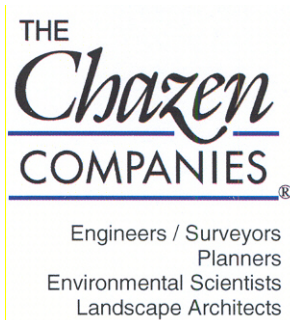


***Supplemental Interim Remedial Measures
Work Plan***

Former Packaged Lighting Systems, Inc.
Brownfield Cleanup Program
NYSDEC Site No. C336079

Village of Walden
Orange County, New York

April 2013
Revised June 2013



**Estate of Hy Hilzen
c/o Dr. Michael Daniels
25 Flag Hill Road
Chappaqua, New York 10514
And
New York State Department of Environmental
Conservation –
Division of Environmental Remediation
625 Broadway
Albany, New York 12233**

I certify that I am currently a NYS registered professional engineer and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Mr. Daniel W. Stone, PE

TABLE OF CONTENTS

1.0	INTRODUCTION, BACKGROUND AND PURPOSE	1
2.0	PROPOSED INTERIM REMEDIAL ACTION – GROUNDWATER TREATMENT	2
3.0	POST-INJECTION MONITORING.....	2
4.0	HEALTH & SAFETY PLAN AND NYSDEC NOTIFICATIONS.....	3
5.0	SCHEDULE.....	4

LIST OF FIGURES

Figure 1: Site Location Map

Figure 2: Proposed Injection Locations

1.0 INTRODUCTION, BACKGROUND AND PURPOSE

This Supplemental Interim Remedial Measures Work Plan (WP) outlines elements of an in-situ groundwater remedial design to address residual solvent impacts at the Former Packaged Lighting Systems, Inc. site (Figures 1 and 2). This Brownfields Cleanup Program (BCP) Site is undergoing Remedial Investigation activities to assess impacts related to the past release of chlorinated solvents at the commercial/industrial property.

Site Remedial Investigation work has been occurring since December 2011 in accordance with a Remedial Investigation and Interim Remedial Measures (RI/IRM) Work Plan dated October 21, 2011 and addendum dated December 19, 2011. This Supplemental Work Plan was prepared following receipt of initial RI sampling results and NYSDEC input.

Chlorinated solvent impacts were identified in groundwater during a 2010 investigation of the Site, performed by others. Trichloroethylene (TCE) is the primary compound of concern. RI activities completed to date under the BCP have been conducted to assess the nature and extend of TCE impacts on the Site and have included the following activities:

- A geophysical survey of the property to identify potentially buried objects;
- Shallow test pitting and sampling to assess anomalies identified through the geophysical survey;
- Indoor vapor sampling to investigate potential interior source area and assess indoor air quality;
- Sampling of a drainage system/suspect source area;
- Surface soil sampling of suspect areas;
- Subsurface soil sampling; and
- Groundwater well installation and sampling.

TCE was previously detected in groundwater at concentrations on the Site ranging from less than 5 parts per billion (ppb) to 440 ppb. The highest TCE concentrations were detected in monitoring wells MW-1 and MW-10 (**Figure 2**). MW-10 is located just off-site and is situated to the north-northeast and down gradient of MW-1. Two wells located between wells MW-1 and MW-10 report lower TCE concentrations, suggestive of a variable residual site TCE presence. RI activities have not identified a specific source of TCE on the Site.

Supplemental RI activities were conducted in May 2013 including additional sampling and the installation of two off-site wells (MW-12 and MW-13) to assess potential migration of TCE impacts to the north and northeast. The two new wells were sampled along with four existing wells (MW-1, MW-3, MW-8 and MW-10) that had exhibited the greatest TCE concentrations during the September 2012 sampling event.

In three of the pre-existing wells, TCE concentrations detected in May, 2013 exhibited lower concentrations than in the 2012 sampling event, demonstrating what may be normal data variability on

the site. Data from existing well MW-10 was generally consistent with the prior concentration (440 ppb in 2012 and 480 ppb in 2013). TCE was also detected in the new off-site wells, with MW-12 at 210 ppb and MW-13 at 100 ppb. These new data suggest TCE impacts are detectable in down gradient, off-site locations but concentrations decrease significantly within a relatively short distance from the Site due to natural attenuation processes. The proposed work will be conducted in accordance with procedures outlined in the previously approved RI/IRM Work Plan.

- Inject treatment compounds into groundwater that will cause residual chlorinated solvents to break down to carbon dioxide and water.
- Perform post-injection monitoring.
- Finalize project BCP documents to achieve Certificate of Completion. Subsequent groundwater monitoring is expected to be included in the Site Management Plan.

