Proposed Record of Decision Amendment
Lubricant Packaging Co.

Middletown / Orange County / Site No. 336034 February 2014

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

SECTION 1: PURPOSE AND SUMMARY OF THE PROPOSED 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 proposing an amendment to the March 2004 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 and Section 6 of this document, has caused the contamination of various environmental media. The proposed 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 lead to this proposed 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.

This site is contaminated with the solvent 1, 1, 1-trichloroethane (1, 1, 1-TCA). Groundwater, soil and soil vapor are all affected. In addition to this contaminant, a nearby site, General Switch, has released other contaminants that may be migrating toward the Lubricant Packaging site in the groundwater.

The potentially responsible parties (PRPs) for the Lubricant Packaging site declined to implement a remedial program when requested by the Department. Therefore, the Department is moving forward with the remedial program under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on this proposed ROD Amendment. This is an opportunity for public participation in the remedy selection process. 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:

Middletown Thrall Library
Reference Desk
11 – 19 Depot Street
Middletown, NY 10940
(845) 341-5461

NYSDEC Region 3 Office
21 South Putt Corners Road
New Paltz, NY 12561
Phone (845) 256-3154

A Public comment period has been set from February 28, 2014 through March 29, 2014, to provide an opportunity for you to comment on these proposed changes. A public meeting is scheduled for March 24, 2014 at the Middletown City Hall, 16 James Street, Middletown, New York.

At the meeting, a description of the original ROD documents and the circumstances that have led to proposed changes in this ROD will be presented. After the presentation, a question and answer period will be held, during which you can submit verbal or written comments on the proposal. We encourage you to review this summary and attend the meeting.

Written comments may also be sent to:

Paul Patel
NYS Department of Environmental Conservation
Division of Remediation 625 Broadway
Albany, NY 12233
Phone (518) 402-8801
appatel@gw.dec.state.ny.us

Comments will be summarized and responses provided in a Responsiveness Summary. The Department may modify the proposed ROD Amendment based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed Amendment identified herein. Comments will be summarized and addressed in the responsiveness summary section of the final version of the ROD Amendment. This ROD Amendment 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 Lubricant Packaging Company site is located at 17 Industrial Place, Middletown, Orange County. The site is in an industrial portion of the City. Industrial Place is located off

Highland Avenue Extension about ¼ mile from State Route 17M.

Site Features: The 1-acre site contains a 7000 square foot industrial building that includes a loading dock and an unpaved parking lot. The eastern and northern portions of the site are wooded. There is an un-named stream channel located east of the site. The unnamed stream channel is locally known as Draper Run.

Current Zoning/Use(s): The site is currently zoned as industrial, and is being utilized by a third party tenant for the wholesale distribution of medical products. The site is located in a light industrial/commercial area. The site is bordered by a vacant lot to the north, a railroad line to the east, an industrial facility to the south and to the west Highland Avenue. The General Switch inactive hazardous waste disposal site (No. 336025) is located northwest of the site. Residential development and condominiums are located about ¼ mile to the north.

Past Use(s) of the Site: Prior to the construction of the Lubricant Packaging Systems facility, the property was used as a railroad supply and repair yard as well as a coal depot. In 1962, the site was developed and occupied by F&W Bearing Service (F&W). The primary operation for F&W was the degreasing and re-lubrication of metal ball bearings in addition to packaging various lubricants. This activity was accomplished by tumbling the ball bearings in a bath of mineral spirits. Limited use of the solvent 1,1,1-trichloroethane (1,1,1-TCA) was also necessary for certain greases. In 1972, the company was sold and the business name was changed to Lubricant Packaging and Supply Company. The business expanded and additional warehouse space was constructed to house lubricant products. From the late 1970s through 1987, drummed products were commonly stored outdoors.

Site Geology and Hydrogeology: The shallow soil on-site is predominantly fill. The fill material generally consists of crushed shale, reworked glacial till, coal cinders, and demolition/construction debris. A bedrock outcrop is located approximately 200 feet northeast of the site. Bedrock on the site ranges from 15 feet below ground surface (bgs) at the southern end of the site to less than 5 feet bgs at the northern end of the site.

The groundwater at the site flows to the southeast. Groundwater elevation ranges from 8 to 15 feet bgs with a higher groundwater in the spring (1 to 10 feet bgs).

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. The Lubricant Packaging Company site is currently zoned for industrial use. The site is located in an industrial area of Middletown and it is anticipated that an industrial or commercial use will continue into the foreseeable future.

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 declined to implement a remedial program when requested by the Department. On July 30, 2009, one PRP, Steven Saines Inc. the site owner, reached an agreement with the State of New York which included a payment response costs and is no longer liable for implementation of the remedy.

