells are from an off-site source to the north or northwest of the Crown Dykman property. While concentrations of PFOS in these wells were higher than others at the site, concentrations of PFOA in MW-11 and MW-8 are consistent with, or less than, those observed in MW-5R and MW-3, at the northern property boundary. Therefore, an upgradient release of PFOA contributing to the presence and distribution of PFAS compounds in groundwater at the site cannot be disregarded. Any isocontours generated for contaminants at the site must consider the groundwater gradient at the site and should not assume that concentrations of groundwater contaminants will migrate

upgradient against the natural hydraulic gradient toward the north and northwest of the site.

During remedial activities, the removal of PFAS compounds that are encountered on the site will be addressed as an ancillary compound during treatment of groundwater related to excavation dewatering activities.

COMMENT 5: Arcadis did not consider a ZVI PRB for the remediation of the dissolved-phase groundwater plume, because "*emplacement of a PRB using conventional trenching methods can be complicated by underground utilities present in this area, and by planned road re- construction activities in the area. Once emplaced the PRB is expensive to adjust, re-locate or remove, and changes in groundwater direction or velocity, though unlikely, can reduce the PRB effectiveness*." Road re-construction is now complete. Furthermore, ZVI can be injected through borings and does not have to be installed via trenches. If borings are utilized to inject the ZVI, it is not clear why the proposed road construction activities have any impact on the feasibility of this remedial approach. We believe this alternative should be considered more thoroughly. Whether it be ZVI or an alternate technology, additional remedial efforts should be employed to prevent residually impacted groundwater from migrating offsite.

RESPONSE 5: Injection of ZVI in downgradient locations was evaluated as part of the initial Feasibility Study for the site (Malcolm Pirnie, 2009), and the subsequent Focused Feasibility Study (Arcadis, 2019). The latter includes:

"Experience with this technology since completion of the original 2009 FS (Malcolm Pirnie, 2009) has shown that it is difficult to inject sufficient mass, and to provide sufficient contaminant contact, in heterogeneous aquifers similar to that at the Crown Dykman Site. It is unlikely that sufficient ZVI mass could be delivered effectively within the DNAPL source area and would be cost prohibitive and ineffective in the dissolved-phase plume. Therefore, ZVI injection is not carried forward as a potential remedial alternative for the Site."

The Department has completed the feasibility study process, including the initial and subsequent focused studies, which provided an overall assessment of potential remedial options that resulted in selection of the preferred amended remedy, as documented in the PRAP. The selection of source area excavation with on-site downgradient ISCO as the preferred amended remedy is based on the success of treatment of the dissolved-phase plume during previous ISCO pilot studies at the site, and in full-scale remedies at similar sites on Long Island. Reaction between contaminants and chemical oxidant generally occurs over a relatively short period, and as such, treatment may be more rapid than other in-situ technologies. In addition, ISCO application does not generate large volumes of residual waste materials for treatment and disposal. Excavation is a well-documented and effective method to address DNAPL VOC sources in soil. In addition, dewatering operations in support of excavation would provide an ancillary mass removal benefit for dissolved-phase contaminants while the DNAPL source is being removed, enhancing the short-term remedial effectiveness.

COMMENT 6: We appreciate that the Department has specified that the backfill at the Site will be completed using clean material that meets the established Soil Cleanup Objectives for use. We recommend that demolition procedures be monitored by the Department's contractor and would

recommend that the reuse of onsite concrete or soil generated by demolition be prohibited without analytical testing as this could be a continuing source of recontamination to the Crown Dykman site and could then act as a source of contamination (esp. soil vapor) to neighboring properties.

RESPONSE 6: The Department has retained Arcadis to provide construction management and inspection services and will require that demolition debris and soil generated by demolition to be disposed off-site.

COMMENT 7: The proposed amendment includes source removal of chlorinated volatile organic compounds (CVOCs) by excavation followed by in situ chemical oxidation (ISCO). Source removal is currently proposed in the southwest corner of the existing building with ISCO treatment extending several feet out from the source removal area. The Proposed Record of Decision Amendment also indicates that "previous off-site groundwater sampling results indicated that the CVOC contamination extends off-site to the south and the west entering the northern portion of Li Tungsten Parcel A (to the south) and the eastern portion of the Li Tungsten Parcel B (to the west). PCE concentrations have been detected at concentrations up to 2,800 ppb, 830 ppb, 3,100 ppb, and 180 ppb for PCE, TCE, 1,2-DCE and vinyl chloride, respectively." As the Li Tungsten Parcels A and Parcel B have recently been redeveloped for restricted-residential use, have there been any considerations as to treatment of the off-site groundwater contamination and installation of a barrier at the property boundary to prevent the continued migration of groundwater contamination off-site. We understand that the Proposed Record of Decision Amendment should result in the long-term reduction of CVOCs, but it will take some time to see improvement in the overall groundwater quality and a more aggressive approach would be beneficial to public health and the environment. There are readily available treatment technologies to successfully implement this goal.

