

**InteGreyted**  
consultants

104 Jamesville Road, Syracuse, New York 13214

Phone (315) 445-0224

Fax (315) 445-0793

*File 4840  
ALDI*

30 March 2001


Mr. Philip G. Waite, P.E.  
Region 6-Environmental Remediation  
New York State Department of Environmental Conservation  
317 Washington Street  
Watertown, New York 13601

Re: Remedial Work Plan – revision 1.0  
Former Green & Sons Fuel Oil Site  
166 Central Avenue - Ilion, New York  
NYSDEC Spill No. 9701402  
VCP Identification No. V00426-6  
InteGreyted Project No. 0012015P

Dear Mr. Waite:

Enclosed please find 4 copies of the revised Remedial Work Plan for the subject site. If you have any questions or comments with the submittal please contact the undersigned at 315-445-0224 or e-mail me ([mschumacher@integreyted.com](mailto:mschumacher@integreyted.com)). We look forward to you timely and favorable response.

Sincerely,  
INTEGREYTED CONSULTANTS, LLC



Mark J. Schumacher  
Project Manager

# InteGreyted consultants

104 Jamesville Road, Syracuse, New York 13214

Phone: (315) 445-0224

Fax: (315) 445-0793

28 March 2001

Mr. Philip G. Waite, P.E.  
Region 6-Environmental Remediation  
New York State Department of Environmental Conservation  
317 Washington Street  
Watertown, New York 13601

Re: Remedial Work Plan – Revision 1.0  
Former Green & Sons Fuel Oil Site  
166 Central Avenue - Ilion, New York  
NYSDEC Spill No. 9701402  
VCP Identification No. V00426-6  
InteGreyted Project No. 0012015P

Dear Mr. Waite:

On behalf of Ventura-Taylor Outparcel, LLC (Ventura), InteGreyted Consultants, LLC (InteGreyted) is presenting this Remedial Work Plan (Revision 1.0) for remediation of petroleum residuals in soil at the subject site. Ventura has expressed an interest in proactively remediating this site so that the property can be prepared for commercial development. Ventura is not the responsible party; however, they are seeking to implement remedial cleanup actions at the site in order to facilitate planned site development activities. The scope of work described herein is based on data obtained during InteGreyted's recently completed Phase II Site Investigation and site investigation work previously completed by others. The proposed scope of work is designed to remediate soils at the site to the applicable standards previously determined for the site by the New York State Department of Environmental Conservation (NYSDEC).

Ventura plans to remediate this site under New York State's Voluntary Cleanup Program (VCP), and Ventura has completed and submitted a VCP application to the State under separate cover.

## **BACKGROUND**

The subject site is located at 166 Central Avenue (Latitude 043° 01' 8.37" N, Longitude 075° 01' 55.01" W) in the Village of Ilion, Herkimer County, New York (Figure 1). The site consists

December 2000, with NYSDEC. Following receipt of the VCP application, NYSDEC assigned Identification No. V00426-6 to the site. Following purchase of the subject property, Ventura intends to construct an approximately 15,000-square-foot supermarket, along with supporting entrance drive, parking lot and utilities on the subject site and the adjoining four properties, which are identified as 168 to 178 Central Avenue.

## **SITE HISTORY AND PREVIOUS INVESTIGATIONS**

### ***Site History***

Available information provided from previous site investigation reports that were prepared by others, in addition to available maps (Sanborn Fire Insurance Maps), aerial photos and city directories were used to develop the following history of the site. The list of documents utilized by InteGreyted to prepare this historical summary is provided in Attachment 1.

In 1925 the subject site consisted of undeveloped property. At some time between 1929 and 1936, Green and Sons Service Station began operations at the site and remained at the site until between 1966 and 1968 when it became Green and Sons, Inc. Fuel Oil (a bulk petroleum distributor). Available maps for 1950 confirm the presence of a filling station and three associated petroleum storage tanks near the station (at the northwest and northeast building corners) along with at least three above ground storage tanks (ASTs) to the east of the station. In 1959, it appears that the size of the filling station doubled; however, the three tanks previously observed near the building were not present. The site remained listed as Green and Sons, Inc. Fuel Oil until 1992, when its listing became Agway Energy Products. Available directories for 1995 to 1996 listed the site as being vacant.

New York State (NYS) Petroleum Bulk Storage (PBS) reports indicate that Martin Green and Sons, Inc. located at the subject site's address had operated a bulk petroleum storage terminal and petroleum distributorship at the site prior to 1996. Five tanks including three 20,000-gallon fuel oil ASTs and two 10,000-gallon kerosene ASTs were formerly located on the eastern unpaved section of the site. Available information indicates these tanks were closed and removed from the site prior to 1996.

### ***Previous Investigations***

A summary of the previous environmental assessments and site investigations performed at the

dated and should be dated as 5 March 1997) confirmed the site history described above. In addition, the ESA indicated that, at the time of the ESA site visit, one 1,000-gallon fuel oil underground storage tank (UST) and one 275-gallon AST were located onsite. The UST was located near the northwest corner of the building and was reported to contain fuel oil. Reportedly, the UST was between 10 and 20 years old. In addition to the UST, a fuel oil AST (installed in approximately 1995) was located within the onsite building. There were no records of spills and/or violations associated with any of the tanks located onsite.

#### *Subsurface Investigation and Geotechnical Report*

In March of 1997, CHA performed a Geotechnical Investigation at the site to evaluate subsurface conditions and provide recommendations for foundation design and construction of a proposed Aldi store at the subject site. As part of the geotechnical investigation, nine soil borings were installed across the site and adjacent parcels (see Attachment 2). Findings presented in the Geotechnical Report dated 18 March 1997 indicated that fuel oil odors were noted in four soil borings (B-2, 3, 4, and 6) at shallow depths (between 2 feet and 10 feet below grade). InteGreyted's review of the boring locations indicated that these borings were located in areas where tanks were reported to have been previously located onsite.

#### *UST Removal*

Available information contained in the limited Phase II Environmental Site Investigation (Phase II) prepared by CHA (dated 18 April 1997) indicated that in March of 1997 the site owner had removed the 1,000-gallon fuel oil UST that reportedly was located near the northeast corner of the building. An UST closure report including soil confirmation sampling data was not available for review. Based on available information and conversations with CHA and Aldi, it appears that the site owner did not prepare an UST closure report for the removal of this tank.

#### *Phase II Environmental Site Investigation*

In March of 1997, CHA performed a limited Phase II Environmental Site Investigation (Phase II) at the subject site to determine the source of petroleum odors detected in soils during the geotechnical investigation, to delineate the extent of any petroleum impacted soils, and to determine if groundwater had been impacted. As part of the Phase II investigation, ten Geoprobe soil borings were advanced to depths of between 5 and 12 feet below grade across the area located near the former 1,000-gallon UST and to the east of the building in the area where the 275-gallon AST was located (see Attachment 2). Soil samples were screened for volatile organic

- Elevated soil gas readings (above 50 ppm) were detected in four soil borings (GP-1, 4, 6 and 9). The locations of these borings were found to corresponded with the known locations of the 1,000-gallon UST and the fuel oil and kerosene ASTs that were previously located onsite. **Note:** Soil samples were not collected for laboratory analysis; therefore, a determination of the nature and concentrations of any petroleum compounds detected (by PID screening) in soils across the site could not be made at the time of CHA's Phase II. In addition, the available screening data was not sufficient to assess potential remedial alternatives and/or to assess the degree of impact in relation to applicable NYSDEC guidance values.
- Groundwater data for samples collected from the temporary wells indicated that VOCs and SVOCs were detected in each of the wells, however, concentrations for most compounds were below or “minimally” above the applicable NYS Class GA groundwater standards (see Attachment 2). The highest concentrations of detected compounds were observed in the sample from boring TW-1 that was located immediately adjacent to the former 1,000-gallon UST. **Note:** Sampling results from these temporary wells are “suspect” because the wells were installed within soil borings without any provisions to prevent impacted materials from zones above the water table from dislodging and falling into the screened interval and affecting sample integrity. Based on available well sampling logs and field notes it appears that sample integrity may have been compromised. In addition, the available well sampling logs indicate that the temporary wells were not purged or developed following installation and prior to sampling. Based on this information it does not appear that “representative” groundwater samples were collected from the temporary wells.

### *Remedial Action Plan*

Following completion of their Phase II, CHA prepared a Remedial Action Plan (RAP), dated June 1997, to address petroleum-impacted media observed at the site during their previous field investigation tasks. Available information indicates that CHA, on behalf of Aldi, submitted the RAP to NYSDEC for review and approval pursuant to the completion of a voluntary cleanup agreement between Aldi (who planned to purchase the property) and NYSDEC.

Subsequently, in a letter from NYSDEC to CHA (dated 1 August 1997), NYSDEC indicated that prior to approval of the RAP additional investigation work was necessary to define the nature and extent of impacted media. In addition, NYSDEC also requested that offsite migration pathways be evaluated.

augers to prevent the collapse of soils around the screen. According to the CHA report, these wells were purged prior to sampling and samples were collected with dedicated bailers. Eight soil and eight groundwater samples were also collected and submitted for laboratory analysis of VOC and SVOC parameters.

InteGreyted's review of the findings presented in the supplemental Site Investigation report dated 4 May 1998 indicated the following.

- VOCs and SVOCs were detected in soils samples collected from soil borings and test pits at concentrations in excess of the NYSDEC STARS Memo #1 guidance values for soils (see Attachment 2). The sampling data from the soil borings confirmed that soils near the former UST and ASTs were impacted with petroleum compounds above STARS guidance values.
- The groundwater sampling data indicated that VOCs at concentrations above the NYS Class GA groundwater standards were detected in one well (GW-3). VOCs and SVOCs were not detected in any of the other wells located onsite or on adjacent parcels (see Attachment 2).
- The CHA data document that groundwater is not affected at the site with the exception of one localized "hot spot" at a former source area.
- Based on the available data, CHA concluded, "there did not appear to be a need for groundwater remediation or an offsite investigation of groundwater quality".

#### *Off-site Investigation*

In May of 1998, CHA performed an Off-Site Investigation on properties adjacent to the subject site. The objectives of the investigation were to evaluate groundwater quality in the area and potential off-site migration via utility trenches. As part of the investigation, three groundwater samples were collected from temporary offsite wells (GW-9, 10 and 11), three water samples (SS-1, 2 and 3) were collected from locations within the adjacent storm sewers, and two water samples (SAN-1 and 2) were collected from locations within the adjacent sanitary sewers (see Attachment 2). The samples were submitted for laboratory analysis of STARS VOC and SVOC parameters.

InteGreyted's review of the findings presented in the additional Off-Site Investigation report dated 2 June 1998 indicated the following.

In addition to the findings presented in the Off-Site Investigation report, CHA recommended revisions to the RAP that was submitted to NYSDEC in June of 1997. These revisions were based on the findings of the additional investigations completed in 1998. In a letter from NYSDEC to CHA, dated 23 June 1998, NYSDEC summarized their position on the project and proposed RAP (see Attachment 3). Of the items detailed in the letter from NYSDEC the most significant amendment to the RAP was focused on the cleanup goals for the site. As indicated by NYSDEC “Aldi’s request to utilize TAGM 4046 cleanup goals where available for those constituents included on Tables 1 and 2 of Appendix B of the STARS Memo #1 Guidance Policy is acceptable”. In addition, NYSDEC suggested that a “cleanup goal of 1,200 ppb be used for constituents not specifically listed in TAGM 4046”.

#### *Phase II Site Investigation (InteGreyted)*

Ventura has expressed an ongoing interest in proactively remediating the subject site so that the property can be prepared for commercial development. However, prior to purchasing the property from the current owner (Projectrac Corp.), Ventura contracted InteGreyted to assess available site information and to conduct a Phase II Site Investigation that would accurately assess the current environmental conditions at the site and determine the nature and extent of petroleum compounds in soils at the site. As part of this Phase II, InteGreyted evaluated available investigation reports issued by CHA for Aldi and determined that the nature and extent of impacted soils at the site had not been adequately defined. InteGreyted then developed a scope of work that was designed to collect site-specific information required to determine the applicability and effectiveness of remedial options for the site.

The Phase II site investigation was conducted at the site by InteGreyted between 13 and 16 November 2000. As part of the investigation, InteGreyted installed 41 Geoprobe soil borings at the site to depths of up to 12 feet below grade (See Attachment 4). Based on field observations and PID screening data, 15 soil samples were selected for laboratory analysis. The selected samples were analyzed for STARS VOC and SVOC parameters. In addition to the borings, 7 test pits were installed across known areas of petroleum-impacted soils and suspect areas where an UST was allegedly located (See Attachment 4). The test pits were installed to verify the extent of petroleum-impacted soils in various areas and to determine if USTs were present near the former building.

Results of InteGreyted’s Site Investigation activities indicated the following.

Results of the investigation indicated the presence of soil and gravel along with some fill (ash, cinders

- USTs were not encountered in test pits (TP-2 and TP-3) excavated along the northern wall and at the northwest corner of the former building. Field observations and available reports indicated that there were no USTs remaining on-site.
- Field observations (Table 1) and analytical data (Table 2) indicated that petroleum-impacted soils were isolated within a limited area (see Attachment 4). Petroleum-impacted soils were typically encountered between depths of 2 feet to 7 feet below grade across the indicated area. The thickness of impacted soils was variable, but on average was approximately 5 feet in vertical extent. Impacted soils were typically not detected at the silt and clay soil interface, which was present at depths of between 7 feet and 8 feet below grade, except for the presence of potentially affected soil to 10 feet at several locations.
- Soil analytical data indicated that VOCs and SVOCs were detected in the soils at concentrations in excess of NYSDEC STARS Memo #1 and TAGM 4046 values (see Attachment 4). However, it should be noted that the VOCs and SVOCs detected were not at concentrations that were “significantly” (i.e. an order of magnitude) above these values.
- A review of the analytical data also confirmed that soils within the affected area typically were “clean” at depths of 7 feet to 8 feet below grade, and all soils outside of the indicated impacted area were “clean” (VOCs and SVOCs non detect or below guidance values). Based on the analytical and field screening data, InteGreyted believes that the extent of petroleum-impacted soils at the site has been clearly defined.
- Impacted groundwater was not encountered during the site investigation. Soils within the saturated zone were typically found to be clean and no sheens or petroleum product was detected in any of the borings.

#### *UST Evaluation (InteGreyted)*

On 20 March 2001, a test pit was excavated to a depth of 10 feet below grade in the area of the former 1,000-gallon fuel oil UST to determine if the UST had been removed as was reported by CHA. NYSDEC’s representatives (Mr. Philip Waite and Mr. Darrell Sweredoski) were onsite to observe the excavation activities. Field observations indicated that a UST was not present. Petroleum-impacted soils were observed at depths of 1.5 to 6.5 feet below grade and were underlain by silt and clay deposits, which appeared to be “clean” (no staining or odors). Groundwater and/or petroleum free product was not



23 June 1998 letter from NYSDEC to CHA (see Attachment 3). Based on this correspondence, InteGreyted assumes that the applicable cleanup goals for remediation at the site are the values indicated in TAGM 4046 where available for those constituents included in the STARS Guidance Policy. For constituents not specifically listed in TAGM 4046, a cleanup goal of 1,200 ppb is in effect. In addition, based on available groundwater data, it does not appear that groundwater at the site is impacted or that an impacted groundwater plume is migrating offsite. Therefore, remediation and/or groundwater monitoring is not necessary.

## **PROJECT SCOPE**

### ***Objective***

The goal of the proposed remediation is to implement *in situ* ozone remedial technologies, in the form of soil vapor extraction (SVE) with ozone sparging, to mitigate residual adsorbed-phase hydrocarbon impacts at the site to the applicable remediation goal as stated above. It is InteGreyted's belief that ozone treatment of the subsurface soils is the most effective remediation technology available that will allow for proper remediation of the site along with the anticipated development of the property in a timely fashion.

### ***Ozone Remediation***

Chemical oxidation has been utilized in the wastewater treatment industry for more than a century, and these technologies have been proven highly efficient and effective at remediating a wide variety of contaminants in the controlled environment of a wastewater treatment system, including chlorinated and petroleum hydrocarbons, phenols and ketones. Over the last decade, there has been an increasing effort to bring these technologies to the realm of *in situ* application.

The use of ozone as the oxidizing agent to implement *in situ* chemical oxidation of soil and groundwater contaminants has been proven effective, economical and highly efficient. Ozone is a more powerful oxidizer than either peroxide or permanganate, and ozone is generated on-site from process equipment, so there is little recurring expense for production, unlike the aqueous commodities. Also, as a gas, ozone is much easier to deliver to the subsurface, and exhibits better subsurface distribution.

Ozone is a relatively unstable molecule, with a very short half-life. The half-life of ozone in air is approximately 2 minutes, as it degrades back to oxygen. In the aqueous phase, dissolved ozone has a half-life of approximately 20 minutes, as it reacts with water to form hydroxyl-

In the aqueous phase, dissolved ozone can directly oxidize contaminants, degrade to hydroxyl-radicals (which in turn oxidize contaminants), or degrade to dissolved oxygen, which will enhance natural biodegradation of contaminants (biological oxidation). Ozone is 12.5 times more soluble in water than oxygen, which allows ozone to dissolve into water at more than 500 ppm and can saturate the water with dissolved oxygen following degradation.

Ozone can be introduced to the subsurface as either a gas (ozone sparging) or a liquid (dissolved ozone injection). In gas phase, ozone is typically introduced to the subsurface (either alone or with air) through traditional air sparge wells. However, the gas sparge rate is typically lower than for air sparging, because the aim is to maximize mass transfer to the dissolved phase and/or maximize contact time with contaminants. In aqueous phase, ozone dissolved in water is typically injected to the subsurface through injection wells, trenches or infiltration galleries.

### ***Remedial Description***

The conceptual remediation system proposed for the subject site will consist of ozone sparging and venting from a series of remediation points installed on-site in the source area. This remedial approach will destroy adsorbed phase contaminants *in situ* through chemical oxidation by ozone. The remediation equipment will be mobile.

Based on the available site data, it is anticipated that a 30-day remedial application will be sufficient in destroying an adequate amount of the adsorbed phase contaminants to meet the applicable soil cleanup standards.

## **SPECIFICATIONS**

### ***Remediation Point Layout***

The remediation point array will consist of 10 ozone sparge points and 17 vapor extraction points (see Attachment 5). The remediation area can be characterized as two zones of contamination. An area of poly-nuclear aromatic hydrocarbon (PAH) compounds is located surrounding soil boring location B-7; and an area of volatile organic compounds VOCs is located surrounding soil boring location B-15. An array of five ozone sparge points will be installed in each of these source zone areas. The vapor extraction points will be installed surrounding these sparge points, to provide off-gas/emission control and draw ozone gas across the treatment area.

### ***Remediation Point Installation and Construction***

The ozone point screen will consist of a Solinst Drive Point Piezometer, Model #615, which is a 3/4-inch diameter, stainless steel drive point with barbed tubing connector and NPT threaded outer casing connection. The inner ozone tube will consist of a 10-foot length of 5/8" x 1/2" Teflon tubing (or equivalent), connected at the drive point barb with a bead of 100% silicon adhesive and an appropriate tubing clamp. The outer protective, secondary containment, casing will be 3/4" NPT threaded galvanized steel drive pipe which will be 8 feet in length.

The annular space between the ozone injection point and borehole wall will be filled with No. 2 Morie Sand, or equivalent, to six inches above the top of the screen; followed by six inches of granular bentonite. The remainder of the annulus will be filled with a 5% bentonite/cement grout, to surface grade.

The top of the galvanized steel, protective casing will be fitted with outer PVC fittings and elbows that transition to an outer sealed section. This section will lead to the long tube run to the remediation equipment, and inner Teflon (or equivalent) and stainless steel following the outer pipe and tube, which penetrates the outer sealed section leading to the long tube run to the remediation equipment (see Attachment 5).

### ***Vapor Extraction Point Installation and Construction***

Seventeen vapor extraction points will be installed by direct-push methodology. A two-inch-diameter steel drive casing with expendable point will be driven to a total depth of between 5 and 8 feet below surface grade, or to the top of the water table (whichever is shallower). Final completion depths for each vapor extraction point will be determined based on the known thickness of petroleum-impacted soils in the area of each proposed extraction point as determined from InteGreyted's site investigation data. The remediation point will then be constructed within the casing, and the steel casing will be extracted.

The vapor extraction points will be constructed of 1.25-inch diameter, Schedule 80 PVC materials, with two feet of 0.020 slot screen and five feet of solid, flush-threaded riser. The annular space between the extraction point and borehole wall shall be filled with No. 2 Morie Sand, or equivalent, to six inches above the top of the screen; followed by six inches of granular bentonite. The remainder of the annulus will be filled with a 5% bentonite/cement grout, to surface grade.

The top of the riser pipe will be fitted with 1.25-inch-diameter schedule 80 PVC fittings and  
... transitioning to 1.25" PE (iron pipe size) leading to the long tube run to the remediation

with National Fire Protection Code guidelines, and will be equipped with continuous ozone detection monitors for health and safety compliance monitoring, leak detection, and system fail-safe controls.

The ozone generator will be a 50 lb/day unit that produces approximately 7 scfm total flow. Additional motive flow may be provided by a supplemental air sparge blower, to produce a total maximum sparge flow of 30 scfm. The vapor extraction blower will be capable of providing an extraction rate of at least twice the maximum sparge flow, and up to a maximum of 250 scfm, at a maximum vacuum of 60 inches of water. A catalytic ozone destruct unit and two 380 lb. granular activated carbon (GAC) vessels will treat extracted vapor. Two additional GAC units will be available at the site, for change-outs if required.

### ***Process Piping***

#### *Ozone Piping and Manifold*

Individual (home run), ozone lines will be plumbed, above-grade, to each of the ten ozone injection points. The ozone piping will consist of Teflon tubing, or equivalent, with individual flow control at the manifold. Each line will be secondarily contained within an outer, PE (or comparable) pipe.

#### *Vapor Extraction Piping and Manifold*

Individual (home-run) vapor extraction lines will be plumbed, above-grade, to each of the seventeen soil vapor extraction points. The extraction piping will consist of 1-inch-diameter PE (or comparable), with individual flow control at the manifold.