SECTION 6: SITE CONTAMINATION

6.1: Summary of Environmental 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,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- soil vapor
- indoor air
- groundwater
- soil

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:

1,1,1-trichloroethane (F001)

The contaminant(s) of concern exceed the applicable SCGs for:

Soil
Groundwater
Soil vapor

Subsurface soil sampling conducted in 2009 indicated 1,1,1-trichloroethane (TCA) above the protection of groundwater soil cleanup objective (SCO) in only one sample location. In 2009, TCA ranged from ND to 850 ppb with almost all sample results noted below the analytical detection limit. The contaminant levels were much lower then found during the previous 1993 investigation. Contaminant levels in the soil in 1993 were as high as 14 ppm for TCA with many more detections. This is a notable decrease in contaminant concentration with time.

In addition to TCA, there are various petroleum–related contaminants called Tentatively Identified Compounds (TICs) which are found in the southern and eastern areas of the site. These compounds are related to the use of oil and grease used for the maintenance of vehicles at the site. In 2009, total TICs were noted in soil as high as 1,700 ppm.

In 2009, groundwater contamination for TCA ranged from a high of 160 ppb at a depth of 14 feet bgs to non-detect. Five of the 15 groundwater monitoring wells exceeded the groundwater standard for TCA of 5 ppb.

Tetrachloroethene (PCE) is also noted in groundwater monitoring wells ranging from non-detect to 450 ppb. The PCE groundwater contamination is located in the southwestern corner of the Lubricant Packaging Company site. PCE is the predominant contaminant of concern from the nearby General Switch inactive hazardous waste disposal site. The groundwater plume from the General Switch site migrates south and impacts the corner of the Lubricant Packaging Company site. Therefore, the PCE groundwater contamination on the Lubricant Packaging Company site is related to the General Switch site.

In 2007 a sub slab depressurization system (SSDS) was installed by the site owner to address concerns about indoor air quality. The system only addressed the buildings office/clean room area while the warehouse/storage area was not addressed**.** Within the warehouse at the Lubricant Packaging Company site, TCA was noted as high as 422 ug/m3 in the sub slab soil vapor and up to 1.1 ug/m3 in indoor air. These levels indicate that the existing sub slab depressurization system should be modified to include the warehouse.

In soil vapor under the Lubricant Packaging Company site, TCA was noted as high as 422 ug/m3. The soil vapor data indicates that mitigation is necessary to address soil vapor intrusion.

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.

In February 1987, a NYSDEC inspection of the facility was performed. The inspection identified several hundred drums of hazardous waste and some storage tanks of listed hazardous wastes as being stored on-site without the proper permitting. A second inspection conducted in March 1987 revealed similar findings. During these first two investigations, 25 samples were collected by the Department from the drums which confirmed the presence of 1,1,1-trichloroethane (1,1,1-TCA), mineral spirits and waste oils.

IRM -- Drum Removal

From March 1987 to March 1991, with Department oversight, the responsible party removed 11,500 gallons of waste containerized in drums from the site, which included those containing spent degreasing solvents.

IRM -- Vapor Mitigation

In the Spring of 2007 a partial subslab depressurization system was installed by the responsible party without Department knowledge or consent. This system covers only the occupied space, not the storage area. Prior to the responsible party's agreement with New York State, the responsible party was maintaining the system. Since 2010, the system has been monitored by the Department.

6.3: 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.*

The site is completely fenced, which restricts public access. Persons who dig below the ground surface may come into contact with contaminants in subsurface soil. 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 soil or groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. A sub-slab depressurization system has been installed within the occupied portion of the on-site building to prevent vapors beneath the slab from entering the building. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion for any future on-site building development and occupancy. Sampling indicates soil vapor intrusion is a potential concern for off-site buildings.

SECTION 7: SUMMARY OF ORIGINAL REMEDY AND PROPOSED AMENDMENT

7.1 Original Remedy

Dual Phase Extraction:

The March 2004 ROD selected dual phase extraction (DPE) for the on-site soil contamination to address saturated soil, soil vapor and groundwater contamination. However, the recent 2009 investigation indicates that soil contamination at the site is much lower then was observed prior to the March 2004 ROD, and that biological degradation products are present in site groundwater. Finally, operation of the DPE system could possibly draw and further disperse the TCE plume migrating onto the Lubricant Packaging Company site. As a result, the FS was revisited, and the technologies identified were further evaluated.

7.2 New Information

Since the issuance of the FS and ROD, new information about the site and the previously selected remedy has been obtained and is outlined below.

- Levels of TCA have diminished in unsaturated soil from 14 ppm to less than 1.0 ppm since 1993 from possible natural attenuation.
- TCA continues to be present in on-site groundwater but there has been a recent increase in the level of TCA natural breakdown products.
- Engineering evaluations performed during the remedial design indicated that operation of the DPE system could possibly draw and further disperse the TCE plume migrating from the General Switch site.