In addition, upon review of Figures 21-23 of the Remedial Investigation Report, we are concerned that the CVOC isocontours are not consistent with what would be expected given groundwater flow and the geology at the Crown Dykman site. The data suggests that there is a potential upgradient source (near the location of the former solvent USTs) that is contributing to two distinct plumes that were inadvertently merged together when the data was analyzed during the RIR preparation. Furthermore, Figures 7C and 7D in 2014 PDI present isocontours around MW- 11 that suggest that the elevated concentrations of cis-1,2-DCE and vinyl chloride are localized to that hotspot. However, the data from the RIR suggests that monitoring well GM-9 (across the street and downgradient of MW-11) also had significantly elevated concentrations for cis-1,2-DCE and vinyl chloride. We are concerned that the remedy in the proposed AROD is not addressing this potential source area and it contribution to offsite groundwater contamination

RESPONSE 7: See response number 5, which describes the results and conclusions of the feasibility study and remedy selection. The presence of a separate, on-site source of PCE or TCE is not supported based on currently available data. Data from the past groundwater investigation do not suggest the presence of a continuing DNAPL source in areas upgradient of the southwestern corner of the site building. Concentrations observed within the western portion of the site are consistent with residual concentrations in groundwater, including those in MW-11, where levels of PCE and TCE in groundwater at that location during 2017 (Crown Dykman Focused Feasibility Study, 2017) were non-detect.

Groundwater flow patterns at the Crown Dykman site suggest that the former Li Tungsten Parcel B property was cross-gradient from the Crown Dykman source areas prior to, and after remedial actions carried out on Parcel B during the early 2000s, with the natural gradient in this area trending toward the south and southeast. These remedial actions included dewatering of the southern portion of Parcel B. Groundwater concentrations observed in wells at the western side of the Crown Dykman property and wells GM-9 and MW-9 on the Parcel B property suggest that the dewatering activities on Parcel B contributed to local changes in the hydraulic gradient at both sites. This may have resulted in some migration of the dissolved-phase plume toward Parcel B during dewatering. Once the remedial activities concluded, the natural gradient was re-established, and migration to Parcel B through the saturated formation ceased. The selected remedy therefore addresses the primary CVOC source area identified at the Crown Dykman site. This is further supported by the decrease in concentrations observed in GM-9 in historic data collected after the completion of remedial activities on Parcel B.

As mentioned in the response to Comment #1, the former Li Tungsten Parcels A and B, located south and west of the site, respectively, are being managed under an SMP that requires groundwater and vapor intrusion evaluation for buildings developed on these properties. The institutional controls specified in the SMP for these properties include a requirement for both mitigation and monitoring where potential impacts are found.

COMMENT 8: There is concern that the proposed excavation may not remove all source material from within this area due to the significant depth. There is a clay lens near the identified source, but that clay layer appears to be very thin and may not have contained the entire source. Is it the Department's intent that this clay layer will be removed? Secondly, will there be confirmation endpoint sampling prior to stopping excavation or will the excavation stop at 15 ft bgs regardless of the conditions encountered? We recommend that an ISCO product such as sodium permanganate be placed at the bottom of the excavation prior to backfill with clean sand as a polishing step.

RESPONSE 8: The proposed limits of the excavation area address the possibility that some DNAPL source may have traveled further downgradient from the area directly beneath the building. Emplacement of an injection header and application of ISCO within the source area excavation footprint is included in the remedy to facilitate post-excavation polishing of the former source area with ISCO.

APPENDIX B

Administrative Record

Administrative Record

Crown Dykman
State Superfund Project
Town of Glen Clove, Nassau County, New York
Site No. 130054

1. *Results of Remedial Investigation,* dated October 1997, prepared by EEA, Inc.

2. *Onsite Source Removal IRM Report,* dated May 2005, prepared by Walden Associates

3. *Final Remedial Investigation Report,* dated December 2009, prepared by Malcolm Pirnie, Inc.

4. *Final Feasibility Study Report,* dated December 2009, prepared by Malcolm Pirnie, Inc.

5. *Crown Dykman Proposed Remedial Action Plan,* dated January 2010, prepared by the Department

6. *Record of Decision Crown Dykman Site,* dated March 2010, prepared by the Department

7. *Pre-Design Investigation Report,* dated October 2014, prepared by Malcolm Pirnie, Inc.

8. *Supplemental Pre-Design Summary Report,* dated July 2018, prepared by Arcadis CE, Inc.

9. *Focused Feasibility Study,* dated November 2019, prepared by Arcadis CE, Inc.

10. *Proposed Record of Decision Amendment Crown Dykman Site,* dated March 2021, prepared by the Department