## **OPERATION, MAINTENANCE & MONITORING**

### ***Operation Duration & Optimization Frequency***

It is estimated that 30-days of remediation system operation will be required to meet the remedial objectives. Following installation and setup of the system, InteGreyted will perform two days of system start-up during the first week of remediation at the site. Thereafter, InteGreyted will implement weekly site visits to perform system optimization and data collection.

### ***Field Monitoring***

- Screening of individual and combined vapor influent for ozone and VOC concentrations;  
and,
- Screening of pre-GAC and post-GAC vapor stream for ozone and VOCs.

### ***Remedial Groundwater Monitoring***

Prior to startup of the remedial system, one temporary monitoring well will be installed in the area of former monitoring well GW-3. Following installation, one pre-remediation (prior to remedial system startup) and one post remediation (following system shutdown) groundwater sample will be collected from the temporary well and analyzed for STARS VOC and SVOC parameters. The pre-remediation sample will be used to determine baseline groundwater quality in the “limited” area around GW-3 where CHA had previously reported the presence of VOCs in groundwater. The post remediation analytical data will be compared to the pre-remediation analytical data to evaluate any changes that may have occurred during the implementation of the remedial option.

A detailed Sampling Plan is presented in Attachment 6.

### ***Performance Monitoring***

At the end of the third week of remedial system operation, the remedial system will be temporarily shutdown for approximately 8 hours to allow InteGreyted to collect a minimum of five performance monitoring soil samples. The analytical data will be used to evaluate if the remedial system is effectively treating the petroleum-impacted soils and to evaluate if the soil cleanup objectives are being met. The evaluation will be based on a comparison of previously collected analytical data (data from InteGreyted’s November 2000 Site Investigation) to the performance monitoring analytical data. Performance monitoring samples will be collected from documented “source” areas and “hot spots” and across the depth intervals from which soil samples were previously collected. Samples will be analyzed for STARS VOC and SVOC parameters. Following the evaluation of the analytical data a determination will be made as to the effectiveness of the treatment option and/or if continued application is required; and if so, for what duration.

A detailed Sampling Plan is presented in Attachment 6.

### ***Performance Evaluation***

Following receipt of the post-remedial soil sampling results, the mass of ozone applied to the subsurface will be compared to the contaminant mass reduction calculated in the soils. The reduced mass will be adjusted for the calculated mass extracted with soil vapor, then compared to the stoichiometric, chemical oxidation demand in order to determine the site-specific ozone utilization efficiency.

The ultimate goal, however, will be to demonstrate that the post-remedial soil sampling results (horizontally and vertically) meet the previously described remediation goals for the targeted compounds (VOCs and SVOCs). Based on baseline soil sampling results, InteGreyted estimates that 50% to 90% contaminant reductions are necessary in the treatment area to meet the remediation goals.

### **HEALTH AND SAFETY**

All project work will be performed in accordance with the site-specific Health and Safety Plan, provided as Attachment 7.

### **REPORTING**

All analytical data, findings, field monitoring data, performance monitoring data, calculations and conclusions will be presented in a project report that will include support documentation (tables, maps, data reports, etc.). The report will include recommendations for further action (as appropriate) based on all available data.

### **SCHEDULE**

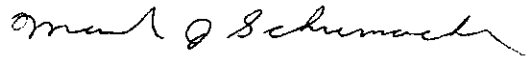
Summarized below is a tentative schedule for completion of project milestones.

<b><u>Task</u></b>	<b><u>Estimated Completion Date</u></b>
Submission of Work Plan:	2-2-01
Meet with NYSDEC:	2-15-01
Final Work Plan:	3-30-01
End Public Comment/Authorize Work Plan:	4-30-01
Start Field Work:	5-1-01
	6-30-01

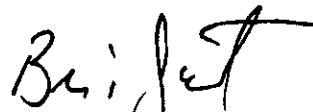
28 March 2001  
166 Central Ave., Ilion, New York  
InteGreyted Project No. 0012015P  
Page 14 of 14

**InteGreyted**  
consultants

Sincerely,  
INTEGREYTED CONSULTANTS, LLC



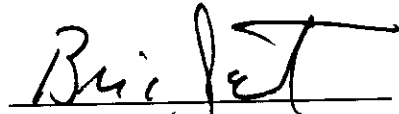
Mark J. Schumacher  
Project Manager



Brian J. Jacot  
Engineer-in-Charge

Engineering work performed as part of this InteGreyted Consultants project was provided by Greystone Engineering, PLLC (Greystone). Greystone certifies that this Work Plan has been prepared in accordance with and represents sound engineering practices and principles.

Brian J. Jacot



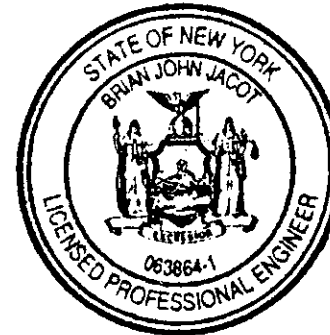
Signature



Date



Registration No.

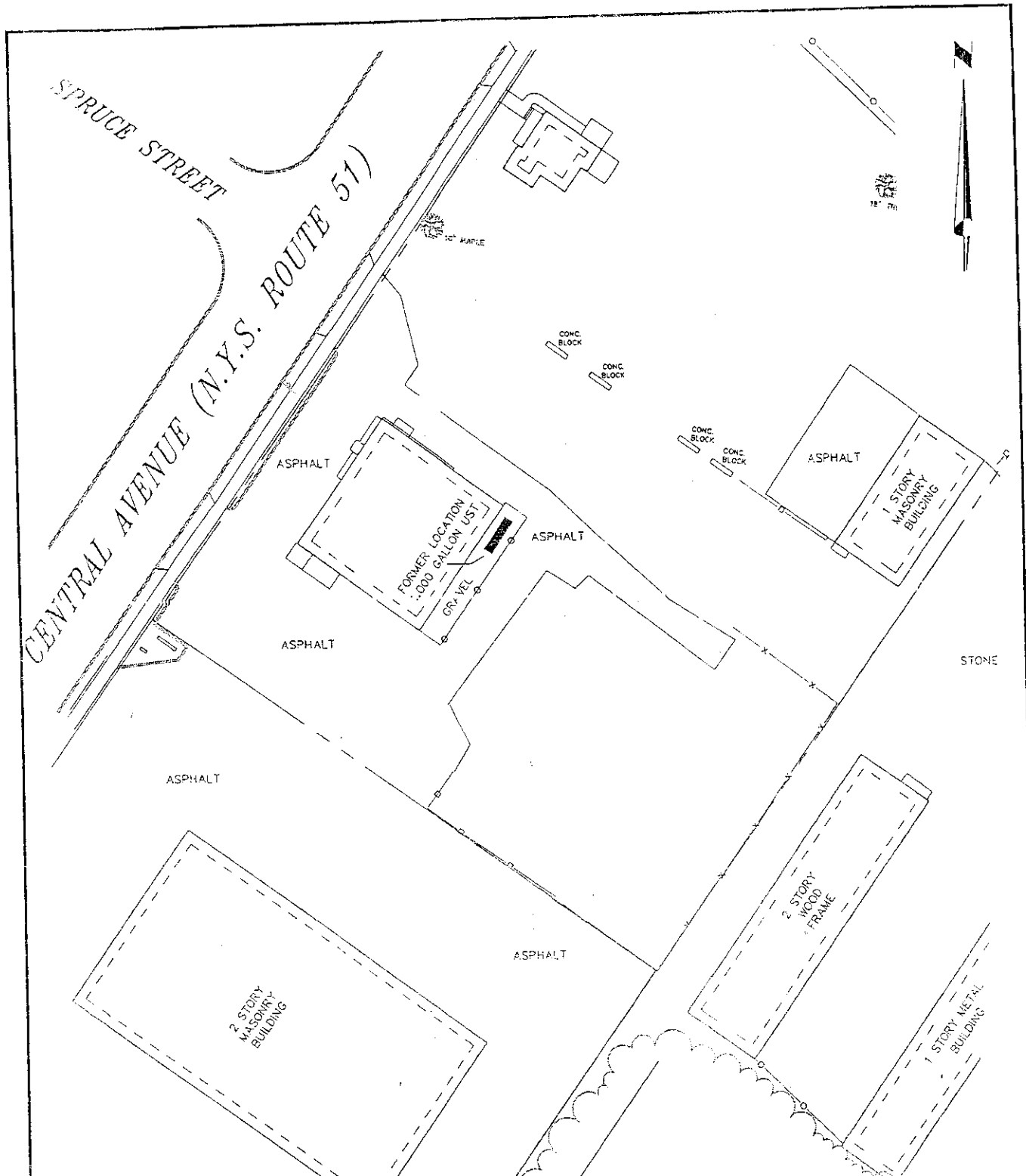


cc: William A. Feinstein, Ventura  
Joanne Goldhand, Schottenstein, Zox and Dunn

Attachments







ATTACHMENT 1  
LIST OF DOCUMENTS

## **List of Documents**

**166-178 Central Avenue  
Town of Ilion, New York**

Phase I Environmental Site Assessment Report, 5 March 1996, Clough, Harbour & Associates. **Note:** The cover page of this report is incorrectly dated and should be 5 March 1997.

Subsurface Investigation and Geotechnical Report, 18 March 1997, Clough, Harbour & Associates.

Phase II Environmental Site Assessment Report, 18 April 1997, Clough, Harbour & Associates.

Remedial Action Plan, June 1997, Clough, Harbour & Associates.

NYSDEC Comments on Remedial Action Plan, 1 August 1997, NYSDEC.

Response to NYSDEC Comments on Remedial Action Plan, 7 August 1997, Clough, Harbour & Associates.

Site Investigation Report, 4 May 1998, Clough, Harbour & Associates.

Response to NYSDEC Comments on Proposed Additional Investigation, 22 May 1998, Clough, Harbour & Associates.

Additional Off-Site Investigation Results & Amendments to RAP, 2 June 1998, Clough, Harbour & Associates.

NYSDEC Response to Additional Off-Site Investigation Results & Amendments to RAP, 23 June 1998, NYSDEC.

ATTACHMENT 2  
CHA FIGURES AND DATA



**CLOUGH, HARBOUR  
& ASSOCIATES LLP**  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

III WINNERS CIRCLE  
P.O. BOX 5259, ALBANY, NEW YORK 12205-0259  
TEL: 518-453-4500 • FAX: 518-459-1735

March 18, 1997

Mr. Lew C. Kibling  
Aldi, Inc.  
P.O. Box 584  
Tully, New York 13159

**RE: Subsurface Investigation and Geotechnical Report**  
**Proposed Aldi Store, 166-178 Central Ave, Ilion, New York**  
**CHA File No. 6201.07.01**

Dear Mr. Kibling:

In accordance with your authorization, we submit our geotechnical report for the proposed Aldi Store on Central Avenue, in Ilion, New York.

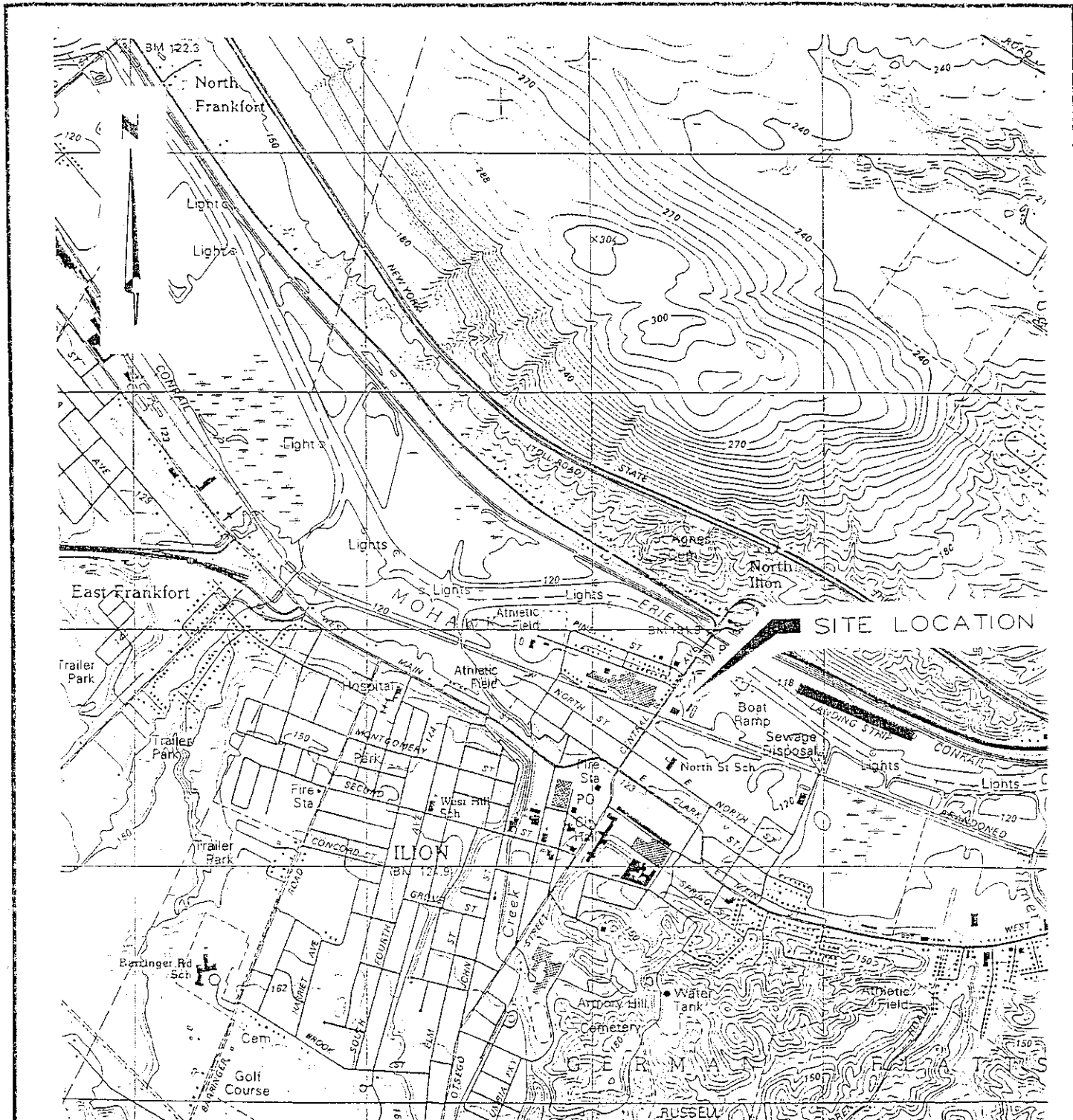
#### SCOPE OF SERVICES

This report summarizes the results of a geotechnical investigation performed by Clough, Harbour & Associates LLP (CHA) for the proposed Aldi, Inc. Store at 166-178 Central Avenue in Ilion, New York. The project site is shown on the Project Location Map (Figure No. 1).

The primary objectives of this investigation were to evaluate subsurface conditions at the site and to provide recommendations for foundation design and construction. Paving and slab recommendations are also included.

This geotechnical report is based on boring logs provided by SJB Services, Inc. CHA representatives did not inspect the drilling of borings.

#### EXISTING CONDITIONS



PHASE II ENVIRONMENTAL SITE  
ASSESSMENT REPORT

PROPOSED ALDI STORE  
166-178 CENTRAL AVENUE  
ILION, NEW YORK

Prepared For:

ALDI, INC.  
P.O. BOX 584  
TULLY, NY 13159

April 18, 1997

CHA Project No. 6201.14.03

Prepared By:

**REFERENCES:**

1. MAP TITLED "MAP OF PROPERTY OF MARTIN GREEN & SONS, INC." BY JOHN H. FIMMAMO DATED JANUARY 7, 1990.
2. NEW YORK STATE HIGHWAY 5181 TAKING MAP 91, PARCEL 101 FILED IN LL-3W-86 IN THE HERKIMER COUNTY CLERKS OFFICE.
3. NEW YORK STATE HIGHWAY CENTRAL AVENUE TAKING MAP 28, PARCEL 26 FILED IN LL-3Y-26 IN THE HERKIMER COUNTY CLERKS OFFICE.
4. MAP TITLED "MAP OF PROPERTY BELONGING MARTIN GREEN & HELEN GREEN" BY LEO E. WHEELER DATED NOVEMBER 5, 1960, FILED IN KK-9B-5 IN THE H.C.C.O.

**NOTES:**

1. BASE MAPPING PREPARED BY CLOUGH, HARBOUR & ASSOCIATES I.L.P. FROM A MARCH, 1997 FIELD SURVEY.
2. BENCHMARK AND CONTOURS ARE BASED ON NAVD 1983, MON. X-31.
3. NORTH ORIENTATION BASED ON MAP REFERENCE #1.
4. UNDERGROUND UTILITIES ARE SHOWN FROM FIELD LOCATION IF POSSIBLE, OTHERS ARE SHOWN FROM RECORD DATA, THEIR EXACT LOCATION MAY DIFFER FROM THAT AS SHOWN AND OTHERS MAY EXIST.
5. THIS SURVEY MADE WITHOUT THE BENEFIT OF AN UPDATED ABSTRACT PARCEL IS SUBJECT TO ANY STATE OF FACTS ONE WOULD DISCLOSE.
6. SUBJECT TO ANY RIGHTS, EASEMENTS, COVENANTS OR RESTRICTIONS OF RECORD.
7. TAX ROLL RECORDS INDICATE CURRENT OWNERS OF RECORD FOR TAX ACCOUNT NUMBER 120007-120007 TO BE PROJECTOR ASSOCIATES, INC. OPERATOR POWER REFERENCED IN 1996 SE PROPERTY OWNER OF PARCELS 101 & 102 TO BE MARTIN & HELEN GREEN, AND PROPERTY OWNERS OF PARCELS 07 & 08 TO BE MARTIN GREEN & SONS, INC.

**LEGEND**

 B-1 SOIL BORING LOCATION

SITE LOCATION  
(NO SCALE)

VILLAGE OF ILION, NEW YORK

**CHA** CLOUGH, HARBOUR & ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS  
111 WINNERS CIRCLE ALBANY, NEW YORK, 12205

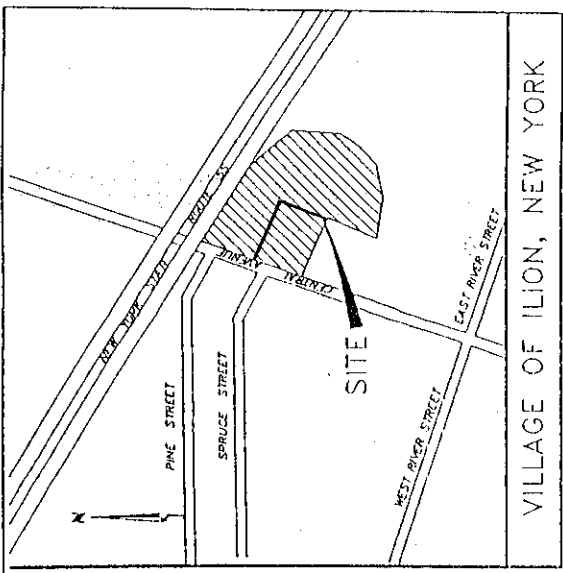
PROJ. NO. 6201.07.01 DATE: MARCH, 1997

FIGURE 2  
BORING LOCATION MAP  
PROPOSED ALDI STORE  
CENTRAL AVENUE  
ILION, NEW YORK

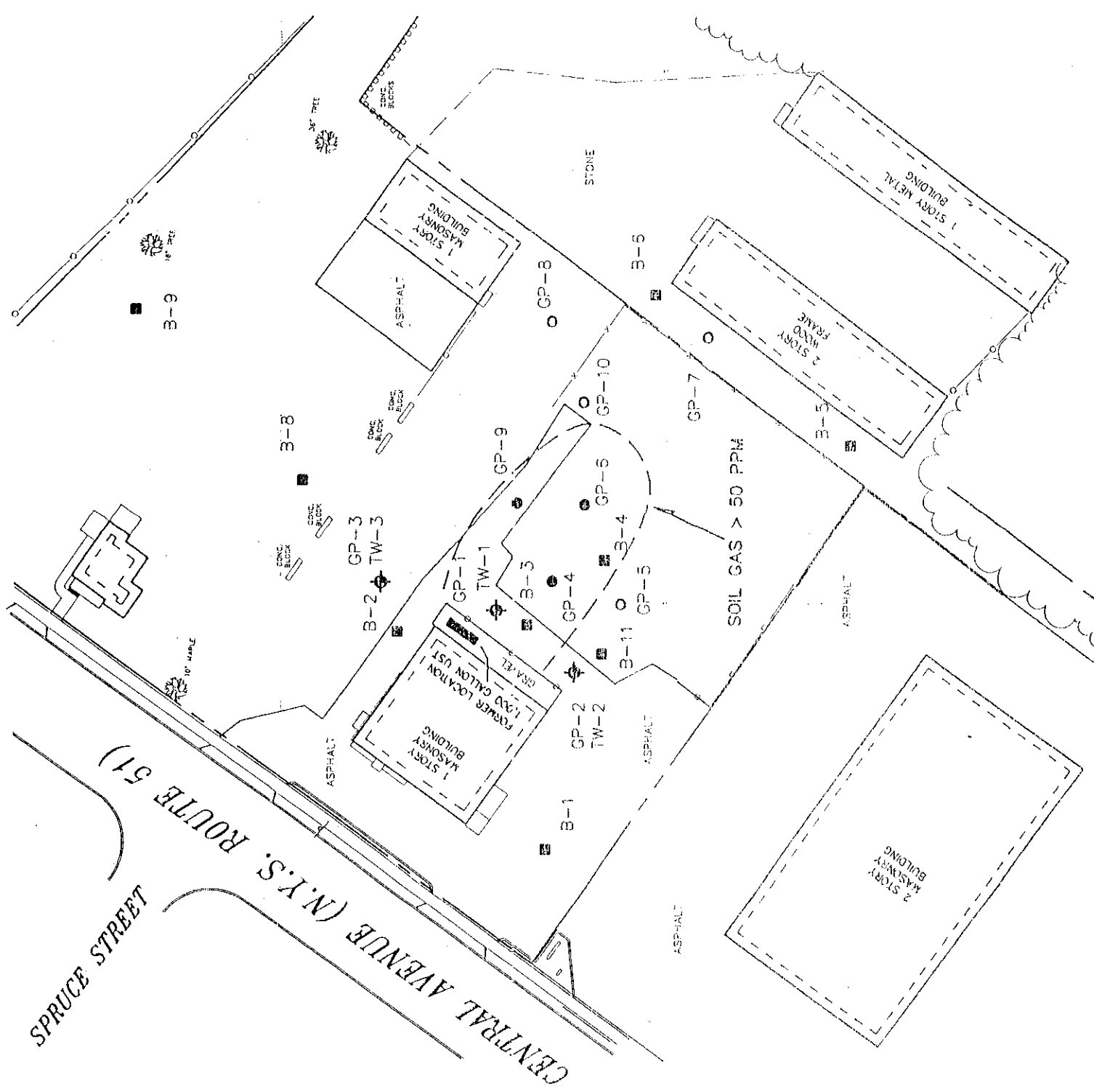
GRAPHIC SCALE



1 inch = 50 ft.