7.3 Proposed Changes to the Original Remedy

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

SUMMARY OF PROPOSED REMEDY CHANGES
Lubricant Packaging Site (No. 336034) Record of Decision Amendment

Media:	2004 ROD	Amended ROD
Groundwater	(1) Dual Phase Extraction wells will remove Groundwater. The Groundwater will be treated to remove contaminants. (2) Long term monitoring; (3) Deed restriction that prohibits the use of ground water without treatment and approval.	(1) In-situ Enhanced Bioremediation (ISEB) in source areas via introduction of electron donors and nutrients with monitoring of ground water parameters and quality to assess effectiveness of the ISEB remedy. (2) Long term monitoring (unchanged); (4) Environmental Easement that prohibits the use of ground water without treatment and approval.
Soil	(1) Use of a cover system over contaminated inaccessible soils. (2) Deed restriction to limit use of property to industrial/commercial use unless otherwise approved by the Department;	(1) The use of ISEB to continue to reduce the level of contaminants in the saturated soil matrix instead of Dual Phase Extraction to reduce contaminants in saturated soils. (2) Use of a cover system over contaminated inaccessible soils (unchanged). (3) Environmental easement to limit use of property to industrial/commercial use.
ICs	(1)Deed restriction to limit use of ground water without treatment and land use restriction to commercial/industrial use. (2)Use of a Site Management Plan to maintain the institutional and engineering controls at the site.	(1)Environmental easement to limit use of groundwater and restrict land use to commercial/industrial use. (2)Use of a Site Management Plan to maintain the institutional and engineering controls at the site. (unchanged)

The remedial actions to address soil vapor/indoor air and the need for a site management plan remain unchanged from the original March 2004 ROD.

SECTION 8: EVALUATION OF PROPOSED CHANGES

8.1 Remedial Action Objectives

Objectives for the cleanup of the site were established in the March 2004 ROD and remain unchanged. The overall remedial objectives were to meet SCGs and be protective of human health and the environment. The remedial action objectives (RAOs) for the 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.
- Remove the source of ground water contamination.

Soil

RAOs for Public Health Protection
- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection
- Prevent migration of contaminants that would result in groundwater contamination.

Soil Vapor

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

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. This section will only address a comparison of the groundwater components of the original remedy compared to the proposed amended remedy.

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 Human Health and the Environment. This criterion is an overall evaluation

of each alternative's ability to protect public health and the environment.

The proposed ROD amendment remedy was evaluated and is protective of public health and the environment. This remedy is consistent with the anticipated future use and the current zoning for the site. The original remedy would remove contaminated groundwater for treatment and discharge. The modified remedy will include in-situ treatment and breakdown of the contamination in the groundwater exceeding groundwater standards. Overall, both remedies are protective of human health and the environment, but the amended remedy, through the breakdown of contamination in-situ provides increased protection to the environment with reduced generation of greenhouse gases and a lesser likelihood of bringing contamination from General Switch onto this site.

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.

Groundwater SCGs for both the original and modified remedies are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code. The original remedy requires extraction and treatment of the groundwater to meet the SCGs. The amended remedy utilizes injection of biological agents to breaks down contamination in place.

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 original and modified remedies would present a potential for construction worker and on-site worker exposure due to fugitive emissions including VOCs and particulates during drilling and remedial systems construction. However, an air monitoring program will be implemented during the construction activities, with contingencies to suspend or take other actions to control discharge to the atmosphere.

Potential short-term impacts associated with the shipment, preparation, storage, and use of nutrients or similar material on-site in the injection or groundwater treatment process can be addressed through site security, a health and safety plan, and a use and operations plan. The proposed modified remedy will have fewer short-term impacts to the community because there will be little or no off-site transportation of contaminated soil.

Both the original and proposed amended remedy will take several months to complete construction activities and preparation, can be implemented safely as standard construction practices would be applied, and require nearly the same equipment. However, the amended remedy is more likely to be

effective at destroying contamination in groundwater in the short-term than the original remedy.

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 contamination; 2) the adequacy of the engineering and/or institutional controls intended to limit the risk; and 3) the reliability of these controls.

The original remedy requires extraction and treatment of the groundwater to address contamination. A pump and treat system for groundwater would require an extended period of operation and have difficulty in permanently controlling groundwater contamination in addition to potentially increasing contamination by pulling contamination from off-site sources. For the modified remedy, the in-situ treatment will be designed to distribute the nutrients to the source area attempting to utilize believed pathways of release for thorough distribution. The application of nutrients to "hot spots" will also allow treatment in-situ, as opposed to requiring capture of contamination for treatment. In-situ treatment is considered to be more effective in treating the saturated soils that are contributing to the groundwater contamination. Under both remedies, adequate and reliable engineering controls would be put in place to limit exposure to remaining contamination. These controls include: a groundwater use restriction, groundwater monitoring and a site management plan.

The proposed remedy is expected to provide better long-term effectiveness, persistence and permanence compared to the original remedies with regards to addressing the primary source (contaminated saturated soils) of groundwater contamination.