2.0 PROPOSED INTERIM REMEDIAL ACTION – GROUNDWATER TREATMENT

The use of an in-situ chemical oxidation treatment program is proposed using sodium persulfate. This remedial method is effective for residual dissolved chlorinated solvents and can result in relatively quick treatments, often with a 50% reduction from one application, while limiting interference with physical conditions of the Site.

At this site, the sodium persulfate will be injected at points spaced across two Site areas where groundwater data have shown the greatest TCE impacts. One area is around MW-1 and MW-8. The other area is south of MW-10. The MW-1/MW-8 injection area will hereinafter be referred to as the “Injection Area A” and the MW-10 injection area will hereinafter be referred to as the “Injection Area B.” It is anticipated that 14 injection points will be installed within Injection Area A and that 10 injection points will be installed within Injection Area B. **Figure 2** depicts the approximate locations and the proposed injection points. Based on site geology and depth to the groundwater table, the target depth for the injections in Injection Area A is between 9 and 12 feet below grade, and the target depth for Injection Area B is between 7 and 10 feet or less where injections can occur within the basement. For Injection Area A, it is anticipated that 840 pounds of persulfate will be mixed with water and distributed amongst the 14 injection points. For Injection Area B, approximately 1,200 pounds of persulfate will be mixed with water and distributed to approximately 10 injection points. The mixtures will be introduced by gravity flow through the injection points. Field monitoring will be conducted to measure oxidation and reduction parameters and pH.

3.0 POST-INJECTION MONITORING

Approximately 45 days after the injection program is complete; the seven monitoring wells will be resampled to assess the effectiveness of the treatment. The groundwater samples will be analyzed for Volatile Organic Compounds (VOCs) via USEPA Method 8260. Appropriate duplicate and quality control samples will also be collected and analyzed consistent with the existing RI/IRM Work Plan.

One injection event is proposed, with a target performance goal to result in approximately 50% reduction in groundwater concentrations of the impacted wells. Monitored natural attenuation is anticipated to be an acceptable approach following completion of the injection; however, one more round of injections may be conducted to achieve additional groundwater concentration reductions, if deemed necessary.

4.0 HEALTH & SAFETY PLAN AND NYSDEC NOTIFICATIONS

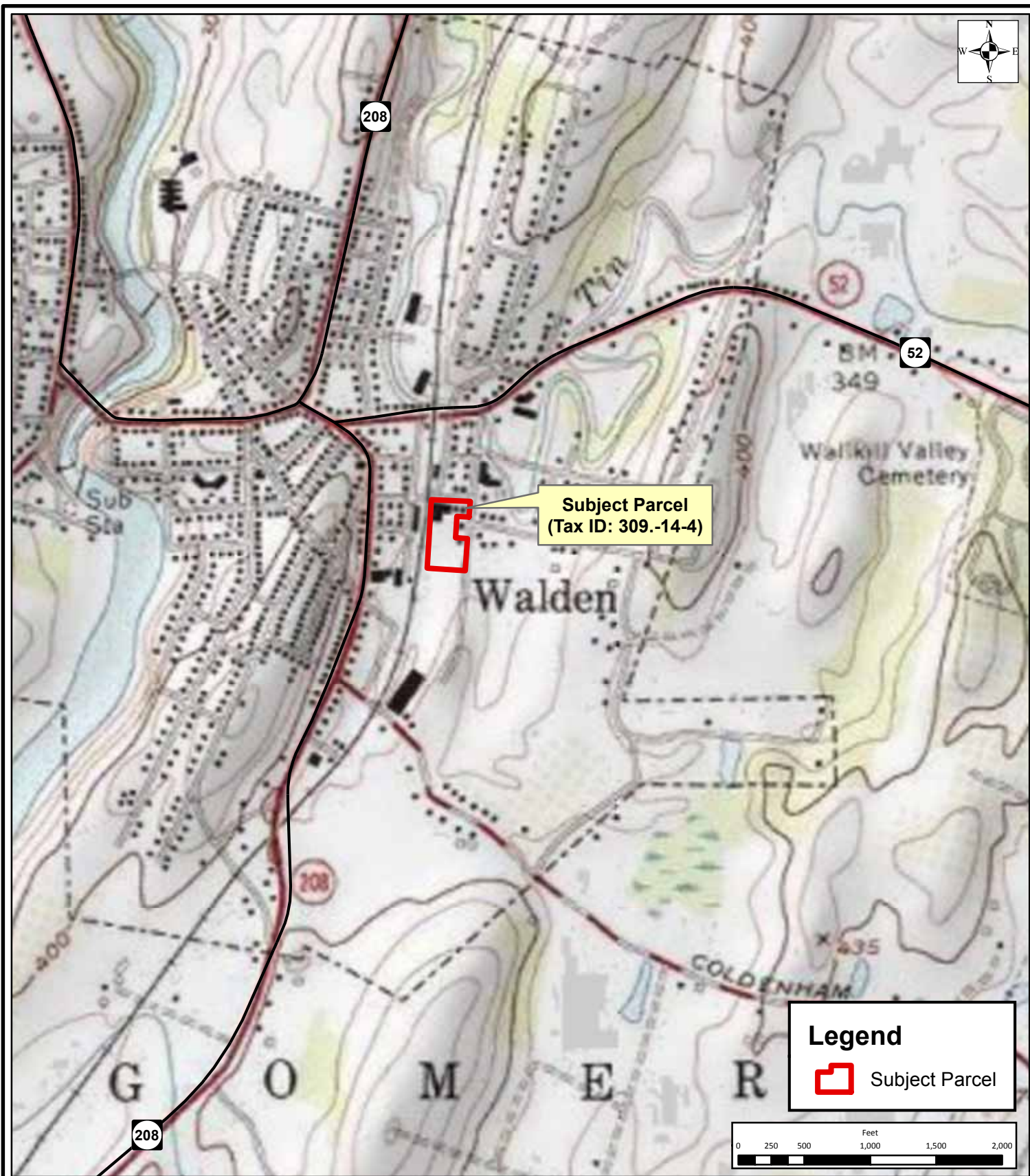
The NYSDEC will be given at least one week notice prior to the start of work. Field work will be conducted in accordance with the site-specific Health and Safety Plan (HASP) dated October 2011 and with the addition of specific information to address the use of sodium persulfate.