LEGEND

- B-9 GEOTECHNICAL BORING
- GP-8 GEOPROBE BORING  
HNU READING < 50 PPM
- GP-4 GEOPROBE BORING  
HNU READING > 50 PPM
- ⚡ TW-3 TEMPORARY WELL

NOTES:

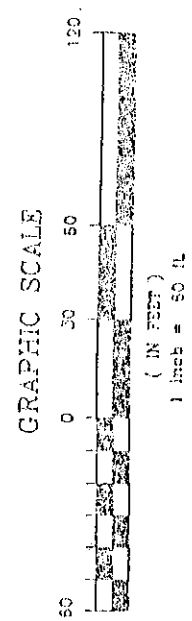
BASED ON MAPPING PREPARED BY  
CLOUGH, HARBOUR & ASSOCIATES LLP.  
FROM A MARCH, 1997 FIELD SURVEY.

**CHA** **CLOUGH, HARBOUR & ASSOCIATES LLP**  
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS  
109 SOUTH WARREN STREET SYRACUSE, NEW YORK 13202  
DRAWING COPYRIGHT © 1997

FIGURE 2  
SITE MAP

PROPOSED ALDI LOCATION

166-178 CENTRAL AVENUE ILION, NEW YORK



PROJ. NO. 6201.14.03 DATE: APRIL 1997

TABLE 1  
GROUNDWATER SAMPLE RESULTS  
(March 1997)

TEST PARAMETER (ug/l)	TW-1	TW-2	TW-3	NYSDEC Standard*
benzene	<3	<3	<3	5
ethylbenzene	<3	<3	<3	5
toluene	<3	<3	<3	5
m-xylene and p-xylene	<3	<3	<3	5
o-xylene	<3	<3	<3	5
isopropylbenzene	22	10	<3	5
n-propylbenzene	28	3	<3	5
p-isopropyltoluene	<3	<3	<3	5
1,2,4- trimethylbenzene	10	<3	<3	5
1,3,5-trimethylbenzene	<3	<3	<3	5
n-butylbenzene	14	<3	<3	5
sec-butylbenzene	12	<3	<3	5
t-butylbenzene	<3	<3	3	5
naphthalene	<3	<3	<3	5
MTBE	<50	<50	<50	5
anthracene	<25	<5	<5	1000
fluorene	27	<5	<5	1000
phenanthrene	78	<5	6	1000
pyrene	<25	<5	<5	1000
acenaphthene	<25	<5	<5	400
benzo(a)anthracene	<25	<5	<5	0.04
fluoranthene	<25	<5	<5	1000
benzo(b)fluoranthene	<25	<5	<5	0.04
benzo(k)fluoranthene	<25	<5	<5	0.04
chrysene	<25	<5	<5	0.04
benzo(a)pyrene	<25	<5	<5	0.04
benzo(g,h,i)perylene	<25	<5	<5	0.04
indeno(1,2,3-cd)pyrene	<25	<5	<5	0.04
dibenzo(a,h)anthracene	<25	<5	<5	1000

\* Guidance Values for Fuel Oil Contaminated Soil  
Values highlighted in boxes exceed NYSDEC Standard

# SITE INVESTIGATION REPORT

PROPOSED ALDI STORE  
166-178 CENTRAL AVENUE  
ILION, NEW YORK

Prepared For:

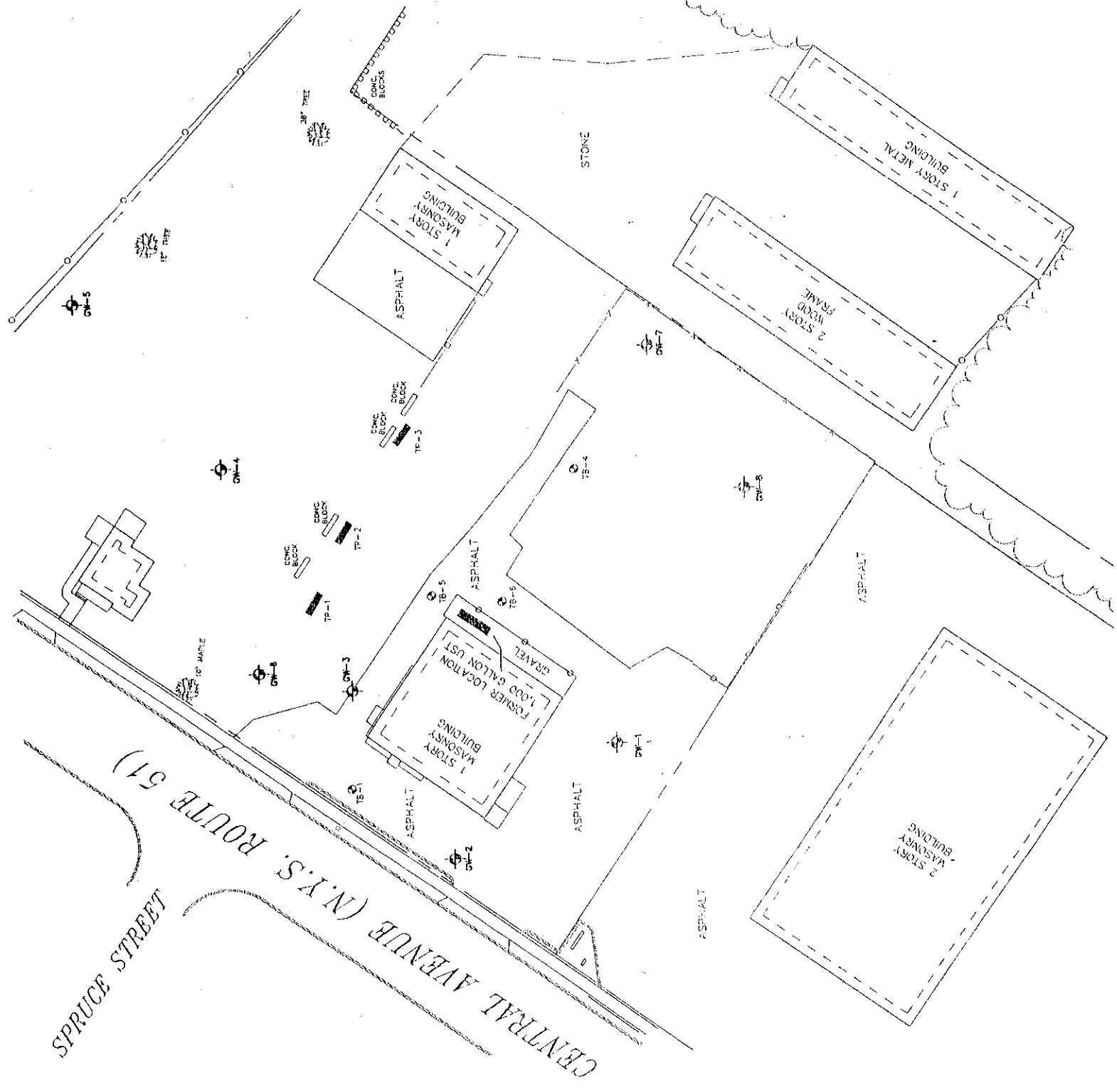
ALDI, INC.  
P.O. BOX 584  
TULLY, NY 13159

May 4, 1998

CHA Project No. 6201.07.02

Prepared By:

CLOUGH, HARBOUR & ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS  
109 S. Warren Street, Suite 1300  
Syracuse, New York 13202  
(315) 471-3920



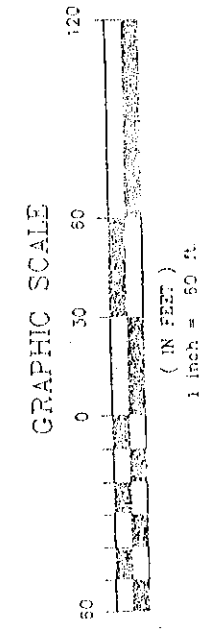
SPRUCE STREET  
 CENTRAL AVENUE (N.Y.S. ROUTE 51)

**LEGEND**

- TP-2 TEST PIT
- GW-3 TEMPORARY WELL
- TB-4 TEST BORING

**NOTES:**

BASED ON MAPPING PREPARED BY  
 CLOUGH, HARBOUR & ASSOCIATES LLP.  
 FROM A MAPCH, 1997 FIELD SURVEY.



**FIGURE 2  
 SITE MAP**

**CHA CLOUGH, HARBOUR & ASSOCIATES LLP**  
 ENGINEERS, SURVEYORS, PLANNERS  
 & LANDSCAPE ARCHITECTS  
 109 SOUTH WARREN STREET SYRACUSE, NEW YORK 13202

PROPOSED ALDI LOCATION  
 166-178 CENTRAL AVENUE  
 ILION, NEW YORK

PROJ. NO. 6201.07.02 DATE: APRIL 1998

TABLE 1  
ALDI MILLION SITE  
SOIL SAMPLING RESULTS

Parameter (ug/kg)	TCPP All. Guidance Value	TP-1 (Comp)	TP-2 (Comp)	TP-3 (Comp)	TB-1 (3-5)	TB-1 (8-10)	TB-4 (3-5)	TB-5 (15-17)	TB-6 (15-17)	GW-2 (3-5)	GW-3 (3-5)	GW-4 (3-5)	GW-8 (3-5)
benzene	14	<7	<2	<13	<540	<5	<140	<7	11	<13	<200	<2	<2
ethylbenzene	100	40	<2	<13	<540	<5	<140	<7	<7	<13	780	<2	<2
toluene	100	<7	<2	<13	<540	46	<140	<7	<7	<13	280	<2	3
m&p-xylene	100	160	<2	<13	<540	32	19000	2800	90	<13	970	<2	8
o-xylene	100	44	<2	<13	1100	15	1700	<7	<7	<13	360	<2	3
isopropylbenzene	100	<7	<2	<13	<540	70	820	<7	<7	<13	260	<2	<2
n-propylbenzene	100	<7	<2	<13	<540	28	<140	<7	<7	<13	1400	<2	<2
p-propylbenzene	100	<7	<2	<13	<540	<5	420	31	<7	<13	<200	<2	<2
1,2,4-trimethylbenzene	100	18	<2	<13	900	100	20000	19	<7	<13	2000	<2	<2
1,3,5-trimethylbenzene	100	<7	<2	<13	<540	54	9800	1300	26	<13	640	<2	<2
n-butylbenzene	100	<7	<2	<13	<540	29	18000	44	<7	<13	1300	<2	<2
sec-butylbenzene	100	<7	<2	<13	1100	24	5200	<7	<7	<13	300	<2	<2
t-butylbenzene	100	<7	<2	<13	<540	<5	<140	<7	<7	<13	<200	<2	<2
naphthalene	200	<7	<2	<13	<540	<5	2500	26	<7	<13	280	<2	<2
MTBE	1000	<140	<33	<250	<11000	<99	<2700	<130	<130	<260	<4000	<30	<21
anthracene	1000	1200	<530	<820	200000	<650	<520	<420	<420	<850	<390	<490	<340
fluorene	1000	1000	<530	<820	97000	<650	<520	<420	<420	<850	<390	<490	<340
phenanthrene	1000	4800	2100	1700	660000	<650	2100	<420	<420	<850	<390	<490	<340
pyrene	1000	9500	6200	3500	610000	<650	590	<420	<420	<850	<390	<490	<340
acenaphthene	400	820	<530	<820	91000	<650	<520	<420	<420	<850	<390	<490	<340
benzo(a)anthracene	0.04	2600	1800	1000	2600000	<650	<520	<420	<420	<850	<390	<490	<340
fluoranthene	1000	2400	1700	1000	5100000	<650	<520	<420	<420	<850	<390	<490	<340
benzo(b)fluoranthene	0.04	2800	<530	<820	1500000	<650	<520	<420	<420	<850	<390	<490	<340
benzo(k)fluoranthene	0.04	1200	<530	<820	1700000	<650	<520	<420	<420	<850	<390	<490	<340
chrysene	0.04	2700	2600	880	3000000	<650	<520	<420	<420	<850	<390	<490	<340
benzo(a)pyrene	0.04	2500	<530	890	3100000	<650	<520	<420	<420	<850	<390	<490	<340
benzo(g,h,i)perylene	0.04	<4500	<530	<820	72000	<650	<520	<420	<420	<850	<390	<490	<340
indeno(1,2,3-cd)pyrene	0.04	<4500	<530	<820	77000	<650	<520	<420	<420	<850	<390	<490	<340
dibenzo(a,h)anthracene	1000	<4500	<530	<820	<12000	<650	<520	<420	<420	<850	<390	<490	<340





**CLOUGH, HARBOUR  
& ASSOCIATES LLP**  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

109 SOUTH WARREN STREET  
STATE TOWER BUILDING  
SUITE 1300  
SYRACUSE, NEW YORK 13202  
TEL: 315-471-3920 • FAX: 315-471-3569

June 2, 1998

Mr. Philip G. Waite, P.E.  
Project Manager  
New York State Department of Environmental Conservation  
317 Washington Street  
Watertown, New York 13601

**RE: ALDI, INC. VOLUNTARY CLEANUP - SITE NO. V00106-6  
ADDITIONAL OFF-SITE INVESTIGATION RESULTS & AMENDMENTS TO RAP  
CHA FILE NO. 6201**

Dear Mr. Waite:

On behalf of Aldi, Inc. (Aldi), Clough, Harbour & Associates LLP (CHA) recently completed an off-site investigation of utilities and properties located adjacent to the proposed Aldi site in Ilion, New York. This letter summarizes the results of that investigation. Additionally, in your letter of May 13, 1998 you indicated that the Remedial Action Plan (RAP) needed to be modified prior to implementation. This letter also addresses those requested modifications.

#### OFF-SITE INVESTIGATION

On May 28, 1998 CHA performed an off-site investigation adjacent to the proposed Aldi site in Ilion. The investigation focused on evaluation of groundwater quality in the area. Samples of groundwater were collected from three temporary wells, from three locations in the storm sewer and from two locations in the sanitary sewer.

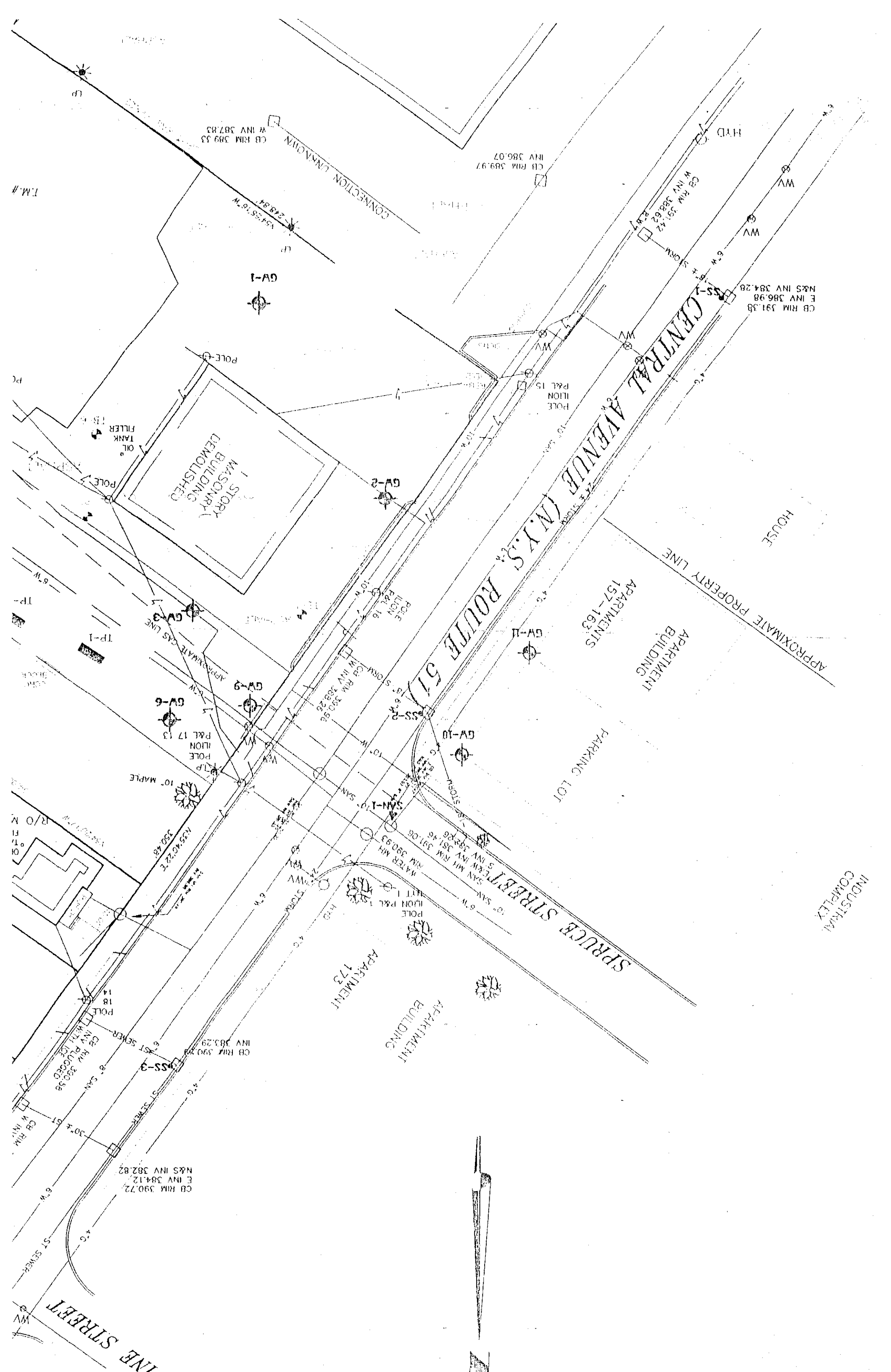
Two wells were installed on the west side of Central Avenue in front of the apartments identified as 157-163 Central Avenue (sample points labeled GW-10 and GW-11). A third well (GW-9) was proposed to be installed on the east side of Central Avenue, as close as possible to the bedding material for the sanitary sewer and water lines. However, because of the presence of overhead power lines, the well was installed approximately 20 feet south of its proposed location. (Please refer to the attached plan for sample locations.) The wells were sampled immediately after installation. After sampling was completed, the wells were removed, and the boreholes were sealed with grout. Drilling equipment was decontaminated between sampling locations.

CHA collected two samples from the sanitary sewer; one upgradient of the site (SAN-1) and one downgradient of the site (SAN-2). CHA collected three (3) samples from the storm sewer; one upgradient of the site (SS-1), one immediately west of the site (SS-2), and one downgradient of the site



*Offices Throughout the Eastern United States*

*Satisfying Our Clients by Meeting Their Needs Through Dedicated People Committed to Excellence*

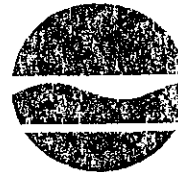






ATTACHMENT 3  
MISCELLANEOUS DOCUMENTATION

New York State Department of Environmental Conservation  
Division of Environmental Remediation, Region 6  
Dulles State Office Building, 317 Washington Street, Watertown, New York 13601-3787  
Phone: (315) 785-2513 FAX: (315) 785-2422



John P. Cahill  
Commissioner

6201

June 23, 1998

RECEIVED  
JUN 24 1998  
CLOUGH, HARBOR & ASSOCIATES  
SYRACUSE, NY

Mr. Christopher Burns  
Principal Scientist  
CLOUGH, HARBOR & ASSOCIATES LLP  
109 South Warren Street, Suite 1300  
Syracuse, NY 13202

RE: ALDI, INC., SITE NO. V00106-6 ADDITIONAL OFF-SITE INVESTIGATION  
RESULTS & AMENDMENTS TO RAP

Dear Mr. Burns:

The Department received the above referenced correspondence on June 3, 1998. Since that time, we have had numerous conversations regarding the contents of that letter as well as additional issues. The following summarizes the Department's position on the project:

1. Results of the Off-Site Investigation

The Department has reviewed the results of CHA's off-site investigation. If, during excavation adjacent to the Central Avenue right-of-way, obviously contaminated soils are found, Aldi should remove as much as possible without jeopardizing the structural integrity of the asphalt/sidewalk/utilities, etc. and confirmation soil samples will be required. If field observations indicate that there is still a serious environmental threat remaining, we will need to consider additional remedial actions.

2. Amendment to the Remedial Action Plan

- A. **Removal of Contaminated Soils Along the Water and Sewer Lines On-Site** - unless there are extraordinary and unforeseen circumstances discovered during excavation that warrant such an action (e.g. product or product saturated soils), Aldi will not be required to remove the utilities for remediation purposes. CHA's recommendation to remove as much contaminated soil as possible without compromising the structural integrity of the utilities is satisfactory. This is assuming that an on-site DEC representative is present to inspect the on-going excavation, and confirmation soil samples will be taken. Again, if a serious environmental threat remains at that point, an alternative remedial action will need to be considered.