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 original remedy requires capture of groundwater containing VOCs to reduce mobility and volume of contamination. The proposed, amended remedy provides an equivalent reduction in mobility and volume by treating the contamination in place.

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 proposed remedies being considered are both technically feasible to implement, although the original DPE remedy would require a longer and more complex construction phase to install the extraction and vapor/groundwater treatment equipment compared to injection of biological agents into the subsurface. The proposed in-situ chemical reduction remedy would be easier and quicker to implement since it requires minimal equipment (primary equipment is a drill rig and distribution tank) and causes very little disruption of existing site features. Overall, the pilot

studies will show that due to the decrease in on-site soil contamination the amended remedy is technically feasible and should not present significant difficulties during implementation.

Both remedies are administratively feasible to implement. The proposed remedy will not require administrative activities associated with treated water discharge permits that the original remedy would require.

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 estimated present worth cost to carry out the proposed remedy is $1,160,000. These costs are primarily capital costs to implement the remedy as well as costs for injection and short-term monitoring of the remedy. After ending the injection process, there will be some long-term monitoring costs under the amended remedy. The estimated cost to complete the original remedy groundwater remedy proposed in the original ROD was $2,740,000. Because the proposed amended remedy provides equivalent levels of protection and compliance with other evaluation criteria, it is considered to be more cost effective.

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

8. Community Acceptance. Concerns of the community regarding the proposed changes 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 final remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 9: PROPOSED AMENDED REMEDY

The Department is proposing to amend the ROD document for the Lubricant Packaging Site. The changes to the selected remedy are summarized in Section 7.3 above.

The proposed remedy is referred to as the Enhanced Bioremediation and Institutional Control remedy. The estimated present worth cost to implement the remedy is $1,160,000. The cost to construct the remedy is estimated to be $842,700 and the estimated average annual cost for 4 years is $80,200.

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

1) The remedial design program will be completed and 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: (*modified to include the major green remediation components of the Department's Green Remediation Policy DER-31).*

   - 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; and
   - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2) In-situ Enhanced Bioremediation (ISEB) will be implemented to treat contaminants in the saturated soil and groundwater. Electron donors and nutrients will be injected into the subsurface southwest of the building and two hot spots east of the building until the remedial objectives have been achieved. The injection will occur via injection wells with the final details on nutrients and application to be determined during the remedial design. The need for additional injections will be evaluated should monitoring indicate that remedial action objectives are not being met *(new).*

3) A site cover currently exists and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). *(unchanged*)

4) A sub-slab depressurization system presently exists in the on-site building but covers only the occupied space, not the storage area. The system will continue to be operated and maintained, and if necessary based on an evaluation during the remedial design upgraded to meet appropriate guidance. (*unchanged*)

5) Imposition of an institutional control in the form of an environmental easement for the controlled property that: (*modified from original remedy*).

- Restricts the use and development of the controlled property to commercial and industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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
- requires compliance with the Department approved Site Management Plan.

6) A Site Management Plan is required, which includes the following: (*unchanged*)

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 Paragraph 5 above.

Engineering Controls: The sub-slab depressurization system discussed in Paragraph 4 above and the site cover system discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