5.0 SCHEDULE

The schedule for implementation of this proposed IRM is as follows:

- A draft Supplemental IRM work plan for this work has been previously submitted for public comment. Following the end of the public comment period on June 24, 2013 and the NYSDEC and NYSDOH approval of this revised Supplemental Work Plan, the IRM work will be scheduled. It is estimated that the field work will be completed in one week. Work is anticipated in early July 2013.
- Post-injection sampling will be completed approximately 45 days after the injection is complete (anticipated August 2013).
- Laboratory analysis: two weeks
- Data reduction upon receipt of laboratory samples: two to three weeks.
- Submit Draft Alternatives Analysis: August 2013
- Submit Draft Construction Completion Reports/Final Engineering Report: September 2013

Figures



Legend

 Subject Parcel

THE
Chazen
COMPANIES
ENGINEERS/SURVEYORS
PLANNERS
ENVIRONMENTAL SCIENTISTS
LANDSCAPE ARCHITECTS

Dutchess County Office:
21 Fox Street, Poughkeepsie, NY 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street, Troy, NY 12180
Phone: (518) 273-0055

Glens Falls Office:
100 Glen Street, Glens Falls, NY 12801
Phone: (518) 812-0513

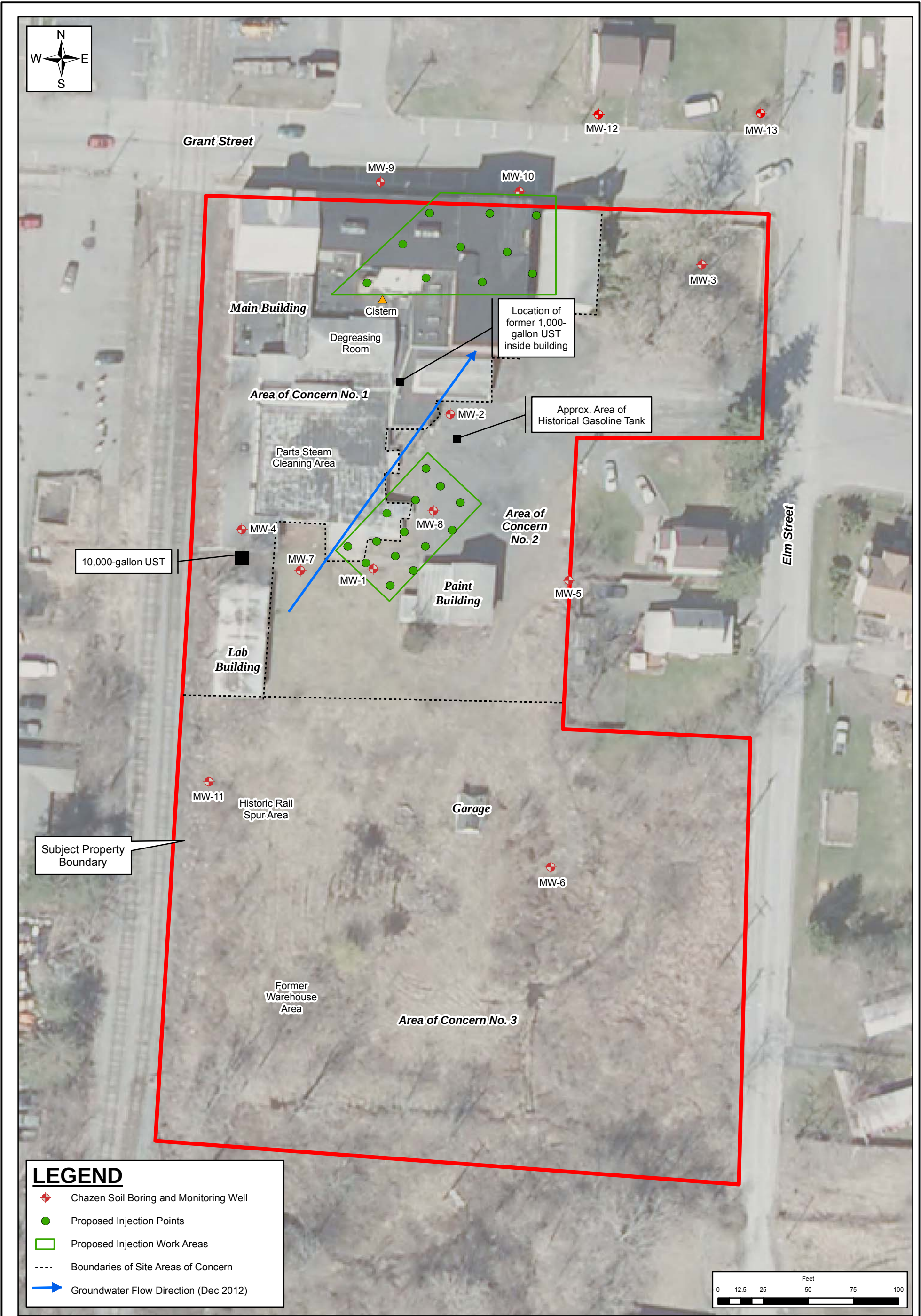
Former Packaged Lighting Systems, Inc. Site

Figure 1 - Site Location Map

29 Grant Street
Village of Walden, Orange County, New York

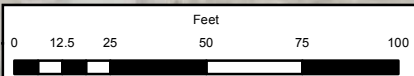