- B. **Removal of Contaminated Soils Below the Water Table** - it's the Department's understanding that Aldi is agreeing to excavate contaminated soils below the water table and that approval to discharge contaminated water from such an excavation to the Herkimer County Sewer District has been granted by the District Board.
- C. **Removal of UST at 166 Central Avenue** - the issue of additional USTs at the site was first brought to Aldi's attention during the review of the initial RAP and the work plan for additional investigations. The Department's comment at that time was to perform an investigation on the north side of 166 Central Avenue during the supplemental field work to determine if any USTs exist. This was not done. Instead an UST was discovered during the demolition of the building after the supplemental work was completed. As indicated in CHA's letter, Aldi must remove the UST along with any contaminated soil and/or product, determine it's contents and size, and if larger than 1,100 gallons register the UST with the DEC.
- D. **Clean-up Goals** - Aldi's request to utilize TAGM 4046 clean-up goals where available for those constituents included on Tables 1 and 2 of Appendix B of the STARS Memo #1 Guidance Policy is acceptable. In addition, we suggest that a clean-up goal of 1,200 ppb be used for other constituents not specifically listed in TAGM 4046. This is over an order of magnitude higher than STARS Memo #1 guidance value (100 ppb).

Regarding your request that the RAP be amended such that contaminated soil would be temporarily stockpiled on-site, the Department could agree to this provided that such stockpiling be limited to no more than 60 days. However, leaving the stockpile to the responsibility of the current site owner would not be acceptable according to paragraph I.B.3. of the Voluntary Cleanup Agreement. The Department has no agreements with the current site owner to maintain and dispose of the proposed stockpiled material and therefore, there is a potential that worse conditions would be created than before remedial activities were commenced. During a subsequent conversation between your client, yourself, and me, it was proposed that the stockpiled material could be re-disposed into the excavation if Aldi, Inc. failed to take title to the property. I have consulted with our Central Office on this proposal and was advised that this practice is not acceptable to the Department under these circumstances.

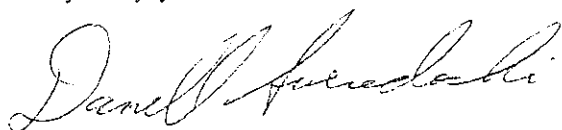
We had also discussed the merits of treating the stockpiled material on-site in accordance with NYSDEC STARS Memo #2. We pointed out the siting limitations for building such a pile, specifically regarding flood plain restrictions. You had indicated that some, if not all, of the pile would be located in the Mohawk River flood plain.

JUNE 23, 1998

In order to address your client's needs not to exceed a set budget for this project, we had also suggested that the limits of excavation could be determined before excavation proceeded. This may necessitate some additional limited subsurface exploration to define the limits of contamination in one area of the property. This additional investigation could be carried out cost effectively using a hydropunch and field screening techniques. Your client would have a known volume of contaminated soil and associated disposal costs before remedial activities started.

Feel free to call me if you have any questions.

Very truly yours,



Darrell M. Sweredoski, P.E.  
Regional Hazardous Waste Remediation Engineer

cc: T. Quinn  
J. Luz  
P. Waite  
J. Drabicki  
G. McCullouch  
B. Conlon, DEE  
L. Kibling, ALDI, INC.  
T. Eisenhut, ALDI, INC.  
S. Richard Levin, Esq., SARGENT, LEVIN, CRAMER & MEYERS, LLP

ATTACHMENT 4  
INTEGREYTED PHASE II DATA

TABLE 2  
Soil Sample Analytical Results  
166 Central Ave., Iion, New York  
November 2000

Analyte	TAGM 4046 Soil Cleanup Objective (ppb)	STARS TCLP Alternative Value (ppb)	SAMPLE ID															
			B-4 (4.0' - 8.0')	B-6 (2.0' - 4.0')	B-7 (4.0' - 10.0')	B-11 (2.0' - 4.0')	B-14 (4.0' - 9.5')	B-15 (2.9' - 6.7')	B-17B (4.0' - 8.0')	B-19 (4.0' - 8.0')	B-25 (2.0' - 5.0')	B-27 (4.0' - 8.0')	B-28 (4.0' - 8.0')	B-32 (4.0' - 7.0')	B-33 (4.0' - 8.0')	B-37 (4.0' - 8.0')	B-39 (2.0' - 6.5')	
<b>Volatile Organic Compounds (ppb)</b>																		
1,2,4-Trimethylbenzene	NS +	100	80	150	1,100	5,100	6,000	4,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NS +	100	12	110	630	1,800	ND	3,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	60	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5,500	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropyl Benzene	NS +	100	30	480	1,300	350	ND	1,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m-p-Xylenes	1,200	100	ND	220	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	NS +	1,000	15	140	820	720	950	1,800	23	ND	3.3	ND	12	ND	11	3.9	240	ND
n-Butylbenzene	NS +	100	10	190	1,600	2,000	820	7,400	ND	ND	19	ND	ND	ND	ND	1.7	250	ND
n-Propylbenzene	NS +	100	25	340	1,800	760	ND	3,200	ND	ND	9.5	ND	ND	ND	ND	1.6	ND	ND
Naphthalene	13,000	200	28	160	980	650	570	2,400	6.5	ND	32	1.8	4.5	16	4.3	8.6	590	ND
o-Xylene	1,200	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	NS +	100	ND	ND	ND	ND	ND	2,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NS +	100	17	420	1,600	1,700	490	5,400	ND	ND	28	ND	ND	ND	ND	9.7	1,600	ND
t-Butylbenzene	NS +	100	ND	81	ND	ND	ND	ND	ND	ND	13	ND	ND	ND	ND	4.4	800	ND
Toluene	1,500	100	20	230	1,100	900	1,100	3,300	6.7	2.4	7.9	4.8	7.5	5.1	5.6	290	ND	ND
Total Xylenes	1,200	100	ND	220	ND	ND	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	ND	ND
<b>Semi Volatile Organic Compounds (ppb)</b>																		
Acenaphthene	50,000***	400	ND	ND	760	490	1,900	2,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,600
Anthracene	50,000***	1,000	330	ND	1,200	ND	ND	1,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,400
Benzo (a) anthracene	224 or MDL	0.04*	530	800	2,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo (a) pyrene	61 or MDL	0.04*	410	ND	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo (b) fluoranthene	224 or MDL	0.04*	410	440	2,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	50,000***	0.04*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo (k) fluoranthene	224 or MDL	0.04*	ND	440	2,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	400	0.04*	390	640	2,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz (a,l) anthracene	14 or MDL	1,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	50,000***	1,000	980	1,000	5,900	ND	ND	650	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50,000***	1,000	ND	ND	860	440	1,300	2,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	560
Indeno (1,2,3-c,d) pyrene	3,200	0.04*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	13,000	200	ND	ND	ND	ND	ND	980	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,500
Phenanthrene	50,000***	1,000	770	940	5,800	500	2,500	5,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,500
Pyrene	50,000***	1,000	820	1,000	6,900	330	420	940	ND	ND	ND	ND	ND	ND	ND	ND	ND	410

Notes:  
Results in parts per billion (ppb).  
ND: Compound not detected.  
NS: No standard.  
NS +: For constituents not specifically listed in TAGM 4046, a cleanup goal of 1,200 ppb was provided by NYSDEC. Refer to 23 June 1998, letter from NYSDEC to CHIA regarding revisions to the previously submitted Remedial Action Plan (RAP).  
Note: The TAGM 4046 guidance value is considered as the cleanup standard where available.

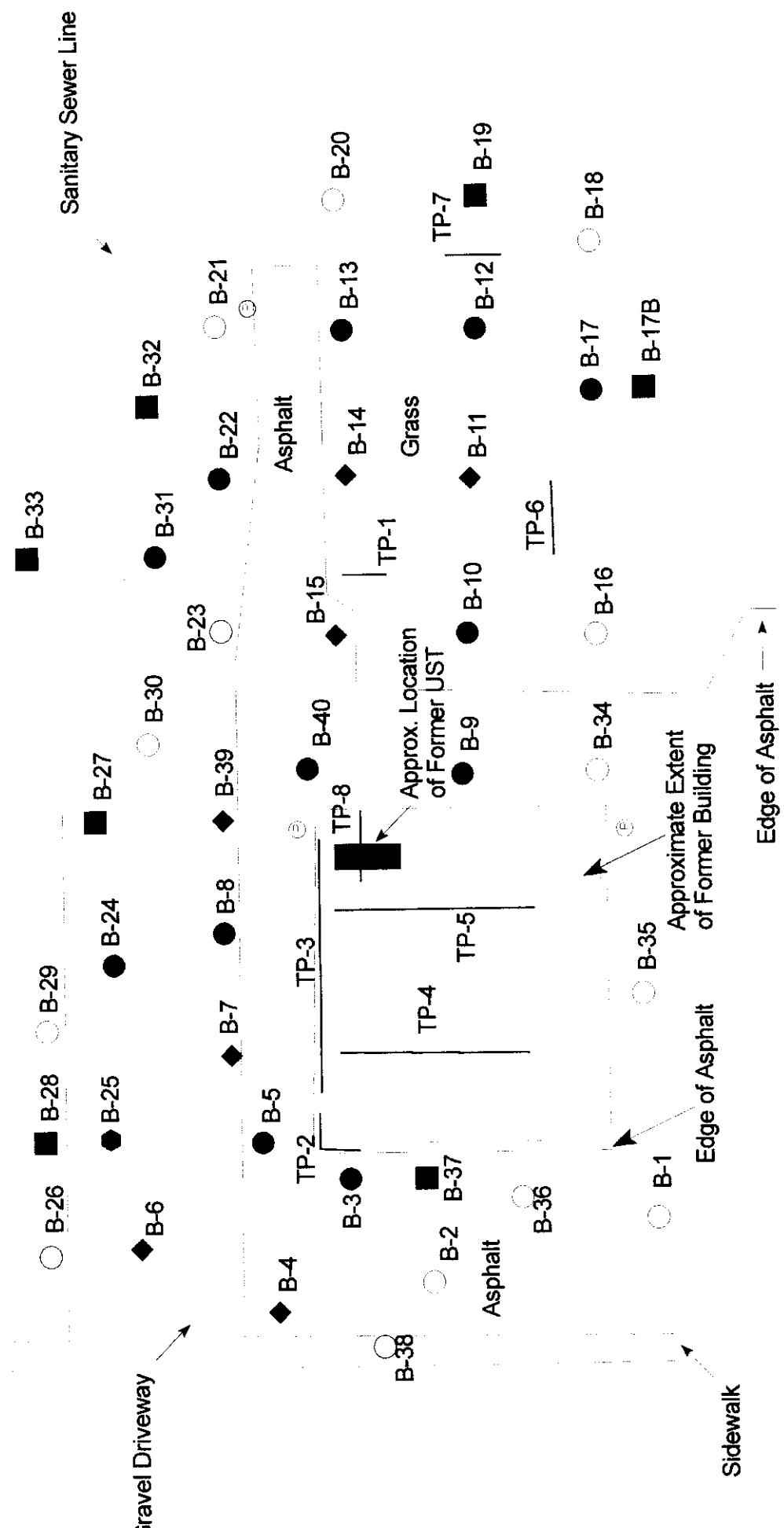
**TABLE 1**  
**Field Observations: Phase II Site Investigation – November 2000**  
**166 Central Avenue, Ilion, New York**

Boring	Depth	PID Reading	Sample Collected	Affected Soil Y/N	Comments/Observations
B-1	0-4	0		N	
	4-8	0		N	
	8-12	0		N	GW ~ 8'
B-2	0-4	0		N	
	4-8	NA		NA	No recovery
	8-12	0		N	GW ~ 8', Light fuel oil odor, trace staining in soil
B-3	0-4	0		N	
	4-8	NA		NA (possible)	Black soils with oil odor in tip
	8-10	8		Y	GW ~ 8', Black, oily odors in soil
	10-12	0		N	
B-4	0-3.3	0		N	
	3.3-4	22		Y	Black, fuel oil odors
	4-8	24	*	Y	No stains/no odors
	8-10	22		Y	GW ~ 8', No stains/no odors
	10-12	0		N	
B-5	0-3	0		N	
	3-4	50		Y	Black, fuel oil odors
	4-7	751		Y	Black, fuel oil odors
	7-8	25		N	Silt
B-6	0-2	0		N	
	2-4	163	*	Y	Black, fuel oil and other odors
	4-8	NA		(possible)	No recovery, sampler stained
	8-12	1.5		N	
B-7	0-3.3	0		N	Black, fuel oil odors
	3.3-4	110		Y	Wet 8' down
	4-10	400	*	Y	
	10-12	3		N	
B-8	0-3.3	0		N	Black stains, fuel oil odors
	3.3-4	130		Y	Black stains, fuel oil odors
	4-6	130		Y	
	6-8	0		N	
B-9	0-2	0		N	
	2-4	10		Y	Black, fuel oil odors
	4-6.7	11		Y	Black, fuel oil odors
	6.7-8	1		N	
B-10	0-2.1	0		N	
	2.1-4	99		Y	Black, gas odors
	4-8.7	30		Y	Black, gas odors
	8.7-12	2		N	Clay, Wet at ~ 10'



Boring	Depth	PID Reading	Sample Collected	Affected Soil Y/N	Comments/Observations
B-11	0-2	0		N	
	2-4	178	*	Y	Black, gas odors
	4-6.7	40		Y	Black, gas odors
	6.7-8	3		N	Silt and clay
B-12	0-4	0		N	
	4-6.7	5		(possible)	Light odor
	6.7-8	1		N	
B-13	0-2	0		N	
	2-4.3	87		Y	Black to gray, gas odors
	4.3-8	82		Y	Black to gray, gas odors
	8-10.8	41		Y	Black to gray, gas odors
	10.8-12	0		N	
B-14	0-4	0		N	
	4-9.5	212	*	Y	Black, gas odors
	9.5-12	0		N	
B-15	0-2.9	0		N	
	2.9-5	250	*	Y	Gray, gas odors
	5-6.7	190	*	Y	Gray, gas odors
	6.7-8	2		N	Silt
B-16	0-4	0		N	
	4-8	0		N	Wet ~ 7'
B-17	0-4	0		N	
	4-4.7	2		Y	Fuel oil odors
B-17B	0-4	0		N	
	4-8	0	*	N	
B-18	0-4	0		N	
	4-8	0		N	
B-19	0-4	0		N	
	4-8	0	*	N	Wet at ~ 8'
B-20	0-4	0		N	
	4-8	0		N	
B-21	0-4	0		N	
	4-8	0		N	
B-22	0-3	0		N	
	3-6	39		Y	Black, gas odors
	6-8	0		N	
B-23	0-4	0		N	
	4-8	0		N	
B-24	0-3	0		N	
	3-5.2	1		(possible)	Black fill, light odor
	5.2-8	0		N	
B-25	0-2	0		N	
	2-4	111	*	Y	Wood fill with odors
	4-5	168	*	Y	Wood fill with odors
	5-8	0		N	

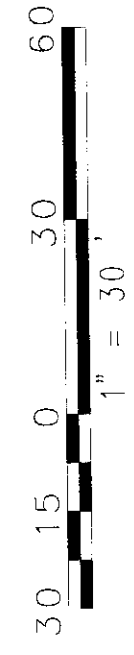
Boring	Depth	PID Reading	Sample Collected	Affected Soil Y/N	Comments/Observations
B-26	0-5	5		N	Fill
	5-8	1		N	
B-27	0-4	0		N	
	4-8	0	*	N	
B-28	0-4	0		N	
	4-8	0	*	N	
B-29	0-4	0		N	
	4-8	0		N	
B-30	0-4	0		N	
	4-8	0		N	
B-31	0-4	0		N	
	4-6.6	6		Y	Black gravel, wet
	6.6-8	0		N	
B-32	0-5	0		N	
	5-7	0	*(4'-7')	(possible)	Black gravel
	7-8	0		N	
B-33	0-4	0		N	
	4-8	0	*	N	
B-34	0-4	0		N	
	4-8	0		N	
B-35	0-4	0		N	
	4-8	0		N	
B-36	0-4	0		N	
	4-8	0		N	
B-37	0-4	0		N	
	4-8	0	*	N	
B-38	0-4	0		N	
	4-8	0		N	
B-39	0-2	0		N	
	2-6.5	110	*	Y	Black, gas odors
	6.5-8	0		N	
B-40	0-3	0		N	
	3-10	100		Y	Black, gas odors
	10-12	0		N	
B-41	0-4	0		N	
	4-8	0		N	



- Boring Location (No PID Readings)
- Boring Location (PID Readings)
- Boring Location (No PID Readings/Lab Samples ND or Below STARS)
- ◆ Boring Location (PID Readings/VOC and/or SVOCs above STARS)
- Boring Location (PID Readings/Lab Sample ND)

Approximate Extent of Impacted Soils

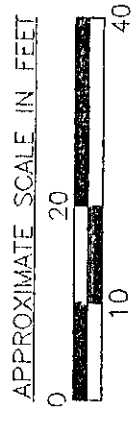
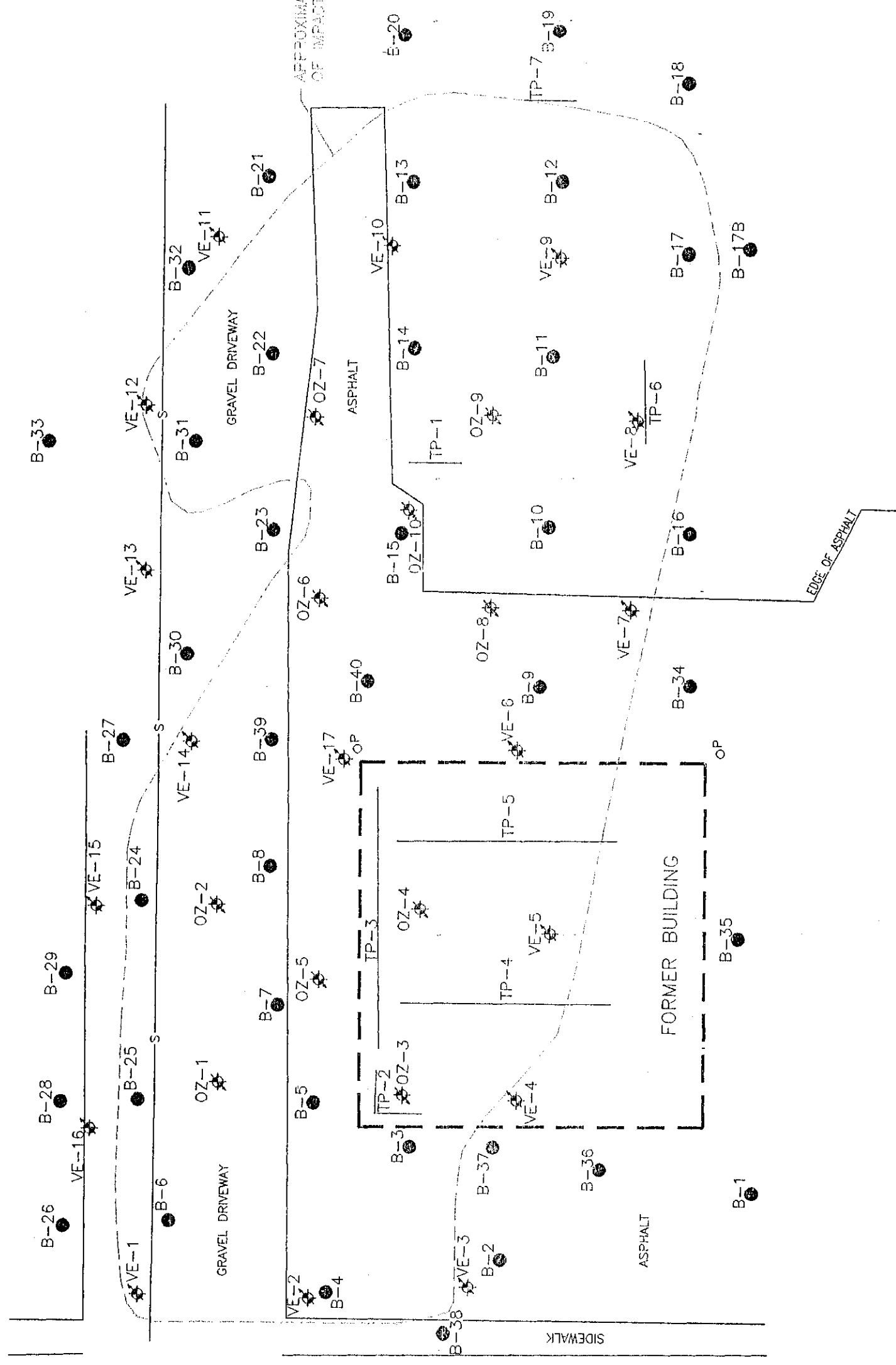
Revised 3-28-01



ATTACHMENT 5  
REMEDIAL SPECIFICATIONS

**LEGEND**

- SOIL BORING
- ✱ VAPOR EXTRACTION POINT
- ✱ OZONE INJECTION POINT
- TP-1 TEST PIT
- S — SANITARY SEWER LINE
- OP UTILITY POLE