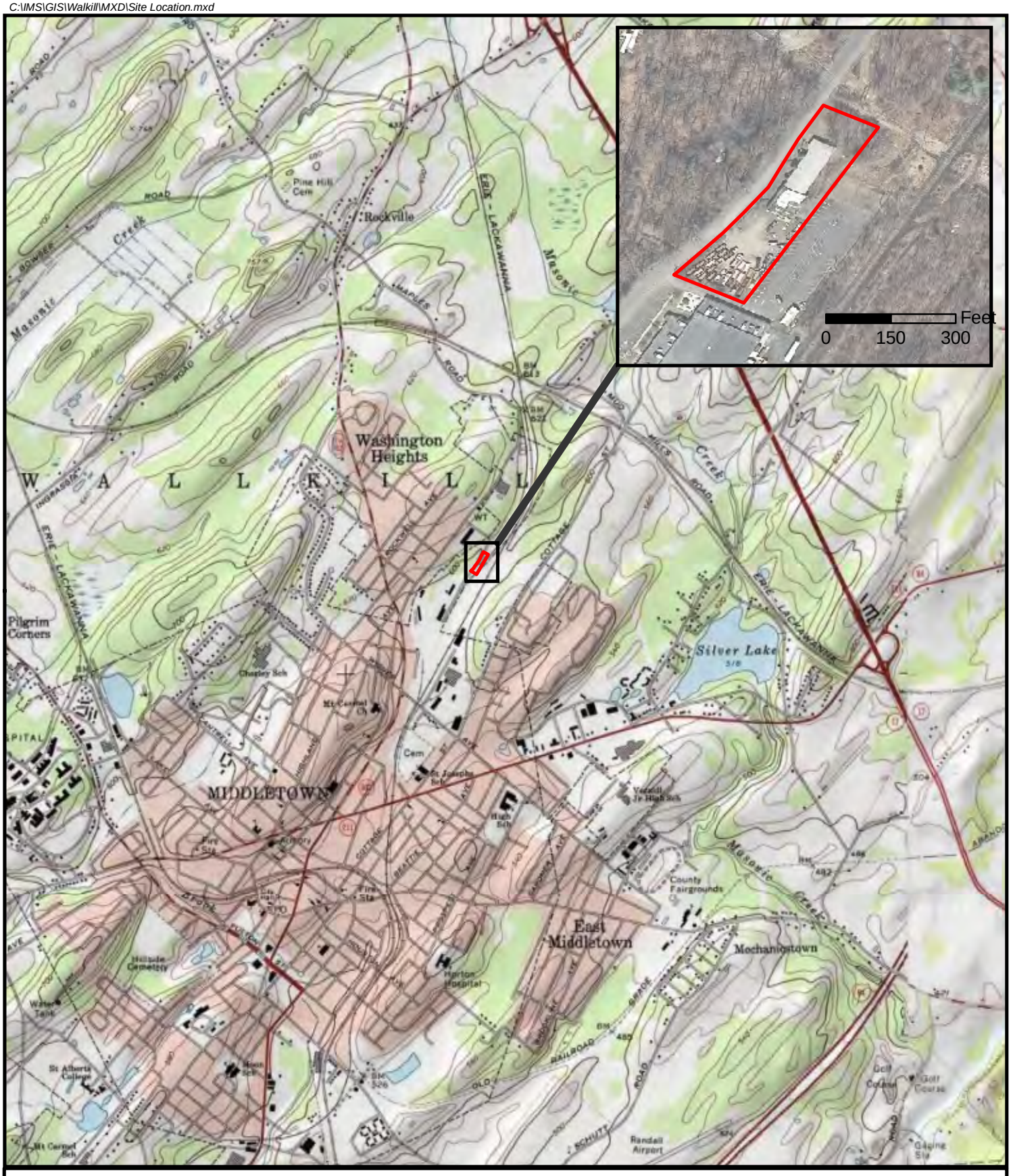
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination, if any;
- descriptions of the provisions of the deed restriction including any land use and/or groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any future buildings developed on the site along with existing site buildings, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision for an evaluation of the potential for off-site soil vapor intrusion, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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 monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above; and;
- Continued evaluation of the potential for soil vapor intrusion of existing site buildings, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion. *(unchanged – updated to reflect current standards)*

C:\IMS\GIS\Walkill\MXD\Site Location.mxd



Legend

Site Boundary

N

Miles
0 0.25 0.5

Figure 1
Site Location Map
Lubricant Packaging Company Site
Middletown, New York

CDM Smith

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Existing Monitoring Well
Site Boundary
Warehouse Doors

N

0 25 50 100 Feet

Figure 2
Site Plan
Lubricant Packaging Company Site
Middletown, New York

CDM Smith

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Sample Location		MW-09
Sample Identification		336034-MW9-12
Sample Date		11/10/2009
Sample Depth		12 feet bgs
Analyte	NYSDEC TOGS	ug/l
cis-1,2-Dichloroethene	5	300
Tetrachloroethene	5	450
trans-1,2-Dichloroethe	5	6.4
Trichloroethene	5	77

MW-09

MW-209

Sample Location		MW-209
Sample Identification		336034-MW209-133
Sample Date		11/10/2009
Sample Depth		133 feet bgs
Analyte	NYSDEC TOGS	ug/l
cis-1,2-Dichloroethene	5	14
Tetrachloroethene	5	120
Trichloroethene	5	17

Sample Location		MW-06
Sample Identification		336034-MW6-6
Sample Date		11/10/2009
Sample Depth		6 feet bgs
Analyte	NYSDEC TOGS	ug/l
cis-1,2-Dichloroethene	5	9.4
Tetrachloroethene	5	91
Trichloroethene	5	12

MW-06

Sample Location		MW-206
Sample Identification		336034-MW206-140
Sample Date		11/10/2009
Sample Depth		140 feet bgs
Analyte	NYSDEC TOGS	ug/l
cis-1,2-Dichloroethene	5	12
Tetrachloroethene	5	37
Trichloroethene	5	13

MW-206

Sample Location		LMW-02
Sample Identification		336034-LMW2-14
Sample Date		11/09/2009
Sample Depth		14 feet bgs
Analyte	NYSDEC TOGS	ug/l
1,1,1-Trichloroethane	5	23
1,1-Dichloroethane	5	35
cis-1,2-Dichloroethene	5	190
Tetrachloroethene	5	39
Trichloroethene	5	59
Vinyl Chloride	2	45
Iron	300	2480
Manganese	300	14700
Sodium	20000	219000