Source: U.S.G.S. Topographic Map Dated 1978, Photo Revised 1980: USGS Ref. Code: Walden - 41074-E2-TF-024; Village of Walden 2007 Tax Parcel Data; State of New York DOT 2008 Roads dataset.

Drawn:	EJO
Date:	June 2013
Scale:	As Shown
Project:	41115.00
Figure:	1



LEGEND

- Chazen Soil Boring and Monitoring Well
- Proposed Injection Points
- Proposed Injection Work Areas
- Boundaries of Site Areas of Concern
- Groundwater Flow Direction (Dec 2012)



CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTS CO., P.C.

Dutchess County Office:
21 Fox Street
Poughkeepsie, NY. 12601
Phone: (845) 454-3980

Capital District Office:
547 River Street
Troy, NY. 12180
Phone: (518) 273-0055

North Country Office:
375 Bay Road
Queensbury, NY. 12804
Phone: (518) 812-0527

This map is a product of The Chazen Companies. It should be used for reference purposes only. Reasonable efforts have been made to ensure the accuracy of this map. The Chazen Companies expressly disclaims any responsibilities or liabilities from the use of this map for any purpose other than its intended use.

Former Packaged Lighting Systems, Inc. Site Figure 2 - Proposed Injection Locations 29 Grant Street Town of Walden, Orange County, New York

Source: NYS Department of Homeland Security and Emergency Services 2010 Orthimagery;
Existing Sample Locations and Site Features from Going Phase II, 2010;
Proposed Features Drawn by Chazen, 2011-2012.

Drawn:	JLK / EJO / RL
Date:	June 2013
Scale:	1:600
Project:	41115.00
Figure:	1