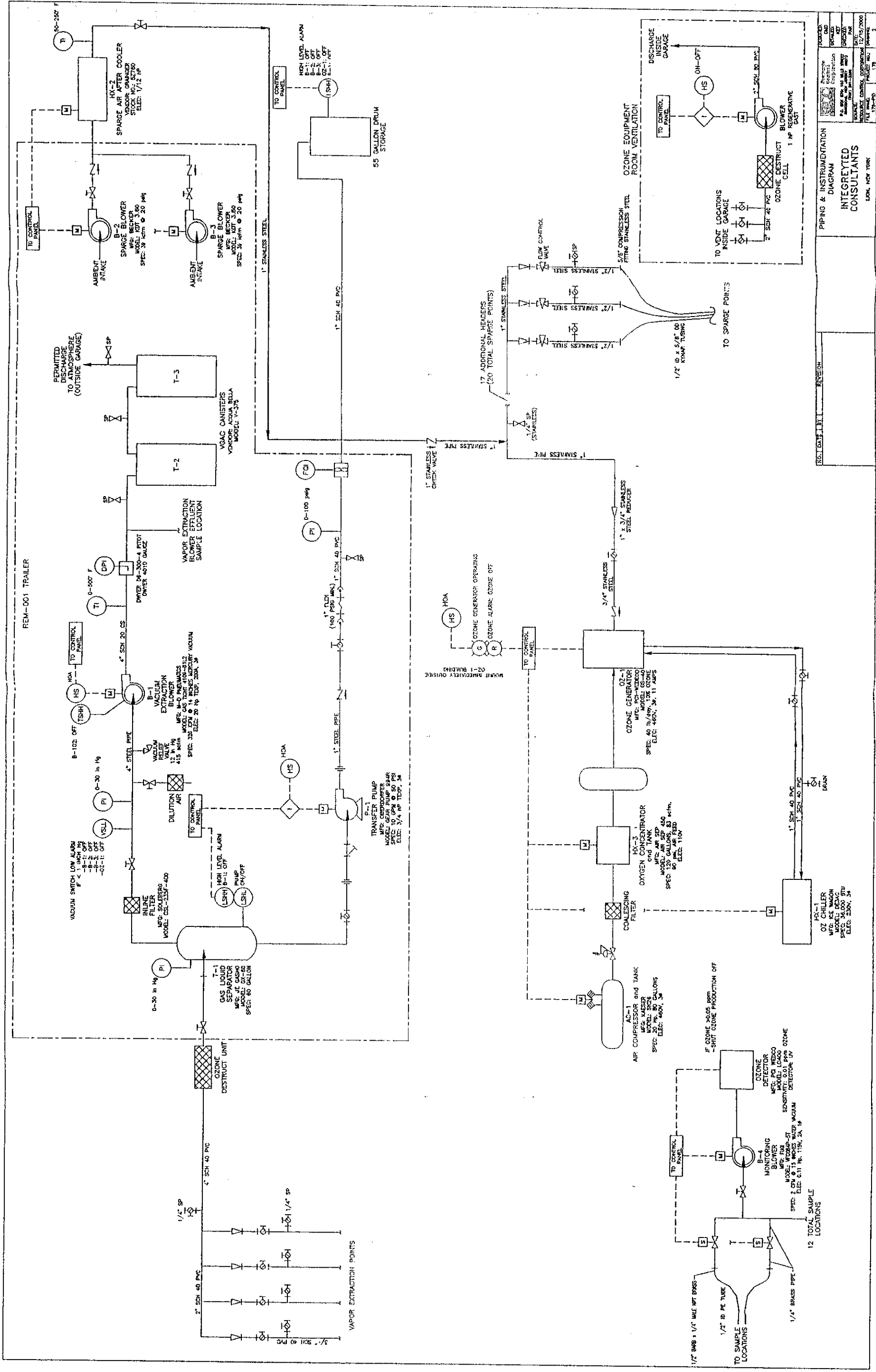


REMEDIATION POINT LAYOUT

**INTEGREYTED CONSULTANTS**

ILION, NEW YORK

	DESIGNED:	KW
	DETAILED:	KEF
P.O. BOX 579, 103 WILLS STREET RANCOocas, NEW JERSEY 08073 (609) 261-3388		CHECKED:
SOURCE: BASE MAP PROVIDED BY: INTEGREYTED CONSULTANTS		DATE:
FILE NAME:	PROJECT NO.:	FIGURE:
188-RPL	188	1



REVISION

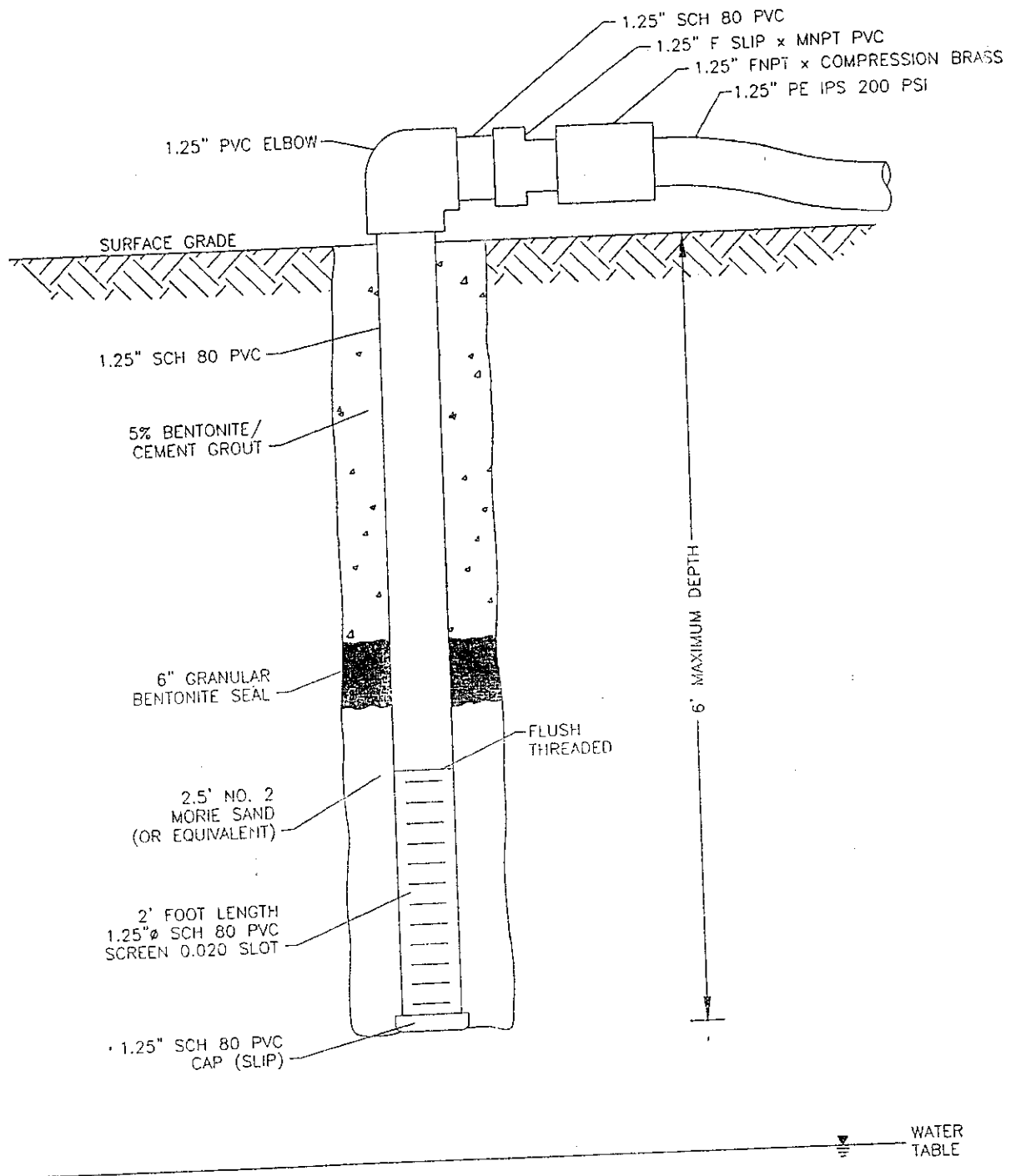
NO.	DATE	DESCRIPTION
1	12/15/2000	ISSUE FOR CONSTRUCTION
2	12/15/2000	ISSUE FOR CONSTRUCTION

PIPING & INSTRUMENTATION DIAGRAM  
**INTEGRATED CONSULTANTS**  
 LION, NEW YORK

REVISION

NO.	DATE	DESCRIPTION
1	12/15/2000	ISSUE FOR CONSTRUCTION
2	12/15/2000	ISSUE FOR CONSTRUCTION

PIPING & INSTRUMENTATION DIAGRAM  
**INTEGRATED CONSULTANTS**  
 LION, NEW YORK



VAPOR EXTRACTION POINT  
CONSTRUCTION DIAGRAM

INTEGREYTED  
CONSULTANTS

ILION, NEW YORK



Resource  
Control  
Corporation

P.O. BOX 579; 103 WILLS STREET  
RANOCAS, NEW JERSEY 08073  
(609) 261-3388

SOURCE: BASE MAP PROVIDED BY:  
RESOURCE CONTROL CORPORATION

FILE NAME:  
188-VEP

JOB NO.:  
188

DESIGNED:  
KW/PAR

DETAILED:  
KEF

CHECKED:  
KW/PAR

DATE:  
01/16/2001

FIGURE:  
2

WATER  
TABLE

# SAMPLING AND ANALYSIS PLAN

## INTRODUCTION

This document represents the Sampling and Analysis Plan (SAP) which is Attachment 6 of the Remedial Work Plan for the Former Green & Sons Fuel Oil Site (the "Site"). This SAP describes the sampling program and procedures to be followed during all sample collection and handling tasks associated with this project.

## SAMPLING ACTIVITIES AND PROCEDURES

System performance monitoring, site closure sampling, and groundwater evaluation tasks, which will include the collection and analysis of soil and groundwater samples, will be conducted as part of the site remedial tasks. The stated purpose each of these tasks is as follows.

- Soil samples will be collected as part of system performance monitoring to confirm that the remedial system is effectively treating the petroleum-impacted soils and to document that the applicable soil cleanup objectives are being met.
- Soil samples will be collected as part of site closure sampling tasks to provide verification that remediation to the applicable soil cleanup objectives was completed.
- Groundwater samples will be collected during groundwater evaluation tasks to assess baseline and post remediation groundwater quality in the "limited" area around former temporary monitoring well GW-3.

Detailed field sampling procedures proposed sampling locations, and analyses are described in the following sections of this SAP.

## ANALYTICAL PROCEDURES

Remedial activities will include soil and groundwater sample collection for analysis for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). In general, laboratory analytical procedures will adhere to USEPA Standard Methods 8021 and 8270 (base/neutrals). All soil and groundwater samples collected during the project will be analyzed for STARS VOCs and SVOCs (base/neutrals) by Phoenix Environmental Laboratories, Inc. (NY Lab Registration #11301) located in Manchester, Connecticut. Phoenix is ELAP certified and is a NYSDEC Contract Laboratory for the NYSDEC Emergency Spill Response Program in Region 6 and other regions across the state (Laboratory Contract No. D-200200).

## FIELD PROCEDURES

### *Soil Boring Installations and Soil Sample Collection*

Soil borings will be advanced at select locations across the site to collect performance monitoring and site closure soil samples. Sampling will be conducted by utilizing Geoprobe (or equivalent) direct push sampling techniques and Macro-Core™ samplers (or equivalent) having a minimum inside diameter (ID) of 1.9 inches. Soil samples will be collected continuously at



each boring location from grade to the specified completion depth. The Macro-Core™ samplers will be used to collect the soil samples in accordance with generally accepted industry practices. Upon extraction from the borehole, InteGreyted's on-site geologist will log each soil core. Soil type, color, moisture, staining and any other pertinent observations will be recorded on a boring log. Each soil core will be sectioned and soils from the selected sampling interval will be placed in a sealed sampling container. Throughout this process, samples will be carefully handled to minimize the potential for loss of volatiles. The headspace of the sampling container will be then be scanned with a Photoionization Detector (PID) to determine if VOCs are present in the sample. Upon completion, the boring will be backfilled to grade with bentonite hole-plug or compacted soil.

### ***Temporary Monitoring Well Installation***

One temporary monitoring well will be installed in the vicinity of former well GW-3 prior to initiation of the proposed remedial option. The monitoring well will be installed to a depth of approximately 12 feet below grade using Geoprobe direct push drilling techniques similar to those used to install the ozone sparge and SVE extraction wells. The monitoring well will be constructed of one-inch diameter PVC riser and a minimum of 5 feet of 0.01-inch slot PVC well screen. The well screen will be installed to straddle the shallow water table. A sand pack will be installed around the well screen and will extend two feet above the top of the well screen. A bentonite pellet seal will be placed above the sand pack and extended to grade. Following completion of the remedial tasks, the well will be removed and the borehole backfilled.

### ***Well Development***

The temporary monitoring well will be developed by bailing with a dedicated disposable polyethylene bailer and rope. A minimum of three to five well volumes will be bailed from the monitoring well during development. Development water from the well will be checked periodically for the presence of a sheen or free product. Development water will be discharged directly to the ground surface.

### ***Groundwater Sampling***

Prior to sample collection the monitoring well will be purged of a minimum of three well volumes. Purge water will be checked for the presence of a sheen or free product. Following purging, a groundwater sample will be collected from the monitoring well using dedicated disposable polyethylene bailers and rope.

## **SAMPLING PROGRAM**

### ***Performance Monitoring***

Performance monitoring will be conducted after the third full week of system operation to determine if the remedial system is effectively treating the petroleum-impacted soils and to determine if the soil cleanup objectives are being met. Performance monitoring soil samples will be collected from soil boring locations primarily in which InteGreyted's site investigation analytical data indicated that VOCs and SVOCs were present at concentrations below or in

excess of the applicable soil cleanup objectives. Soil samples will be collected near previous soil borings that were located adjacent to each of the documented "source" areas and "hot spots" and across the documented depth intervals from which InteGreyted previously collected soil samples. As part of this task, up to five soil samples will be collected from the specified soil borings and depth intervals identified on Table 1 (see below). These locations and depth intervals were selected to include a representative cross section (both vertically and horizontally) of the site. A review of InteGreyted's November 2000 sampling data indicates that the selected soil sample locations represent 71 percent of the impacted soil samples detected during our previous site investigation. Sampling rationale is also provided for each selected sampling location presented on Table 1.

**Table 1**  
**Performance Monitoring Sample Locations**

Boring Location	Sample Depth (ft)	Sampling Rationale
B-7	4 to 10	To assess effectiveness of the treatment near an identified source area of VOCs and SVOCs that is located within the center of an ozone sparge array. InteGreyted detected the highest concentrations of SVOCs in this boring during our investigation.
B-15	3 to 6.5	To assess effectiveness of the treatment near an identified source area of VOCs and SVOCs that is located within the center of an ozone sparge array. InteGreyted detected the highest concentrations of VOCs in this boring during our investigation.
B-6	2 to 4	To assess the effectiveness of the treatment near the northwest corner of the remedial area where VOCs and SVOCs were detected at "low" concentrations in shallow soils.
B-11	2 to 4	To assess effectiveness of the treatment in the eastern portion of the remedial area where SVOCs and elevated concentrations of VOCs were detected in shallow soils. This location is within the area where the former ASTs were located onsite.
B-4	3 to 5	To assess the effectiveness of the treatment near the western edge of the remedial area where InteGreyted detected VOCs and SVOCs at low concentrations, and where elevated concentrations of SVOCs were detected previously by CHA.

**Note:** Proposed sample depths are in feet below grade.

Following receipt of the performance monitoring analytical data, an evaluation will be made to determine the effectiveness of the remedial system. As part of the evaluation, the performance monitoring data will be compared to the baseline analytical data collected during InteGreyted's November 2000 Site Investigation activities. The analytical data sets will be evaluated to determine the overall quantitative reduction of VOCs and SVOCs (as applicable) at each sampling point along with the overall percentage reduction. The performance monitoring data

will also be compared to the TAGM 4046 soil cleanup objectives to determine if the remedial goals have been met. NYSDEC will be provided with the analytical data summary sheets and results of the performance monitoring evaluation upon completion of our evaluation. Based on the data evaluation, a determination will be made as to the effectiveness of the treatment option and/or if continued application is required; and if so, for what duration. This determination will be based on the following general guidance criteria along with calculations of estimated reductions of VOCs and SVOCs that can be expected in soils based on the evaluation results. Please note that following collection of the performance monitoring samples the remedial system will be restarted and will be in operation a minimum of an additional 7 to 10 days before the analytical data is received and evaluated.

- If between 80 and 100 percent on the soil samples analyzed indicate a reduction in the concentration of VOCs and SVOCs to levels at and/or below the cleanup objectives, and calculations indicate that the additional short term application following sampling would reduce concentrations to acceptable levels, then the system will be shut down and closure sampling will be conducted.
- If less than 80 percent of the samples meet the above criteria and calculations indicate that the additional short term application following sampling will not reduce the concentrations of VOCs and SVOCs to levels at and/or below the cleanup objectives, then operation of the treatment system will continue.

If continued system operation is required, subsequent performance monitoring samples (as determined to be applicable) will be collected at the locations and depths of the samples collected during the initial round of performance monitoring.

### *Closure Sampling*

Site closure sampling will be conducted following shut down of the treatment system (anticipated to be after 30 days of operation) to provide verification that remediation to the applicable soil cleanup objectives was completed. Soil samples will be collected from select areas of significance and evaluated with respect to available pre-remedial sampling data and performance monitoring sampling data to assess the effectiveness of the remediation. Closure soil samples will be collected from soil boring in which InteGreyted's site investigation analytical data and field screening data indicated that petroleum-impacted soils were present. Distribution of confirmation soil samples will be horizontally and vertically spaced to document that the impacted area has been remediated across the known affected depths. As part of this task, up to eight soil samples will be collected from the specified soil borings and depth intervals identified on Table 2 (see below). These locations and depth intervals were selected to include a representative cross section of the impacted zone (both vertically and horizontally) across the site. Combined with the performance monitoring data, sampling coverage will be at a ratio of one sample per every 1,230 square feet of affected area. This ratio is two times greater than the typical sampling ratio of one sample per 2,500 to 3,000 square feet that NYSDEC has typically required on similar VCP projects in the area. In addition, analytical data from the 15 soils samples collected by InteGreyted in November 2000 provides additional data that should be considered and utilized to support site closure. Sampling rationale and justification is provided for each selected sampling location presented on Table 2.

**Table 2**  
**Closure Sample Locations**

Boring Location	Sample Depth (ft)	Sampling Rational
B-3	8 to 10	Field screening (PID 8 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval.
B-9	4 to 6.5	Field screening (PID 10 to 11 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval.
B-13	4 to 9	Field screening (PID 41 to 82 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval.
B-14	4 to 9.5	Field screening (PID 212 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval. VOCs were detected in a soil sample from this depth in excess of the cleanup objectives.
B-22	3 to 6	Field screening (PID 39 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval.
B-25	2 to 5	Field screening (PID 111 to 168 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval.
B-39	2 to 6.5	Field screening (PID 110 ppm) and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval. One VOC was detected in a soil sample from this depth in excess of the cleanup objectives.
TP-4 and TP-5 Area	3 to 6	Field screening and visual observations during our site investigation indicated the presence of petroleum-impacted soils across this depth interval in the indicated test pits.

**Note:** Proposed sample depths are in feet below grade.

Following receipt of the post-remedial closure soil sampling results, the mass of ozone applied to the subsurface will be compared to the contaminant mass reduction calculated in the soils. The reduced mass will be adjusted for the calculated mass extracted with soil vapor, then compared to the stoichiometric, chemical oxidation demand in order to determine the site-specific ozone utilization efficiency. The analytical data will also be compared to the soil cleanup objectives for the targeted compounds (VOCs and SVOCs). Based on this comparison, a determination will be made as to whether the cleanup objectives have been met. The ultimate goal, regardless of the

mass balance calculation, is to demonstrate by sample collection and analyses that the cleanup objectives have been met.

If the remedial objectives are met for the site, InteGreyted will prepare a final closure report for submittal to NYSDEC that details the results of the remedial process and requests site closure. However, in the event that the cleanup objects are not met for a particular area, a determination will be made as to the need for additional remediation, and/or the duration of further remediation, if necessary. Additional samples would then be collected as necessary.

### ***Groundwater Evaluation Sampling***

Prior to startup and following shutdown of the remedial system, one pre-remediation and one post-remediation groundwater sample (respectively) will be collected from the temporary monitoring well installed as part of the remedial tasks (see above for well installation details). The pre-remediation sample will be used to determine baseline groundwater quality in the area immediately surrounding former temporary well GW-3. The post-remediation analytical data will be compared to the pre-remediation analytical data to evaluate any changes that may have occurred during the implementation of the remedial option.