LMW-02

Sample Location		LMW-06
Sample Identification		336034-LMW6-13
Sample Date		03/02/2010
Sample Depth		13 feet bgs
Analyte	NYSDEC TOGS	ug/l
1,1,1-Trichloroethane	5	68
1,1-Dichloroethane	5	38
1,1-Dichloroethene	5	6.2
Chloroethane	5	10
Iron	300	4440
Manganese	300	4090
Sodium	20000	46600

LMW-06

Sample Location		LMW-01	
Sample Identification		336034-LMW1-14	336034-DUP 1
Sample Date		11/09/2009	
Sample Depth		14 feet bgs	
Analyte	NYSDEC TOGS	ug/l	ug/l
1,1,1-Trichloroethane	5	160	160 D
1,1-Dichloroethane	5	27	26
Selenium	10	14.2	10.6
Sodium	20000	50000	50200

LMW-01

Sample Location		LMW-05
Sample Identification		336034-LMW5-40
Sample Date		11/09/2009
Sample Depth		40 feet bgs
Analyte	NYSDEC TOGS	ug/l
Iron	300	3290
Manganese	300	300
Sodium	20000	27000

LMW-05

Sample Location		LMW-03
Sample Identification		336034-LMW3-15
Sample Date		11/09/2009
Sample Depth		15 feet bgs
Analyte	NYSDEC TOGS	ug/l
1,1,1-Trichloroethane	5	130
1,1-Dichloroethane	5	67
1,1-Dichloroethene	5	6.4
Chloroethane	5	7.4
Trichloroethene	5	5.8
Iron	300	922
Manganese	300	467
Sodium	20000	28700

LMW-03

Sample Location		LMW-04
Sample Identification		336034-LMW4-14
Sample Date		11/09/2009
Sample Depth		14 feet bgs
Analyte	NYSDEC TOGS	ug/l
1,1,1-Trichloroethane	5	140
1,1-Dichloroethane	5	17
1,1-Dichloroethene	5	17
Chloroethane	5	9.8
Manganese	300	710
Sodium	20000	33700

LMW-04

LMW-08

LMW-09

INDUSTRIAL PLACE

EDGE OF PAVEMENT

BENCHMARK: 607.21' X-CUT IN SOUTH BONNET BOLT OF HYDRANT

MRL PAVED OVER

GATE

ASPH. PARKING

TIMBER RET. WALL

CONC.

LMP-08 PLANTER

LOADING DOCK

BRUSH

GRAVEL AREA

WOODED AREA

UNPAVED DRIVE

LSB-01 LSB-02 LSB-03 LSB-04 LSB-05 LSB-06 LSB-07 LSB-08 LSB-09 LSB-10 LSB-11 LSB-12 LSB-13 LSB-14 LSB-15 LSB-16 LSB-17 LSB-18 LSB-19 LSB-20 LSB-21 LSB-22 LSB-23 LSB-24 LSB-25 LSB-26 LSB-27 LSB-28 LSB-29 LSB-30 LSB-31 LSB-32 LSB-33 LSB-34 LSB-35

GP-01 GP-02 GP-03 GP-04 GP-05 GP-06 GP-07 GP-08 GP-09 GP-10 GP-11 GP-12 GP-13 GP-14

TP-01 TP-02 TP-03 TP-04 TP-05 TP-06

LSV-01 LSV-02 LSV-03

AA

Hole-01 Hole-02 Hole-03 Hole-04 Hole-05 Hole-06

LMP-01 LMP-02 LMP-03 LMP-04 LMP-05 LMP-06 LMP-07

605 610 615 619 620 625 629

Sample Location		LMW-01	
Sample Identification		336034-LMW1-14	336034-DUP 1
Sample Date		11/09/2009	
Sample Depth		14 feet bgs	
Analyte	NYSDEC TOGS	ug/l	ug/l
1,1,1-Trichloroethane	5	160	160 D
1,1-Dichloroethane	5	27	26
Selenium	10	14.2	10.6
Sodium	20000	50000	50200

Sample Location		LMW-05
Sample Identification		336034-LMW5-40
Sample Date		11/09/2009
Sample Depth		40 feet bgs
Analyte	NYSDEC TOGS	ug/l
Iron	300	3290
Manganese	300	300
Sodium	20000	27000

Sample Location		LMW-03
Sample Identification		336034-LMW3-15
Sample Date		11/09/2009
Sample Depth		15 feet bgs
Analyte	NYSDEC TOGS	ug/l
1,1,1-Trichloroethane	5	130
1,1-Dichloroethane	5	67
1,1-Dichloroethene	5	6.4
Chloroethane	5	7.4
Trichloroethene	5	5.8
Iron	300	922
Manganese	300	467
Sodium	20000	28700

Sample Location		LMW-04
Sample Identification		336034-LMW4-14
Sample Date		11/09/2009
Sample Depth		14 feet bgs
Analyte	NYSDEC TOGS	ug/l
1,1,1-Trichloroethane	5	140
1,1-Dichloroethane	5	17
1,1-Dichloroethene	5	17
Chloroethane	5	9.8
Manganese	300	710
Sodium	20000	33700