ATTACHMENT 7  
HEALTH AND SAFETY PLAN

**SITE SAFETY PLAN**

**InteGreyted – Ilion, NY Project**

**January 19, 2001**

**PREPARED BY:**

Resource Control Corporation  
PO Box 579  
Rancocas, NJ 08073  
609-261-3388

## EMERGENCY INFORMATION

Police Department: 911

Fire Department: 911

EMS Unit: 911

Hospital: Little Falls Hospital  
140 Burwell St  
Little Falls, NY 13365  
(315) 823-1000

Jeffrey C. Dey: Project Director (609) 261-3388/Health & Safety Officer

Tom Farrell: Project Manager/Site Safety Officer (609) 261-3388

Mark Schumacher: Project Manager/Site Safety Officer (Alt.). (315)445-0224 (office), (315) 491-4144 (mobile)



## TABLE OF CONTENTS

1.0	GENERAL.....	1
2.0	SITE HISTORY AND DESCRIPTION.....	1
3.0	WORK AREAS.....	1
4.0	PROTECTIVE EQUIPMENT .....	2
4.1	General .....	2
4.2	Personnel Protection Requirements and Methods .....	4
4.3	Action Levels .....	4
	4.3.1. Ionization Detector Response.....	4
	4.3.2 Combustible Gas Response.....	4
	4.3.3 Oxygen Detector Response .....	5
	4.3.4 Radiation Monitor Response .....	5
4.4	Decontamination Procedures .....	6
5.0	SAFETY EQUIPMENT .....	6
5.1	General .....	6
5.2	Color Code.....	6
	5.2.1 Red .....	6
	5.2.2 Yellow .....	6
5.3	Warnings and Notifications .....	7
5.4	Communications for Entry Into Hazardous Areas .....	7
6.0	FIRE PREVENTION .....	7
	6.1 General .....	7
	6.2 Explosive Gas Survey .....	7
7.0	MEDICAL SURVEILLANCE PROGRAM.....	7
7.1	General.....	7
7.2	Physicals.....	8
8.0	ON-SITE MEDICAL PROVISIONS.....	8
8.1	General .....	8
8.2	Accident Reporting .....	8
8.3	First Aid.....	8
8.4	Heat Stress .....	9
	8.4.1 Heat Stress Monitoring .....	9
	8.4.2 Heart Rate Evaluation.....	9
	8.4.3 Symptoms and Treatment .....	10
8.5	Cold Stress .....	10
	8.5.1 General .....	10
	8.5.2 Frostbite.....	10
	8.5.3 Hypothermia .....	11
	8.5.4 Prevention.....	11
8.6	Emergency Notification.....	12
9.0	AIR QUALITY/AMBIENT AIR MONITORING .....	12
9.1	General .....	12

9.2	Preliminary Survey.....	12
9.3	Daily Surveys.....	12
9.4	Records.....	13
9.5	Hazard Assessment.....	13
9.6	Engineering Controls.....	14
10.0	SITE SECURITY.....	14
11.0	PROGRESS MEETING/EMPLOYEE TRAINING.....	14
11.1	Tailgate Safety Meetings.....	14
11.2	Orientation/Indoctrination.....	14
11.3	Training.....	15
11.4	Worker and Community Right-To-Know.....	15
12.0	CONTRACTOR COMPLIANCE.....	15
13.0	OCCUPATIONAL NOISE.....	15
14.0	HEAVY EQUIPMENT OPERATIONS AND HEAVY MATERIALS HANDLING SAFETY.....	15
15.0	EMPLOYEE CERTIFICATION.....	16
16.0	SITE SAFETY PERSONNEL RESPONSIBILITIES.....	16
17.0	CONFINED SPACE ENTRY.....	17
18.0	EXCAVATING/TRENCHING SAFETY.....	18
19.0	APPROVALS.....	19

APPENDICES

- Appendix A: Contingency Evacuation Plan
- Appendix B: Contingency Medical Emergency Plan
- Appendix C: Contingency Contamination Emergency Plan
- Appendix D: Contingency Fire Emergency Plan
- Appendix E: Contingency Spill or Air Release of Hazardous Material Plan
- Appendix F: Sign-Off Sheets
- Appendix G: Air Monitoring Data
- Appendix H: Electrical Safety
- Appendix I: Drilling Procedures
- Appendix J: Contaminant Profiles

Appendix K: Map to Hospital

Appendix L: Standard Operating Procedures Within Environments That May Contain Ozone

## **RESOURCE CONTROL CORPORATION**

### **Chain of Command - Responsible Individuals**

- |    |                              |   |
|----|------------------------------|---|
| 1. | Jeffrey C. Dey,              | President/Health & Safety Officer, Project Director |
| 2. | Scott Miller, Andrew Grier   | Project Engineers                                   |
| 3. | Tom Farrell, Mark Schumacher | Site Safety Officer, Project Manager                |

The chain of command for this site is as follows:

- Immediate site coordination problems and/or scheduling will be brought to the attention of the Project Director.
- Problems relative to personnel health and safety will be brought to the attention of the Project Director or Site Safety Officer.
- Site Operational meetings and problems requiring corporate coordination and input will be brought to the attentions of personnel listed above.

### **1.0 GENERAL**

This site-specific Health and Safety Plan shall be in effect throughout the duration of the Site Operations. All personnel, regardless of the company for which they are employed, are subject to the requirements of this plan.

### **2.0 SITE HISTORY AND DESCRIPTION**

This site safety plan covers all site activities performed during environmental work scope as detailed in Quotes.

Site activities include soil vapor extraction (SVE), ozone sparging and monitoring.

Possible hazards at the site include exposure to hazardous vapors due to SVE/ozone sparge, and electric shock when working with on-site blowers and the system control panel.

### **3.0 WORK AREAS**

Work and support areas shall be established based on ambient air data and proposed work areas. They shall be established in order to contain contamination within the smallest areas possible and shall ensure that each employee has the proper personnel protective equipment for the area or zone in which work is to be performed.

Adequate safety instruction signs shall be placed in areas where admittance is restricted due to hazardous environment. Proper care shall be maintained to assure that all work areas are contained.

Personnel will not, under any circumstances, be permitted on the site alone. All personnel shall use the "Buddy System", in groups of two or more, while on site.

This mandate is in effect for all site activity in Level C or above, or, in Confined Space Entry activities. Personnel may be on-site alone for Level D site activity, if confined space entry activities are not in progress.

#### **4.0 PROTECTIVE EQUIPMENT**

##### **4.1 General**

Protective clothing shall be worn by all persons on site as directed by the Project Director. This person is named in the beginning of this report.

##### **4.2 Personnel Protection Requirements and Methods**

Action levels shall have been adopted by RCC's safety professionals. Action levels are those concentrations that are to be continuously monitored in the field by use of an OVA, Micro Tip, and/or HNU with readings being taken in the breathing space occupied by the field personnel to determine whether an action level has been exceeded.

The Site Safety Officer will designate the appropriate level of protection for personnel entering the work area as determined by the pre-determined action level and RCC's air monitoring program.

Respiratory protection shall be selected for use as warranted by ambient air monitoring and type of site work being performed. Levels of Protection are as follows, from highest protection needed to no protection, within each of the four categories:

###### **Level A**

Level A should be selected when the highest level of respiratory, skin and eye protection is needed.

- Approved, positive pressure-demand, self contained breathing apparatus (SCBA) or airline
- Full encapsulating, chemical-resistant clothing  
Type - Life Guard "The Responder"
- Gloves (outer), chemical-resistant  
Type - Butyl Rubber (NBR)
- Gloves (inner), chemical-resistant  
Type - Latex or PVC surgical
- Chemical-resistant disposable outer-boot coverings  
Type - Neoprene
- Steel toe and shank boots
- Hard hat
- All seams between protective clothing items will be sealed with duct tape.
- Two-way radio communications

## Level B

Level B should be selected when the type and atmospheric concentrations of substances have been identified and a high level of respiratory protection, but less skin protection, is required. It should also be selected for initial site entries, or, when the atmosphere contains less than 19.5% oxygen.

- Approved, positive pressure demand, self-contained breathing apparatus (SCBA) or airline
- Chemical-resistant clothing  
Type - Polyethylene Coated Tyvek
- Gloves (outer), chemical-resistant  
Type - Butyl Rubber (NBR)
- Gloves (inner), chemical-resistant  
Type - Latex or PVC surgical
- Chemical-resistant disposable outer-boot coverings  
Type - Neoprene
- Steel toe and shank boots
- Hard Hat
- All seams between protective clothing items will be sealed with duct tape.

## Level C

Level C should be selected when the type of air contaminants have been identified, concentrations have been measured, and a canister is available that can remove this contaminant. The atmospheric concentration of oxygen must be greater than or equal to 19.5%.

- Approved, full-face air purifying, canister-equipped respirator
- Chemical-resistant coveralls
- Gloves (outer), chemical-resistant  
Type - Butyl Rubber (NBR)
- Gloves (inner), chemical-resistant  
Type - Latex or PVC surgical
- Chemical-resistant disposable outer-boot coverings  
Type - Neoprene
- Steel toe and shank boots
- Hard hat
- All seams between protective clothing items will be sealed with duct tape.

## Level D

Level D should be worn when the contaminants are known within acceptable respiratory limits and there is not a hazard from direct skin contact.

- Gloves (outer), chemical-resistant  
Type - Butyl Rubber (NBR)
- Steel toe and shank boots
- Hard hat
- Standard work uniform with Safety Vest
- Goggles or safety glasses

After selection of the proper respiratory protection device(s), documentation shall be developed governing the operating procedures to be followed, based on employee/wearer training on proper use and limitations of specific device(s). No person may be assigned a task requiring the use of respiratory protection equipment without first being properly trained in its use and limitations. Before wearing of any respiratory protection equipment is permitted, wearer must first complete a fit test, and must be completely aware of fitting procedures.

No person may be assigned a task requiring the use of respiratory equipment where it has been determined that said person has a physical limitation which might result in injury in conjunction with respiratory equipment use. A physician shall be consulted as to individual limitations based on information obtained in baseline physical examinations, and subsequent follow-up examinations.

All respiratory equipment shall be properly fitted to worker(s) who will be using such equipment. All equipment shall be properly cleaned and inspected for worn parts as often as necessary. SCBA's should be inspected once a month at a minimum. All equipment shall be cleaned before being worn by a different operator.

Applicable protective clothing shall be selected and worn at all times by employees potentially exposed to contamination.

### 4.3 Action Levels

All initial site activities will be done in Level D attire as noted in Section 4.2. Please refer to Appendix L for action levels during the operation of ozone.

#### 4.3.1. Ionization Detector Response

Type - Photoionization or Flame ionization Detector

0.0	to	100.0 ppm	:	Level D to be worn
101.0	to	750.0 ppm	:	Level C to be worn
751.0	to	10,000 ppm	:	Level B to be worn
Above 10,000			:	Immediately withdraw from area

#### 4.3.2 Combustible Gas Response

0.0	to	20.0% LEL	:	Continue with normal activity
Above 20.0% LEL			:	Immediately withdraw from area

<b>4.3.3 Oxygen Detector Response</b>			
0.0% to 19.5% Oxygen	:	Level B is mandatory	
19.5% to 23.0% Oxygen	:	Continue with normal activity	
Above 23% Oxygen	:	Immediately withdraw from area	

<b>4.3.4 Radiation Monitor Response</b>			
0.0 to 2.0 mR/hr	:	Continue with normal activity	
2.0 to 3.0 mR/hr	:	Level C is mandatory	
3.0 to 5.0 mR/hr	:	Level B is mandatory	
Above 5.0 mR/hr	:	Immediately withdraw from area	

The levels for ionization detector response may be upgraded by the response to either oxygen or radiation. These levels may never be downgraded without the express permission of the Site Safety Officer (i.e., ionization detection reveals that Level D apparel be worn to 100 units on the meter, and the meter shows that 50 units are present. The oxygen meter reveals that the concentration is 17.8%. The normal Level D response is now upgraded to Level B.)

Contact the Project Director for the choice of proper gloves and suits, or, if clarification of any of the action levels as listed above is needed.

#### 4.4 Decontamination Procedures

Where high levels of site contamination are present in soils being handled on site such that respiratory, skin and eye protection are necessary, decontamination will be required (Levels C, B and A). A support area will be positioned so that no one is permitted to enter or leave without passing through this area. At the boundary between the work and support areas, decontamination processes for equipment and personnel are required. All access to and from the work area will be through this section of the support area.

Decontamination will be performed to protect workers from exposure to dangerous materials and to eliminate the hazard of contamination on equipment.

At each work location reusable sampling and personal protective equipment will be decontaminated prior to sampling, between each sample, and after sampling. Sampling equipment will be decontaminated by steam cleaning or washing with a mixture of alconox and water, then rinsed twice with distilled water and allowed to air dry on a clean plastic tarp. All decontamination solution shall be recycled as the nutrient blend solute. Disposable sampling and personal protective equipment will be placed in plastic bags and temporarily stored in designated drums. These drums shall be disposed of according to regulatory guidelines, if necessary.

Following proper decontamination procedures (decon) is as important as donning the appropriate safety gear. If proper decon is not done, many of the protective measures taken while working on-site are negated. All workers on-site must always be conscious of the different ways they can be exposed to the hazardous material.



Gloves and boots are the first items that should be decontaminated. Four basins should be set up near the decontamination station at the beginning of the day. These basins should be large enough to step into. A brush will be available to clean the boots and gloves.

First Basin	-	soap and water - boot & glove cleaning
Second Basin	-	water - boot & glove rinsing

A hose can be used to clean the respirators and other equipment.

The sequence of steps for removing and cleaning personal protective equipment follows:

- Wash gloves and boots.
- Rinse work gloves and boots.
- Remove tape at wrists, ankles and neck.
- Remove outer boots (if used) and outer gloves.
- Remove respirator or mask.
- Package and/or dispose of respiratory or filters.
- Package boots and gloves or dispose of them.
- Dispose of all contaminated items in properly labeled drums.
- If necessary, copy notes from contaminated paper onto clean paper while wearing inner gloves (surgical gloves) at decontamination station area.
- Remove latex gloves.
- Dispose of latex gloves and contaminated note paper.
- Wash hands and face.

## 5.0 SAFETY EQUIPMENT

### 5.1 General

This section applies to all equipment required on-site to prevent injury.

### 5.2 Color Code

#### 5.2.1 Red

Red shall be used to identify fire equipment; identify containers of flammable materials; stop bars/buttons on mechanical machinery used for emergency power disconnection.

Red lights shall be provided at barricades or obstructions. Danger signs shall be painted red.

#### 5.2.2 Yellow

Yellow shall be used as the basic color for identifying caution. Physical hazards shall be marked by yellow signs, (i.e., tripping, falling, hitting against, caught in between, etc.).

### 5.3 Warnings and Notifications

Signs and tags shall be of a design in accordance with 29 CFR 1910.145.d. Specific signs designed in this section are danger, caution, slow-moving vehicle, biological hazard, and safety instruction. Signs shall be worded in a clear, concise manner, positive in suggestion, accurate in fact.

Tags shall be used for temporary situations, to warn of broken equipment or other similar hazard. These tags are only temporary, as is the hazard being called to attention. Temporary hazards should be remedied as quickly as possible. This can be done by either fixing the damaged item or dismantling, removing or rendering the item tamper-proof. Tags will be designed in accordance with 29 CFR 1910.145.f-2.

#### **5.4 Communications for Entry Into Hazardous Areas**

Where large distances may separate workers or in extremely dangerous areas, a communication network shall be established using portable two-way radios. The use of hand signals may be employed in close areas where portable radios are inconvenient, or unavailable.

All employees shall be trained in understanding hand and radio signals, to alleviate any problems encountered in the case of an emergency. All radio equipment shall be certified as intrinsically safe.

### **6.0 FIRE PREVENTION**

#### **6.1 General**

Fire prevention and protection techniques shall be instituted on-site to minimize sparks. All smoking and utilization of tools requiring open flames shall be prohibited during the duration of site activities. Emergency procedures in case of fire shall be discussed with workers before every new work area location or new work activity begins. Diagrams of emergency routes shall be displayed in the work areas and in areas and any other areas where workers will break and relax from work activities.

#### **6.2 Continuous Ozone Monitoring**

The remediation system is outfitted with a continuous ozone monitoring device with automatic system shut down capabilities. System shut down will automatically occur in the event that unacceptable ozone levels exist within the ozone generator trailer or should the vapor extraction rate fail to be that of at least twice the sparge rate.

### **7.0 MEDICAL SURVEILLANCE PROGRAM**

#### **7.1 General**

This section covers all employees included in on-site testing or supervision that may be exposed to potential health hazards.

#### **7.2 Physicals**

A baseline physical examination must be conducted on all employees before they are permitted to engage in site activities. A complete medical survey should be completed on each employee upon start of employment. Yearly re-examination should be performed to update information on employee health status.

Any time an injury occurs while on the job, in areas where potential or known hazard exist, the injured party shall submit to periodic monitoring of blood, pulmonary functions, skin contaminations, etc., at a clinic equipped for such monitoring. This monitoring should be continued until the extent of contamination, if any, can be accurately determined. Any injured person who is currently undergoing periodic testing will not be permitted back to work in a hazardous atmosphere. This restriction shall be continued until conclusive evidence can be presented that returning to work will not further endanger the employee's health. At this time, a Return to Work form will be completed by the attending physician.

Where injury does not involve potential hazardous contamination, but does result in limitation of work abilities, the employee should not return to work until a doctor has examined the injury, and determined it sufficiently healed. At this time, a Return to Work form will be completed by the attending physician.

## **8.0 ON-SITE MEDICAL PROVISIONS**

### **8.1 General**

This section covers all required on-site medical services, hygiene services and information pertaining to area hospitals and clinics that are necessary for treatment of injury.

### **8.2 Accident Reporting**

When an emergency situation occurs, a warning procedure should be initiated by the first person to recognize the situation. Warning may consist of short blasts of an air horn for injuries or illness, or, a long continuous blast of the horn when immediate evacuation of an area is necessary. In the event of accident or injury of any type on-site, a report of such accident shall be made immediately. The area supervisor shall be responsible for remedial plan of action. Site Safety Officer shall be responsible for completing an Injury Report.

### **8.3 First Aid**

A First Aid Kit will be on site for non-severe injuries (cuts, small burns, etc.) . In the event of a serious injury, EMS units will be immediately notified and a report shall be filed by Site Safety Officer.

### **8.4 Heat Stress**

Heat stress may be of concern depending upon the ambient temperature. The heat stress of personnel on-site shall be monitored by use of an oral thermometer, using a reading taken at the beginning of the work day shift as a baseline.

If any person shows an increase of greater than (1) degree from the reading taken at the beginning of the work day or shift, that person shall be relieved of duty until his ambient body temperature returns to the baseline reading. He/She shall immediately be encouraged to use adequate control methods to reduce his/her body temperature.

If, after returning to the baseline, similar event occurs, the person shall be relieved of duty for the duration of the work day. He/She shall be also be relieved of duty if over the duration of the work day signs of heat exhaustion, or, heat stroke are present.

One or more of the following control measures can be used to help control heat stress:

- Provision of adequate liquid to replace lost body fluids. Employees must replace water and salt lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Replacement fluids can be a 0.1% salt water solution, commercial mix such as Gatorade or Quick Kick, or a combination of these and fresh water.
- Establishment of a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts for workers or earlier/later work schedules.
- Cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments.
- All breaks are to be taken in a shaded area.
- Employees shall remove impermeable protective garments during rest periods.
- Employees shall not be assigned other tasks during rest periods.
- All employees shall be informed of the importance of adequate rest, acclimatization and proper diet in the prevention of heat stress.

#### 8.4.1 Heat Stress Monitoring

Heat stress may occur even in moderate temperatures and may present heat rash, heat cramps, heat exhaustion, and/or heat stroke.

Monitoring procedures should be implemented to prevent heat stress arising from any of the following: environmental conditions, use of personal protective equipment, intensity of workload.

#### 8.4.2 Heart Rate Evaluation

Heart rates should be measured periodically by taking a 30 second radial pulse (thumb side of wrist using middle and ring fingers and multiplying the number of beat by 2) at the beginning of a rest period. Frequency of monitoring is determined according to adjusted air temperature and level of personal protective equipment worn (See Table 1).

TABLE I

Adjusted ** Temperature	Normal * Ensemble	Impermeable * Ensemble
90 F or above	After 45 min @ work	After 15 min @ work
87.5 - 90 F	After 60 min @ work	After 30 min @ work
82.5 - 87.5 F	After 90 min @ work	After 60 min @ work
77.5 - 82.5 F	After 120 min @ work	After 90 min @ work
72.5 - 77.5 F	After 150 min @ work	After 120 min @ work

\* For work levels of 250 Kcal/hr

- \*\* Calculate adjusted air temperature by using this equation:  $\text{temp adj F} = \text{temp f} + (13 \times \% \text{ sunshine})$   
 Measure air temp with bulb shielded from radiant heat.

### 8.4.3 Symptoms and Treatment

<b>Symptoms</b>	<b>Treatment</b>
Heat rash - red rash on the skin	Increase fluid intake
Heat cramps - muscle spasms - pain in the hands, feet, and abdomen	Rest in cool areas
Heat exhaustion - pale, cool moist skin - heavy sweating - dizziness, nausea, fainting	Apply cool water to skin surfaces
Heat stroke - red, hot, unusually dry skin - lack of or reduced perspiration - nausea - dizziness and confusion - strong, rapid pulse - coma	Transport to nearest hospital

## 8.5 Cold Stress

### 8.5.1 General

During operation in winter months, cold stress could be an occupation stress which can be addressed.

Persons working outdoors in temperatures at or below freezing may be frostbitten. Extreme cold for a short time may cause severe injury to the surface of the body, or result in profound generalized cooling, causing death. Areas of the body which have high surface-area-to-volume ratios such as fingers, toes, and ears are the most susceptible.

Two factors influence the development of a cold injury; ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10 degrees F., with a wind of 15 miles per hour is equivalent in chilling effect to still air at least 18 degrees below zero.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph is increased to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration

soaked.

### **8.5.2 Frostbite**

Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorized into:

- Frost nip or initial frostbite: characterized by sudden blanching or whitening of skin.
- Superficial frostbite: skin has a waxy of white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep frostbite: tissues are cold, pale and solid; extremely serious injury.

### **8.5.3 Hypothermia**

Systematic hypothermia is caused by exposure to freezing or rapidly dropping temperature. Its symptoms are usually exhibited in five stages:

- 1) shivering,
- 2) apathy, listlessness, sleepiness and sometimes rapid unconsciousness,
- 3) glassy state, slow pulse, and slow respiratory rate,
- 4) freezing of the extremities, and finally
- 5) death.

### **8.5.4 Prevention**

Thermal socks, long cotton or thermal underwear, hard hat liners and other cold weather gear can aid in the prevention of hypothermia.

- Blankets, warm drinks (other than caffeinated coffee) and warm break areas are essential.
- The overall goal is to keep from getting wet. If one does get wet, he/she should dry off and change clothes.
- Cold stress training is also appropriate for work at the site.

### **8.6 Emergency Notification**

A complete list of all State and local Police Departments, Ambulance, and Rescue Departments and a listing complete with routes to all hospitals and emergency facilities shall be maintained by the Project Director. The list must include phone numbers and quickest routes to area facilities. The Site Safety Officer shall also contact the hospital or emergency treatment center and inform them of an injured workman. Advice on the transportation method, and if necessary, decontamination or treatment shall be sought. Facilities to be listed on the site are listed below.

### **EMERGENCY INFORMATION**

**Police Department: 911**

**Fire Department: 911**

**EMS Unit: 911**

**Hospital: Little Falls Hospital  
140 Burwell St, Little Falls, NY 13365  
Emergency Dept. - (315) 823-1000**

**Resource Control Corporation: Office - (609)-261-3388**

**Jeffrey C. Dey: (609) 265-3912**  
Project Director

**Scott Miller: (609) 265-1378**  
Project Engineer

## 9.0 AIR QUALITY/AMBIENT AIR MONITORING

### 9.1 General

This section will govern all air monitoring to be done on-site preceding the start of operations. It will also govern ongoing air monitoring during testing and cleanup of site. Reliable measurement of airborne contaminants are necessary to select appropriate protective equipment. Protection equipment will be necessary, based on the potential health effects of exposure to contaminants found.

### 9.2 Preliminary Survey

During all operations, air monitoring shall be conducted by a trained professional from RCC, Inc. He/She will have a sound working knowledge of state and federal occupational safety and health regulations, and formal training in occupational safety and health. The preliminary survey shall be conducted in the following manner:

Portable real-time instrumentation to be utilized will be at a minimum:

- Gastech Hydrocarbon Surveyor
- Explosimeter
- Oxygen meter

All proposed areas where sampling, excavation, soil handling or transporting or any other operation is to take place, shall be monitored.

### 9.3 Daily Surveys

All daily monitoring procedures shall be the same as those described above in the preliminary monitoring procedures except that the level of personal protection may be stepped up or down if the level of respiratory, skin or eye protection warrants.

Ambient air monitoring shall be conducted throughout the duration of all operations on site. A minimum of five locations around the perimeter of the site will be established and actively monitored during operations. High risks work areas shall be monitored due to the possibility of significant exposure varying directly with distance from the source. Monitoring these workers conserves resources that would be necessary to monitor workers further removed from the contaminated source.

In the event that daily air analysis result in the ambient air exceeding recommended levels for the respiratory equipment utilized, the Project Director will be notified immediately. The Project Director shall immediately inspect operating conditions at the work area and attempt to determine the cause of the elevated levels in the ambient air. The Project Director may require changes in the operating procedures in order to reduce or eliminate elevated conditions.

In the event elevated levels persist after several attempts to reduce such levels, the Project Director will immediately stop all operations at that location and either:

- Step-up respiratory and worker protection to next level of protection.
- OR
- Remove workers from that location until conditions improve.



At that time, ambient air monitoring shall be continued until safe levels are achieved.

This program will be conducted and monitored by RCC. All equipment utilized for sampling shall be maintained and calibrated as per factory specification and shall be documented and included in facility record documents. All ambient air monitoring results shall be provided to the Site Safety Officer during the same day of having obtained results. These results shall be in written form and in ink.

#### 9.4 Records

Accurate records shall be kept of all air monitoring results. These records should include date, time, place of sample, air temperature, weather conditions, and a physical description of any obvious hazards that may influence the results of the tests. These records shall be maintained as part of the on site documentation. A copy of these records will be retained by RCC, to maintain accurate site records.

#### 9.5 Hazard Assessment

Personnel present on site shall be advised of all potential hazards associated with substances that are present.

An evaluation of potential hazards has been conducted utilizing information acquired from various generators to ensure that site activities, personnel protection and emergency materials are those which are expected to be encountered.

The chemical information listed below represents the most hazardous conditions that may be present on the site. It represents a combined correlation of data from each of the contaminants known to be present on the site, giving levels which are deemed to be having the greatest potential for adverse health affects. All levels are based on Photoionization detector response. Please refer to Appendix L for ozone chemical information.

If data is not available for the parameters listed below, they will be listed as NOT AVAILABLE.

TLV	Threshold Limit Value	300 ppm
TLV-TWA	Threshold Limit Value Time-Weighted Average	300 ppm 300 ppm
TLV-STEL	Threshold Limit Value Short-Term Exposure Limit	500 ppm
TLV-C	Threshold Limit Value-Ceiling	NOT AVAILABLE
PEL	Permissible Exposure Limit	300 ppm
REL	Recommended Exposure Limit	100 ppm
IDLH	Immediately Dangerous to Life or Health	10,000 ppm
ODOR T.	Odor Threshold	0.07 ppm

V.P.	Vapor Pressure	24.7 mmHg
I.P.	Ionization Potential	< 10.2 eV
FL-P	Flash Point	- 49 F
LEL	Lower Exposure Limit	1.0 %
UEL	Upper Exposure Limit	7.5 %

## 9.6 Engineering Controls

Where feasible, engineering controls shall be the primary means utilized to maintain containment exposure within the limits prescribed to be safe.

## 10.0 SITE SECURITY

The Project Director shall be responsible for the management of any security systems implemented at the site. Access to the site shall be at the discretion of the site manager.

No visitors shall be allowed without the approval of the Project Director. Visitors shall not be permitted to enter known or suspected active hazardous work areas without proper indoctrination by the Site Safety Officer.

## 11.0 PROGRESS MEETING/EMPLOYEE TRAINING

### 11.1 Tailgate Safety Meetings

Tailgate safety meetings shall be held at the beginning of each shift at a central location in a non-contaminated area. This area should be noted on the site plan. All ongoing activities shall be discussed, and air monitoring results will be presented. Safety measures shall be reviewed to ensure all employees are aware of all precautionary methods.

### 11.2 Orientation/Indoctrination

Orientation and Indoctrination of all new employees shall be conducted by the Project Director before the new workers are allowed access to the work area. The indoctrination shall include discussion of work activities, chain of command, respiratory protection program, emergency work exits and any other applicable information governing everyday work activities.

### 11.3 Training

It is important that all employees be properly trained in all tasks to be performed. This training includes, but is not limited to, sampling procedures, protective clothing fitting, decontamination procedures where necessary, proper care to be used around extremely toxic or flammable materials, and proper care to be observed in areas of extreme danger. All employees are required to be trained in the following areas of health and safety awareness:

- Basic Safety: this includes cause and prevention of slip, trip and fall hazard, safe drum handling and opening techniques, safe lifting techniques, heat stress illness and its prevention, etc.
- Hazardous Protection: dealing with the identification, recognition and safe work procedures or

toxic materials. This would include having knowledge of the use and limitation of applicable protective clothing, respirators, and decontamination procedures. Respirator fit tests for all employees required to use respirators fall under this category. Training information pertaining to routes of exposure, toxic effects, and specific nature of the job which could result in exposure should be conveyed at this time.

- First Aid and Cardiopulmonary Resuscitation: at least one employee on each shift, as well as the project manager and/or site safety officer, should be trained in the proper procedures for administering first aid and CPR.

#### **11.4 Worker and Community Right-To-Know**

The following contaminants are possible, or are suspected, in site soils and may be present in excess of prescribed limits:

##### Fuel Oil and Gasoline

Any person needing specific information on any of the chemicals listed above should contact the Site Safety Officer. They will be provided in accordance with OSHA 29 CFR 1910.1200.

Any employee request for work place surveys or hazardous fact sheets must be responded to within five days. All employees must be formally informed in writing of the hazardous nature of all substances to be handled, as well as the health hazards these substances might pose. Proper training in the handling of all substances on site must be performed. The importance of proper training cannot be over-emphasized.

#### **12.0 CONTRACTOR COMPLIANCE**

All EPA, state and federal regulations shall be adhered to by site employees during excavation, disposal and construction operations. Any contractors should also conduct medical screening examinations for employees, comply with the personnel protective programs, and emergency response procedures, etc.

#### **13.0 OCCUPATIONAL NOISE**

Requirements set forth in the OSHA Hearing Conservation Amendment (OSHA 1910.95) shall be adhered to during work on-site. Both area noise monitoring and personnel noise dosimetry shall be conducted by the Site Safety Officer to determine the level of noise and the adequate level of protection. Hearing protection shall be provided where sound pressure levels exceeds 85 dB (a weighted scale, slow response). Hearing protection shall be required where sound pressure levels in areas and/or on equipment exceeds 90 dB (a weighted scale, slow response).

#### **14.0 HEAVY EQUIPMENT OPERATIONS AND HEAVY MATERIALS HANDLING SAFETY**

The following information warrants extra attention regarding work around heavy equipment (drilling rigs, front and/backhoe loaders, etc.) and heavy materials:

- Use common sense.
- Hard hats shall be worn at all times on-site. Other protective gear as specified in this site safety plan is applicable as well.
- Pay attention at all times.

- Maintain visual contact at all times.
- Establish hand signal communication when verbal communication is difficult. Determine one person per work group to give hand signals to equipment operators.
- Be aware of footing at all times.
- All heavy equipment shall have backup alarms of some type.
- Only qualified people are to operate heavy equipment.
- Use chains, hoists, straps, and any other equipment to safely aide in moving heavy materials.
- Never walk directly in back of, or to the side of, heavy equipment without the operator's knowledge.
- Never use a piece of equipment unless you are familiar with its operation. This applies to heavy as well as light equipment (e.g., chain saws).
- Pipe Sections and other materials to be removed during any project are extremely heavy. Make sure all precautions have been taken prior to moving. Let the equipment, not your body, do the moving.
- Be sure that no underground or overhead power lines, sewer lines, gas lines, or telephone lines will present a hazard in the work area.
- Get help whenever you are in doubt about a material's weight. Use the "Buddy System".
- Ensure that air bottles are secured properly to heavy mobile equipment.

#### 15.0 EMPLOYEE CERTIFICATION

All on-site workers, regardless of the company with which they are employed, are required to have read this entire Health and Safety plan, and must sign the accompanying form to acknowledge this.

#### 16.0 SITE SAFETY PERSONNEL RESPONSIBILITIES

The responsibilities of all personnel involved in health and safety operations are stated below:

<u>TITLE</u>	<u>SAFETY RESPONSIBILITIES</u>
<b>Project Director</b>	<ul style="list-style-type: none"> <li>■ Monitors on-site hazardous conditions</li> <li>■ Overall responsibility for ensuring that the procedures stated in the Site Safety Plan are followed.</li> <li>■ Dismisses personnel who, by unsafe action, endanger themselves, co-workers, or the public.</li> </ul>
<b>Site Safety Officer</b>	<ul style="list-style-type: none"> <li>■ Enforces Site Safety Plan</li> <li>■ Periodically inspects and ensures proper maintenance of safety equipment.</li> <li>■ Knows emergency procedures and evacuation routes.</li> <li>■ Notifies, when necessary, local public emergency officials.</li> <li>■ Enforces safety procedures</li> <li>■ Documents and coordinates field activities and sample collection.</li> <li>■ Manages field operations</li> <li>■ Stops work on site if conditions threaten the health and safety of field personnel</li> </ul>

**Team Workers**

- Complies with Site Safety Plan.
- Safely performs assigned work tasks.
- Notifies Team Leader or Site Safety Officer of unsafe working conditions

## 17.0 CONFINED SPACE ENTRY

Confined spaces can be identified as an area having any one of the following characteristics:

- limited openings for entry and exit
- unfavorable natural ventilation
- not designed for continuous worker occupancy

Included within this definition are excavations, storage tanks, impoundments, silos, pipelines, pits and vaults.

All personnel are urged to use caution in identifying any of the areas listed above, and, to plan their approach to operations conducted in these areas.

All personnel are urged to use all engineering controls possible to avoid entering these areas. Examples of this would include using remote sampling equipment, or, using a contractors back hoe bucket to collect soils for sampling, rather than personnel entering the excavation.

If engineering controls cannot be used or are not effective, numerous safety measures need to be put in place before any personnel shall be permitted to enter a confined space, as follows:

- Continuous ambient air monitoring will be performed at all times while in an active work area.
- Constant monitoring with flame or photoionization detectors will be done to detect the presence of hazardous substances. An off-site background level will be noted and documented.
- The level of protection will be determined by noting the action levels in Section 4.3.
- Constant monitoring of combustible gas levels will be done to detect possible explosive hazardous.
- If the detectors show readings between 0% and 20.0% of the lower explosive limit (LEL), all site activities may continue.
- If the detectors show readings above 20.0% of the lower explosive limit (LEL), all site activities will cease immediately and all personnel will be withdrawn to an area which is under 20.0% of the LEL.
- Constant monitoring of oxygen levels will be done to detect the possibility of oxygen deprivation. If the detectors show readings between 0% and 19.5% oxygen, the level of protection will be upgraded to Level B immediately, as noted in Section 4.2.
- If the detectors show readings between 19.5% and 23.0% oxygen, all site activities may continue.
- If the detectors show reading above 23.0% oxygen all site activities will cease immediately and all personnel will be withdrawn to an area which is under 23.0% of the LEL.
- Self-contained breathing apparatus shall be kept immediately adjacent to the work area, and shall be removed from their cases ready for immediate use.
- No open flames are permitted in, or adjacent to, any confined space. Fire extinguishers will be

kept at the work area.

- All personnel entering a confined space will be equipped with lifelines and life belts before entering.
- A trained back-up person will be on hand at all times. This person's sole responsibility will be to monitor the progress of the tasks being performed.
- Ventilation, for air supply and control of temperature extremes, may be accomplished by the use of fans or blowers.
- Personnel should use extreme caution while standing on loose, granular material stored in bins, silos and hoppers such as sand, coal or grain, which can engulf and suffocate a worker.
- Personnel should use caution around slick surfaces, and be aware of falling objects.

## **18.0 EXCAVATING/TRENCHING SAFETY**

All excavation and trenching work must comply with all safety regulatory agency rules. Prior to any excavation work, the existence and location of underground pipe, electrical conductors, etc. must be determined. The walls and spaces of all excavations more than five (5) feet deep or excavated below a building footing or foundation shall be guarded properly by shoring, sloping of the ground, or equivalent means.

Daily inspections of excavations shall be made. If there is evidence of possible cave-ins or slides, all work in the excavation shall cease until the necessary safeguards have been taken.

Trenches more than four (4) feet deep shall have ladders or steps located so as to require no more than 25 feet of lateral travel between means of access.

All equipment such as pipe, tools, etc. shall be kept out of traffic lanes and access ways. Equipment shall be stored to prevent danger to personnel at any time.

All trenches shall be completely guarded on all sides. A minimum of two (2) feet from the edges will be maintained. Trench guarding shall consist of wooded, metal, or heavy plastic barricades spaced no further apart than 20 feet. Such barricades shall not be less than 36 inches high when erected.

Protection between barricades shall consist of at least 3/4 inch wide nylon tape (yellow or yellow and black). The tape shall be stretched between barricades.

All barricaded sections immediately adjacent to where pedestrians cross trenches shall be guarded with a minimum of 2 by 2 inch wooded rails from the bridge to the first adjacent barricade. This barricade shall not be less than eight (8) feet horizontally to the top of the first barricade.

All pedestrian bridges shall be of sufficient strength to prevent no greater vertical deflection than 1/2 inch when a 250 pound weight is applied to the center of the bridge.

Handrails shall consist of an intermediate and top rail on both sides of the bridge. The top rail shall be a minimum of 42 inches high and capable of withstanding a lateral force of 200 pounds against the center of the top rail.

All surfaces which a person could reasonably contact should be sufficiently free of splinters, nails, or

protrusions which may cause injury.

All trenches shall be backfilled as soon as practical after work is completed and all associated equipment removed.



**19.0 APPROVALS**

Approved by: \_\_\_\_\_  
President  
Resource Control Corporation

\_\_\_\_\_  
Site Safety Officer  
Resource Control Corporation

## APPENDIX A

### APPENDIX A CONTINGENCY PLAN EVACUATION PLAN

Although very unlikely, it is possible that a site emergency could necessitate evacuating all personnel from the site. If such a situation develops, the Site Safety Officer, or designated representative, will notify the Project Director, or vice versa, of the event and appropriate signal will be given for site evacuation. The above officers shall ensure that the evacuation is carried out in a calm, controlled fashion.

All personnel shall exit the site and shall congregate in an area designated by the Project Director and/or Site Safety Officer to be safe. The route of evacuation will be dependant on wind direction, severity and type of incident, etc.

The Project Director and/or Site Safety Officer shall ensure that all personnel are accounted for, if someone is missing the Site Safety Officer will alert emergency personnel.

This may be done by contacting the appropriate Police Department as listed in **Section 8.6**. Advise them of the situation and request and expedient response by Emergency Services personnel.

Contact the Site Safety Officer, Project Director and Director of Operations as soon as possible after attending to the evacuation. During office hours they may be contacted by phone. If after hours they should be contacted at their residence, by car phone or beeper.

## APPENDIX B

### APPENDIX B CONTINGENCY PLAN MEDICAL EMERGENCY

The following procedures should be instituted immediately in the event of a medical emergency involving illness or injury to one of RCC's employees while on site.

The site should be shut-down and immediately secured. The area in which the injury or illness occurred should be considered off-limits until the cause of the illness or injury is known.

In the event of a non-trauma related illness or injury, instantaneous real-time air monitoring readings with flame or photoionization detectors should be acquired to ascertain if the illness or injury was caused by potential exposure to hazardous materials. Monitoring should be done both upwind and downwind of the incident site.

Assess the victim's condition for the nature of injury or illness. Pay close attention to the level of consciousness and any cardiac or respiratory involvement.

If the victim appears to be critically injured (i.e. unconsciousness, cardiac or respiratory abnormalities, stroke, seizures, etc.), support the victim's vital functions. Administer CPR if needed. Notify Police, Fire Department and EMS Units immediately.

This may be done by contacting the appropriate Police Department as listed in Section 8.6.. Advise them of the situation and request as expedient response by Emergency Services personnel.

The victim should be decontaminated as soon as possible after removal from the contaminated environment. This should be done in non-contaminated area well away from the source of the problem. Extreme care should be used to avoid cross-contamination. The victim should be washed by water spray or safety shower. Contaminated protective clothing should be removed after washing. The victim should be covered with plastic or fitted with a Tyvek 1422 suit. The SCBA or CCROV should be removed last, except in the case of a critical injury where the victim requires respiratory support. The victim should not be transported until decontamination is performed to the degree that personnel will not be subjected to cross-contamination.

The Fire Department should be notified if manpower is immediately needed, or if access to water to wash and decontaminate the victim is not available at the location.

If the victim appears to be critically injured, they should be transported to the nearest Emergency Room as soon possible. Under no circumstances should the victim be transported to the hospital in anything other than an EMS Unit staffed by qualified personnel.

If the victim's condition appears to be non-critical, and is anything more severe than minor cuts or bruises, they should be transported to the nearest hospital. Under no circumstances should the victim be transported to the hospital in anything other than an EMS Unit staffed by qualified personnel.

If the victim has sustained extremely minor injuries or a minor illness, it will be up to the discretion of the

Site Safety Officer whether or not the victim should be treated on-site, and, may continue to work. If the Site Safety Officer determines that the victim may not continue to work, the victim should be decontaminated, relieved of duty for the day and returned to the office, if during normal working hours. An occupational physician from the current medical surveillance contractor, or the victim's family physician should be contacted. If after hours, the victim should be decontaminated and transported to the nearest hospital.

Contact the Site Safety Officer, or Project Director as soon as possible after attending the needs of the victim. During office hours they may be contacted by phone. If after hours they should be contacted at their residence, by car phone or beeper.

The incident should be documented on a Injury/Illness Report Form.

## Appendix C

### APPENDIX C CONTINGENCY PLAN CONTAMINATION EMERGENCY

The following procedures should be instituted immediately in the event of contamination to one of RCC's employees by Hazardous Materials.

If Emergency Rescue is needed to remove the victim from the contaminated area, notify Police, Fire Department and EMS Units immediately.

This may be done by contacting the appropriate Police Department as listed in Section 8.6.. Advise them of the situation and request an expedient response by Emergency Services Personnel.

Absolutely no Emergency Rescue is to be attempted without having a trained back-up present.

If the victim is able to move under their own power, escort them to a non-contaminated area as soon as possible.

The site should be shut-down and immediately secured. The area in which the contamination occurred should be considered off-limits until the arrival of trained personnel who are properly equipped with the appropriate personal protective equipment and monitoring instrumentation.

Assess the victim's condition for the nature of injury or contamination. The victim should be considered symptomatic if they exhibit any evidence of abnormal symptoms. Pay close attention to the level of consciousness and any cardiac or respiratory involvement. Use special care to insure that you do not become contaminated as well. If any abnormal symptoms are present, notify Police, Fire Department and EMS units immediately.

This may be done by contacting the appropriate Police Department as listed in section 8.6.. Advise them of the situation and request an expedient response by Emergency Services Personnel.

Attempt to identify the exact type of material involved. If the material cannot be positively identified, attempt to acquire a grab sample. Use extreme caution if the danger of being contaminated exists.

The victim should be decontaminated as soon as possible after removal from the contaminated environment. This should be done in non-contaminated area well away from the source of the problem. Extreme care should be used to avoid cross-contamination. The victim should be washed by water spray or safety shower. Contaminated protective clothing should be removed after washing. The victim should be covered with plastic or fitted with a Tyvek 1422 suit. The SCBA or CCROV should be removed last, except in the case of critical injury where the victim requires respiratory support. The victim should not be transported until decontamination is performed to the degree that personnel will not be subjected to cross-contamination.

If the victim appears to be critically injured (i.e. unconsciousness, cardiac or respiratory abnormalities, seizures, etc.), support the victim's vital functions. Administer CPR if needed.

The Fire Department should be notified if manpower is immediately needed, or, if access to water to wash

and decontaminated the victim is not available at the location.

If the victim appears to be symptomatic, they should be transported to the nearest Emergency Room as soon as possible. Under no circumstances should the victim be transported to the hospital in anything other than an EMS unit staffed by qualified personnel.

If after hours, the victim should be decontaminated and transported to the nearest hospital.

Contact the Site Safety Officer and Director of Operations as soon as possible after attending to the needs of the victim. During office hours they may be contacted by phone. If after hours they should be contacted at their residence, by car phone or beeper.

The incident should be documented on an Injury/Illness report form.

## APPENDIX D

### APPENDIX D CONTINGENCY PLAN FIRE EMERGENCY

The following procedures should be instituted immediately in the event of a fire on-site.

The site should be shut-down and immediately secured. The area in which the fire occurred should be considered off-limits until the cause can be determine. All non-essential site personnel should be evacuated from the site to a safe, secure area. Notify the Fire Department immediately.

This may be done by contacting the appropriate Fire Department as listed in Section 8.6.. Advise them of the situation and the identity of any hazardous material involved.

The four classes of fire along with their constituents are as follows:

- Class A: Wood, cloth, paper, rubber, any plastics, ordinary combustible materials.
- Class B: Flammable liquids, gases and greases.
- Class C: Energized electrical equipment.
- Class D: Combustible metal such as magnesium, titanium, sodium, potassium.

Small fires on-site may be actively attacked for control and extinguishment. Extreme care should be taken while in this operation and protective clothing such as Nomex or PBI should be worn to protect the employee. If the fire involves hazardous materials, positive-pressure self-contained breathing apparatus is mandatory.