Legend

- Site Boundary
- Soil Vapor Sampling Location
- Historical Sub-slab Soil Gas Locations
- Ambient Air Sampling Location
- Geoprobe Sampling Location
- Test Pit
- Monitoring Port
- Monitoring Well
- Soil Boring

Note:
Highlighted values exceed NYSDEC Technical and Operational Guidances Series (TOGS) 1.1.1 groundwater effluent limitations.
All units in µg/L.
D = Diluted
J = Estimated

0 20 40 80 Feet

Figure 3
Groundwater Exceedance Summary
Lubricant Packaging COmpany Site
Middletown, New York
CDM

\\Ednsvr01\GIS\Lubricant_Packaging_Beattie\MXD\Pre-Design_Report\Figure_5-1_Soil_Exceedance_Summary.mxd

Sample Location	GP-11		
Sample Date	7/3/2001		
Sample Depth	3.5 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Acetone	50	98	B

Sample Location	GP-12		
Sample Date	7/3/2001		
Sample Depth	4 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Acetone	50	180	

Sample Location	LMW-03		
Sample Date	Aug-93		
Sample Depth	11 feet bgs		
Anlayte	NYCRR SUBPART /TAGM		
1,1,1-Trichloroethane	680	2,000	J
Tentatively Identified Compounds (TICs)	>10,000	301,000	J

Sample Location	LSB-18		
Sample Identification	336034-LSB18-3		
Sample Date	10/29/2009		
Sample Depth	3 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Chromium	10	11.5	
Iron	2000	19200	

Sample Location	LSB22		
Sample Identification	336034-LSB22-10		
Sample Date	10/27/2009		
Sample Depth	10 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Acetone	50	90	

Sample Location	LSB-05		
Sample Identification	336034-LSB05-7.5		
Sample Date	10/27/2009		
Sample Depth	7.5 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Tentatively Identified Compounds (TICs)	>10,000	20,770	J
Chromium	10	13.7	
Iron	2000	21300	

Sample Location	LSB-10		
Sample Identification	336034-LSB10-6.5	336034-LSB10-6.5-DUP	
Sample Date	10/27/2009		
Sample Depth	6.5 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Chromium	10	11	12
Iron	2000	16500	16400

Sample Location	GP-02		
Sample Date	7/3/2001		
Sample Depth	5 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Acetone	50	76	B

Sample Location	LMW-06		
Sample Identification	336034-LMW6-(14-16)		
Sample Date	02/19/2010		
Sample Depth	14 to 16 bgs		
Analyte	NYCRR Subpart/TAGM		
Chromium	10	18.9	
Iron	2000	20,100	

Sample Location	TP-02		
Sample Date	Aug-93		
Sample Depth	8 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
1,1,1-Trichloroethane	680	14,000	
Tentatively Identified Compounds (TICs)	>10,000	1,781,513	J

Sample Location	LSB-03		
Sample Identification	336034-LSB03-5		
Sample Date	10/27/2009		
Sample Depth	5 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Chromium	10	12.4	
Iron	2000	66400	
Lead	450	2630	
Mercury	0.73	0.926	
Selenium	4	4.71	

Sample Location	TP-01		
Sample Date	Aug-93		
Sample Depth	4 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
1,1,1-Trichloroethane	680	4,200	
Tentatively Identified Compounds (TICs)	>10,000	73,038	J

Sample Location	GP-14		
Sample Date	7/3/2001		
Sample Depth	7 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Acetone	50	65	B

Sample Location	LSB20		
Sample Identification	336034-LSB20-11		
Sample Date	10/27/2009		
Sample Depth	11 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Tentatively Identified Compounds (TICs)	>10,000	117,500	

Sample Location	GP-06		
Sample Date	7/3/2001		
Sample Depth	10 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
Acetone	50	110	B
Tentatively Identified Compounds (TICs)	>10,000	14,740	J

Sample Location	LSB24		
Sample Identification	336034-LSB24-7		
Sample Date	10/29/2009		
Sample Depth	7 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
1,1,1-Trichloroethane	680	850	
Chromium	10	13.7	
Iron	2000	17900	

Sample Location	LMW-04		
Sample Date	Aug-93		
Sample Depth	5 feet bgs		
Analyte	NYCRR SUBPART /TAGM		
1,1,1-Trichloroethane	680	770	J
Tentatively Identified Compounds (TICs)	>10,000	425,000	J