The designated Site Safety Officer, or his representative, will be responsible for all fire fighting activities on the site.

All approaches to the fire should be done from the upwind side if possible. Distance from the employee to the fire should be close enough to ensure proper attack of the extinguishing material, but far enough away to ensure that the employee is safe. The proper extinguisher should be utilized for the Class(s) of fire present on the site.

If possible, the fuel source should be cut off or separated from the fire. Care must be taken when performing operations involving the shut-off of valves and manifolds, if present.

Examples of proper extinguishing agents are as follows:

- Class A -
  - Water
  - Water with 1% AFFF Foam (Wet Water)
  - Water with 6% AFFF or Fluroprotein Foam
  - ABC Dry Chemical
  - Halon 1211

Class B -      ABC Dry Chemical  
                  Purple K  
                  Halon 1211  
                  Carbon Dioxide  
                  Water with 6% AFFF Foam

Class C -      ABC Dry Chemical  
                  Halon 1211  
                  Carbon Dioxide

Class D -      Metal - X Dry Chemical

No attempt should be made against large fires. These should be handled by the Fire Department.

Contact the Site Safety Officer and Project Director as soon as possible. During office hours they may be contacted by phone. If after hours they should be contacted at their residences, by car phone or beeper.

All fire extinguishers should be recharged and inspected by qualified personnel after any use. They should be returned to their proper location after recharge. A record of inspection shall be maintained by the Site Safety Officer.



## APPENDIX E

### APPENDIX E CONTINGENCY PLAN SPILL OR AIR RELEASE OF HAZARDOUS MATERIAL

The following procedures should be instituted immediately in the event of a spill or air release of a hazardous material on-site.

The site should be shut-down and immediately secured. The area in which the spill or release occurred should be considered off-limits until the cause can be determined and site safety can be evaluated. All non-essential site personnel should be evacuated from the spill area to a safe, secure area.

The spilled or released product should be immediately identified and appropriate measures, such as dikes or berms, should be instituted to halt and contain the flow. If the spill extends into waterways, the Coast Guard and the National Response Center (1-800-424-8802) should be notified immediately. Spill booms should be put in place in an attempt to curb downstream contamination.

Instantaneous real-time air monitoring with ionization and combustible gas indicators should be started. Monitoring should be done both upwind and downwind of the spill site or release point. An evaluation of upgrades in personnel protective equipment as indicated in Section 4.3 should be made based upon the results of the air monitoring.

If the material is unknown, level B protection as listed in Section 4.2 is mandatory. Samples of the material should be acquired to facilitate identification of the material.

If the results of the monitoring show that the levels of contaminants exceed IDLH values as listed in Section 9.5, the site should be immediately evacuated and the appropriate Federal, State, County and local regulatory authorities and emergency response personnel should be notified.

Notify the Police and Fire Departments immediately if contaminants are found to have migrated off-site into populated areas, a large spill of flammable products is involved, or, the material is considered acutely toxic or exceeding published IDLH values.

This may be done by contacting the appropriate Department as listed in Section 8.6.. Advise them of the situation and the identity of any hazardous materials involved.

The procedures as listed above should be instituted if there is a discovery of an acutely toxic material in much larger quantities than expected. In this case, all employees on the site should be cleared to a safe area and briefed in a tailgate safety meeting.

The spill or release should be reported to the appropriate Federal, State, County and local regulatory authorities per the reporting standards of those regulatory agencies. Contact the Site Safety Officer and Project Director as soon as possible. During office hours they may be contacted by phone. If after hours, they should be contacted at their residence, by car phone or beeper.





## APPENDIX H

### APPENDIX H ELECTRICAL SAFETY

Electrical equipment in the field poses a significant safety hazard. This is especially true in environments that may contain flammable vapors. For this reason, all equipment and power cables in and around wells or structures that are suspected of containing contamination must be intrinsically safe. Some environments will require explosion-proof equipment instead of intrinsically safe equipment.

Explosion-proof equipment shall be used according to the National Fire Protection Association (NFPA) National Standard Electrical Code. The Code should be referred to before each installation is attempted because each one will need to be evaluated on an individual basis to determine if explosion-proof equipment needs to be installed. The Code specifies minimum safe distances for each contaminant, listed with each Class, Division and group. If Receptacle outlets or other electrical hook-ups are installed within the confines of this minimum safe distance, then explosion-proof equipment is mandatory. All installations must be inspected by a licensed electrical inspector before power supplied to any electrical equipment.

All power must be turned off at the main switch and the appropriate lock-outs and tag-outs shall be put in place before any repair work is done on the systems.

All electrical cords used on site shall be the three-pronged grounded variety. The integrity of the cord and exterior covering shall be inspected and maintained at all times. Any cord which has cuts or frayed areas in the outer coverings shall be discarded and replaced. The use of three-to-two prong adapters shall be prohibited at all times regardless of reason. Disabling the grounding prong by cutting off or removing it from the male receptacle end shall be prohibited at all times.

Ground Fault Circuit Interrupters (GFCI) are fast acting circuit breaker which senses small imbalances in the circuit caused by leakage to ground, and within a fraction of a second, shuts off the electrical power. The GFCI will not protect the employee from line-to-line contact hazard (such as holding two "hot" wires or a "hot" and a neutral wire in each hand). The GFCI will protect against ground fault, fires, overheating and the destruction of insulation on wires subject to power-to-ground conditions.

GFCI's can be used to reduced electrical hazards on the site. Tripping (interruption of current flow) is sometimes caused by wet connectors and tools. The exposure of connectors and tools to excessive moisture shall be limited by using watertight or sealable connectors. Providing more GFCI's or shorter circuits can prevent tripping caused by leakage from several tools, or buy leakage from extremely long circuits or cable runs.

## APPENDIX I

### APPENDIX I DRILLING PROCEDURES

During drilling operations, two persons (one designated as "driller" and the as "helper") must be present at all times. The helper must be instructed as to the location of the emergency shut-off switch. Every attempt must be made to keep unauthorized personnel from entering the work area. If this is not possible, the operation should be shut down until the area is cleared. The area where the operation is taking place shall be cordoned off with a barricade. The Site Safety Officer or the Project Director has the authority and the responsibility to shut down the drilling operations whenever a hazardous situation is deemed present.

The mast of the drilling rig must maintain a minimum clearance of 15 feet from any overhead electrical cables. All drilling operations will cease immediately during hazardous weather conditions such as high winds, heavy rain, lightening and heavy snow.

## APPENDIX J

**THESE MATERIALS MAY BE USED DURING THE INSTALLATION OF THE SYSTEM AND THEREFORE ARE INCLUDED IN THIS PLAN. UPON START UP OF THE SYSTEM, THESE MATERIALS WILL BE REMOVED.**

CONTAMINANT PROFILES - \*NIOSH "Pocket Guide to CHEMICAL HAZARDS" will be on site.

Sulfuric Acid - H<sub>2</sub>SO<sub>4</sub> ; CAS # 7664-93-9 ; Synonyms - Battery Acid, Hydrogen Sulfate, Oil of vitriol.

Conversion Factor: 1 ppm = 4.08 mg/m<sup>3</sup> . Exposure Limits - NIOSH/OSHA - 1 mg/m<sup>3</sup>

IDLH: 80 mg/m<sup>3</sup>

NIOSH: \*Respirator = 25 mg/m<sup>3</sup> : PAPRAGHiE/SA:CF

50mg/m<sup>3</sup> : CCRFAGHiE/SCBAF/SAF/GMFAGHiE

First Aid: Eye: Immediately Wash Skin: Water Flush Immediately  
Breath: Respirator Support Swallow: Medical Attention Immediately

Incompatibilities and Reactives : Organic materials, chlorates, carbides, fulminates, water, powdered metals.

Personal Protection: Above 4 ppm OSHA Level B. Below 4 ppm OSHA Level C

Trichloroethane - CH<sub>2</sub>ClCH<sub>2</sub>Cl; CAS # 79-00-5; Synonyms - beta - Trichloroethane, Vinyl trichloride.

Conversion Factor: 1ppm = 5.55 mg/m<sup>3</sup> . Exposure Limits - NIOSH - 45 mg/m<sup>3</sup>- 10 ppm

IDLH: 500 ppm

NIOSH: \*Respirator - At any detectable concentration,

SCBAF:PD,PP/SAF:PD,PP:ASCBA

First Aid: Eye: Immediately Wash Skin: Soap Water Flush Immediately  
Breath: Respirator Support Swallow: Medical Attention Immediately

Incompatibilities and Reactives : Strong Oxidizers & Caustics; chemically active material such as aluminum, magnesium powder, sodium & potassium.

Personal Protection: At any detectable level, Level B. Material is a poison.

Lacquers - Solutions of resins, gums or plastics in an organic solvent. Flash Point 0-80 F.

Mineral Spirits - CAS # 64475-85-0; Synonyms - Petroleum Spirits, Mineral thinner, Solvent naphtha.

Conversion Factor: 1ppm = 4.11 mg/m<sup>3</sup>(approx.) Exposure Limits - OSHA - 400 ppm

IDLH: 10,000 ppm  
NIOSH: \*Respirator - Level B at 850 ppm or greater SCBA/SA  
First Aid: Eye: Immediately Wash Skin: Soap Water Flush Immediately  
Breath: Respirator Support Swallow: Medical Attention Immediately  
Incompatibilities and Reactives : Strong Oxidizers  
Personal Protection: Level D to 400 ppm above 400 to 850 Level C, above 850 Level B

Chromium Metals - CAS # 7440-47-3

Conversion Factor: Not Applicable Exposure Limits - OSHA - 1 mg/m<sup>3</sup>  
IDLH: No evidence found to the existence of an IDLH  
NIOSH: \*Respirator - Level B at any detectable level  
First Aid: Eye: Immediately Wash Skin: Soap Water Flush Immediately  
Breath: Respirator Support Swallow: Medical Attention Immediately  
Incompatibilities and Reactives : Strong Oxidizers  
Personal Protection: At any detectable level , OSHA Level B

#2 & #4 Fuel Heating Oil, Mineral Oils, Motor Oil - CAS # 77650-28-3

NO TOXICITY DATA - AVOID CONTACT WITH SKIN AND EYES

**APPENDIX K  
MAP TO HOSPITAL**






[click here](#)

[click here](#)

[click here](#)

**Buy Camcorders on YAHOO! Shopping**  
Thousands of stores. All in one place.

Welcome, Guest User

[Create My Favorite Locations](#) - [Sign In](#)

Yahoo! Yellow Pages

[New Search](#)

Starting From: Arriving At:

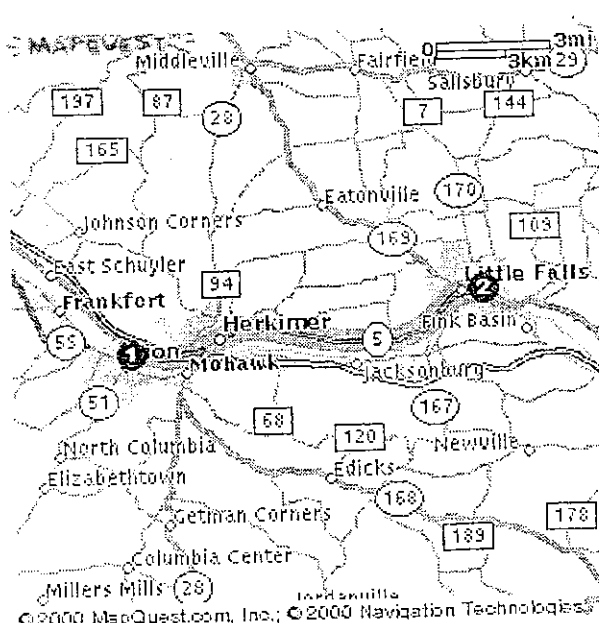
Distance: Approximate Travel Time:

Central avenue  
Ilion, NY 13357

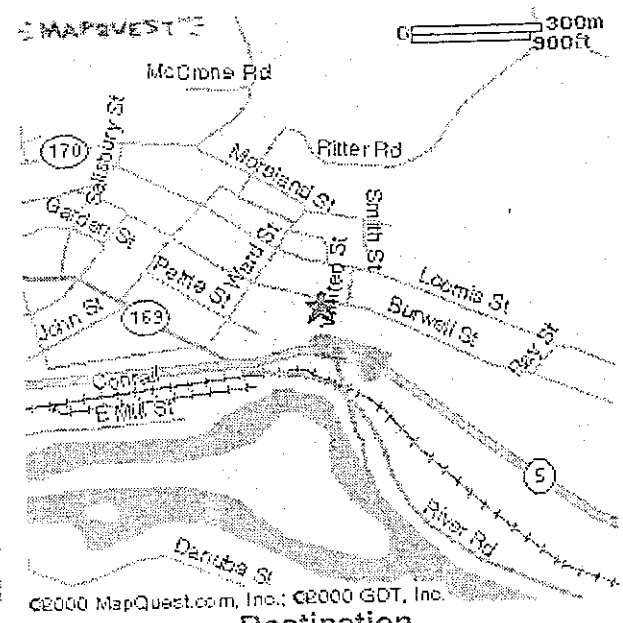
140 Burwell St  
Little Falls, NY 13365-1725

10.5 miles 19 mins [Reverse Driving Directions](#)

Directions	Miles
1. Start out going Northeast on CR-51 by turning right.	0.2
2. Take the RT-5 ramp.	0.2
3. Merge onto NY-5 E.	2.1
4. NY-5 E becomes NY-5/NY-28.	0.4
5. Stay straight to go onto NY-5.	6.8
6. NY-5 becomes NY-167 E/NY-5 E.	0.5
7. NY-167 E/NY-5 E becomes NY-167 E/NY-5 E/NY-169 S.	0.1
8. NY-167 E/NY-5 E/NY-169 S becomes NY-167 E/NY-5 E.	0.0
9. Turn LEFT onto NY-169.	0.0
10. Turn LEFT onto NY-167 W/NY-5 W/NY-169 N.	0.1



Full Route



Destination

**APPENDIX L**  
**STANDARD OPERATING PROCEDURES WITHIN ENVIRONMENTS THAT MAY CONTAIN OZONE**

**STANDARD OPERATING PROCEDURES  
WITHIN ENVIRONMENTS THAT MAY CONTAIN OZONE  
Ozone System Standard Operating Procedure**

January 19, 2001  
Page 1 of 4

*These procedures should be reviewed for appropriate incorporation into Site Specific Health and Safety Plans.*

**PROJECT:**  
InteGreyted  
Ilion, NY

**Prepared By:**  
Resource Control Corporation  
103 Willis Street, Rancocas, NJ 08073  
phone (609) 261-3388

## **1.0 BACKGROUND**

The following addendum to the project Site Safety Plan dated January 22, 2001 has been prepared to address the proper handling of ozone. This Addendum must be read and signed by all parties prior to site entry. Unless altered by the items below, all other aspects of the Site Safety Plan remain in effect.

The site remediation system will be augmented by the addition of an ozone generator as follows:

vendor	PCI-WEDECO Environmental Systems, Inc.
manufacturer	PCI-WEDECO Environmental Systems, Inc.
model	GS-40
address	1 Fairfield Crescent, West Caldwell, NJ 07006
phone	(973) 575-7052
contact	Chris Hubbard or Dave Stone

The ozone generator will be housed within a 30 foot seabox container. The ozone generator will deliver 50 lb/day ozone, at 7scfm discharge. Discharge from the generators will be plumbed to the sparge points.

## **2.0 SAFETY**

The Material Safety Data Sheet for ozone is attached to this Addendum. Safety levels and criteria are listed below:

NIOSH ceiling REL (not to be exceeded at any time) = 0.1 ppmv (0.2 mg/m<sup>3</sup>)  
NIOSH ***IDLH = 5 ppmv***  
OSHA PEL = 0.1 ppmv (0.2 mg/m<sup>3</sup>)  
OSHA STEL = 0.3 ppmv

Ozone has an odor detectable at ~ 0.05 ppm. The smell can be described as slightly antiseptic, somewhat similar to Chlorine. NOTE: Sensory fatigue will occur and your sense of smell should not be relied upon as an indicator of the level of ozone present.

### **Personal Protective Equipment (PPE)**

- At present operations will cease rather than increase individual PPE requirements.

### **Health Hazards**

- Exposure to Ozone can impair pulmonary function, cause eye irritation and headaches. The information can be accessed at <http://www.cdc.gov/niosh/pdfs/0476.pdf>.

Health and safety protocols shall be followed as written.

## **3.0 OPERATING PRECAUTIONS**

*These procedures should be reviewed for appropriate incorporation into Site Specific Health and Safety Plans.*

### **3.1 Chemical Compatibility Ozone Compatible Materials**

The following materials are compatible with ozone, and are suitable for primary piping:

Teflon	PVDF (Kynar (R) )	Stainless Steel
--------	-------------------	-----------------

The following materials are semi-compatible with ozone, and are suitable for secondary piping (NOT SUITABLE FOR PRIMARY PIPING):

Teflon	PVDF (Kynar (R) )	Stainless Steel	
Norprene	Silicon	PE	EPDM
vinyl ester FRP	HDPE	Polypropelene	PVC
Carbon Steel	Poly ester FRP		

(Note: Secondary pipe / tube shall be installed with a sample port so that annular space may be monitored for ozone.)

### **3.2 Engineering Controls and Safety Precautions**

1. Installed in an enclosed, locked area to which only RCC employees have access.
2. Installed with a continuous ozone detector connected to the control system which will:
  - a) shut off the ozone generator
  - b) energize an externally mounted red alarm light when the ozone concentration reaches 5 ppmv.
3. Installed such that there is a sample port accessible outside the enclosure to allow personnel to use a hand held ozone monitoring device to measure the ozone content of the air inside the enclosure prior to entry.
4. Installed in containment pipes in any space which is
  - a) Not continuously monitored for ozone and connected to the system controls.
  - b) Which is not buried below ground in an ozone application area.
5. Installed with a green indicator light viewable from outside the enclosed ozone compound, indicating to the operator that ozone is currently being generated.
6. Installed with a red indicator light viewable from outside the enclosed ozone compound, indicating to the operator that system fault has occurred.
7. Installed with a hand switch mounted outside of the ozone generator room allowing ozone switching ON and OFF to be conducted without entering the room.
8. Installed with proper backflow prevention (check valves, or equivalent device) to prevent exposure under abnormal operating conditions.
9. Installed with a recirculation and/or exhaust blower having an ozone destruct cell to degrade room-ozone.

### **3.3 Recording Measurements Inside of the On-site Structure**

The ozone generator produce a deliverable concentration of about 10% ozone. However, because safety criteria indicate limited acceptable exposures, the following precautions must be taken. With these precautions, ozone implementation should be able to be completed without incident. However, should you believe that other precautions are appropriate, please discuss with your supervisor prior to performing any work at the site.

**UPON CONDUCTING ANY WORK ON SITE WITHIN 500 FEET OF THE OZONE SYSTEM**

**STANDARD OPERATING PROCEDURES  
WITHIN ENVIRONMENTS THAT MAY CONTAIN OZONE  
Ozone System Standard Operating Procedure**

January 19, 2001  
Page 3 of 4

*These procedures should be reviewed for appropriate incorporation into Site Specific Health and Safety Plans.*

- Carry a handheld monitor
- If any ozone is detected (smell or instrument), proceed with shutting ozone off and conducting appropriate leak testing and repair
- If ozone is detected below 0.3 ppm, then proceed to switch ozone production OFF using the exterior hand switch located on the ozone equipment trailer.
- If ozone is detected above 0.3 ppm, then proceed to switch ozone production OFF by disconnecting electrical service to the ozone equipment trailer from a remote location, such as a remote breaker panel.

**UPON CONDUCTING ANY WORK INSIDE THE OZONE EQUIPMENT TRAILER**

- Prior to entering the on-site ozone generator enclosure, collect and record air monitoring measurements by extending a tube connected to the hand held ozone detector which will measure ozone concentrations with an 0.05 ppm sensitivity inside the enclosure.
- Should **any** ozone measurements be detected:
  1. Do not enter the structure.
  2. Shut ozone production OFF using the exterior shut off switch.
  3. Re-monitor the interior space through the sampling access hole.
  4. Upon no detection of ozone, enter cautiously, leading with the hand held monitor.
  5. If ozone is detected at any point, exit the space and allow time for ozone to dissipate.
  6. Repeat above steps until no ozone is detected.
  7. Use acceptable leak testing procedure.
- Should it be determined that the ozone generator fittings are leaking or have become disconnected **DO NOT COME IN CONTACT WITH THE OZONE**. In such instance, immediately leave the area, shut off the ozone generator from the outside emergency shut off and call the office.

**3.4 Recording Measurements On-site.**

- Ozone and air mixtures will be piped to application points. Should there be any need to disconnect the distribution lines to these wells, the ozone generator must first be turned off, the tubing must be purged with non-ozone containing air, and a 5 minute equilibration period must be observed before disconnecting the tubing. Continuous ozone monitoring must be performed during the tubing disconnection process.
- Should any ozone be detected in the breathing zone or potential breathing zone in a manner such that the exterior emergency shut off switch can not be safely engaged, follow the site access procedure.

**4.0 Additional General Site Cautions**

1. A hand held ozone monitor (0.05 ppm sensitivity) shall be used in conjunction with all ozone systems. Site visits may not occur without an O<sub>3</sub> monitor available.
2. Do not disconnect or cut active process lines: All maintenance shall be conducted only after the piping system has been purged with non-ozone compressed air and complete Ozone system shutdown.

**STANDARD OPERATING PROCEDURES  
WITHIN ENVIRONMENTS THAT MAY CONTAIN OZONE  
Ozone System Standard Operating Procedure**

January 19, 2001  
Page 4 of 4

---

*These procedures should be reviewed for appropriate incorporation into Site Specific Health and Safety Plans.*

3. Whenever ozone equipment is in operation, there shall be a permanently affixed sign placed on the system that reads as follows:  
**"WARNING - OXIDIZER"**
4. Other site activities (e.g. groundwater sampling, subsurface work) may have potential for personal exposure to ozone to occur. Air monitoring should be used as necessary to prevent personnel exposures.