Legend

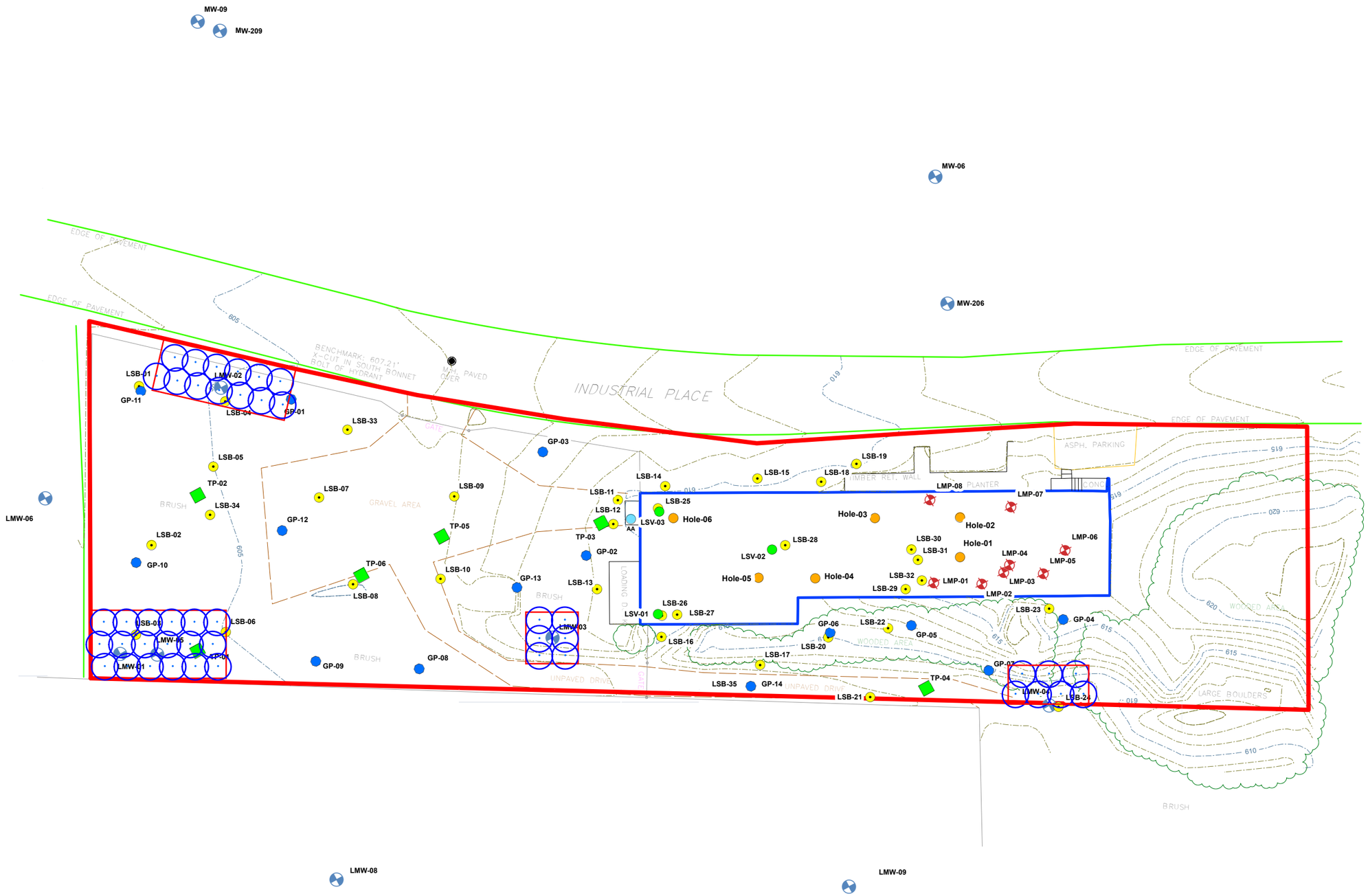
- Site Boundary
- Soil Vapor Sampling Location
- Historical Sub-slab Soil Gas Locations
- Ambient Air Sampling Location
- Geoprobe Sampling Location
- Test Pit
- Monitoring Port
- Monitoring Well
- Soil Boring

Note:
Highlighted values exceed NYCRR Subpart 375-6.8(b) Remedial Program Soil Cleanup Objectives for the Protection of Groundwater or, where there is no Part 375 criteria, exceed the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Soil Cleanup Objectives.
All VOC data is in µg/kg; metals data is in mg/kg.
J = Estimated

0 20 40 80 Feet

Figure 4
Soil Exceedance Summary
Lubricant Packaging Company Site
Middletown, New York

CDM



Legend

- Site Boundary
- Soil Vapor Sampling Location
- Historical Sub-slab Soil Gas Locations
- Ambient Air Sampling Location
- Test Pit
- Monitoring Port
- Monitoring Well
- Soil Boring
- Geoprobe Sampling Location
- Injection Point with Anticipated Radius of Influence
- Area Exceeding Groundwater Criteria

0 20 40 80 Feet

Figure 5
Enhanced Bioremediation Injection Layout
Lubricant Packaging Company Site
Middletown, New York

CDM