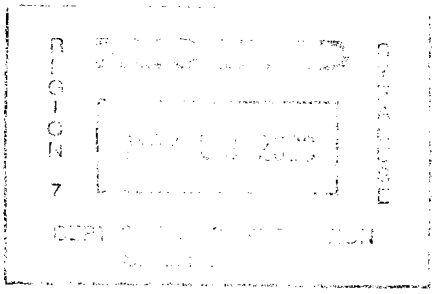
Barton & Loguidice, P.C.

Consulting Engineers

May 18, 2000



Mr. Thom DiCaprio
Clemett and Company
2020 Lemoyne Street
Syracuse, New York 13211

Re: Review of Work Plan
Remediation System Installation - Altmar Mini Mart
File: 639.002

Dear Mr. DiCaprio:

We have reviewed the work plan prepared for installation of the high vacuum extraction system at the Altmar Alaskan Oil site. We note that this site is subject to the Voluntary Cleanup Agreement (VCA) requirements. The following comments are offered in relation to the work plan:

- The selected radius of influence is based on the pilot test data results. Due to the short period utilized for pilot testing, this radius of influence may be conservative (i.e., smaller than actual) at the tested flow rate.

- The vacuum and flow rates established in the installed system are likely to be lower than that established during the pilot test, based on the equipment selected. Therefore, the radius of influence of the installed system is likely to be smaller than predicted during the pilot test. Since the pilot test data is conservative, the selected radius of influence is likely to be appropriate for the system described.

- Based on the selected radius of influence, the selected well pattern appears appropriate.

- Site soils are described as fine sand and silt. We assume that sand pack size will be selected to minimize intrusion of fines through the 20-slot screens.

- Well drop tube sizing and lateral sizing should be based on maintaining a 3,000 standard feet/min velocity in the pipes. This has been identified as maximizing fluid lift in high vacuum systems.

- Does the system have provisions to handle the removal of free product (LNAPL) if encountered?

290 Elwood Davis Road Box 3107 Syracuse, New York 13220 315-457-5200 Fax: 315-451-0052 e-mail: B&L@BartonandLoguidice.com

the frequency of water replacement in the vapor diffuser will be established

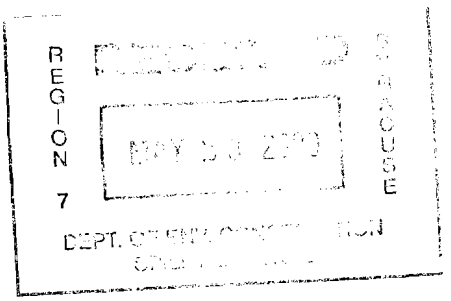
WORK PLAN

REMEDIATION SYSTEM INSTALLATION

ALASKAN OIL, INC.
ALTMAR MINI MART
ROUTE 13 & CEMETERY ROAD
ALTMAR, NEW YORK
NYSDEC SPILL #9614774

Prepared For:

Mr. Scott Blake
Alaskan Oil, Inc.
120 Wilkinson St.
Syracuse, NY 13204



Prepared By:

Clemett and Company, Inc.
2020 Lemoyne St.
Syracuse, NY 13211

May 10, 2000

Introduction

On March 8, 2000, Clemett and Co., Inc. (Clemett) conducted a pilot-scale high vacuum extraction (HVE) test on well RW-1 at the Alaskan Oil, Inc. site located at the intersection of Route 13 and Cemetery Road, Altmar, New York (Figure 1). This site is part of a Multi-Site Response Program/Voluntary Cleanup Agreement (VCA) between Alaskan Oil, Inc. and the New York State Department of Environmental Conservation.

The pilot-scale test was conducted using a portable treatment system consisting of a Rietschle Druvac VTA 100 rotary vane vacuum pump (50 to 70 cfm capacity, ultimate vacuum 25.5 in. Hg), a moisture knockout drum, dual sediment filters, two liquid-phase carbon drums and one vapor-phase carbon drum. A PVC drop tube was inserted into RW-1, the wellhead was sealed, and the tube was connected to the manifold of the treatment system. The static water level in RW-1 was 6.58 feet below the top of the casing. The bottom of the drop tube was set at 12.5 feet below the top of the casing. Approximately 6 feet of draw down in RW-1 was established and maintained throughout the test.

Data collected during the test included depth to water measurements in monitoring wells MW-1, MW-5, MW-10, MW-11 and MW-12; vacuum (in. w/c) at MW-1, MW-11 and MW-12 and volatile organic compound (VOC) concentrations (ppm) in the air discharge of the vacuum pump. VOC concentrations were measured with a Photovac 2020 photoionization detector (PID) which was calibrated to a 100 ppm isobutylene standard. Influent and effluent samples were collected from the liquid-phase carbon drums by Barton & Loguidice, P.C. The samples were analyzed for VOCs at a New York State Department of Health certified laboratory in accordance with USEPA Method 8021 with MTBE (STARS list).

Results of the test indicated groundwater drawdown in MW-1, MW-11 and MW-12 (average drawdown 0.34') and a vacuum influence at MW-1, MW-11 and MW-12 (average maximum vacuum 4.8 in. w/c). Based on draw down and vacuum influence, the average radius of influence was determined to be 38 feet (the average of the distances between RW-1 and MW-1, RW-1 and MW-11 and RW-1 and MW-12). The estimated 38 foot radius of influence is considered conservative due to the short duration of the test. The true radius of influence is anticipated to be greater once the full-scale system is in operation. A total of 638 gallons of groundwater were recovered at a calculated flow rate of 1.52 gallons per minute. PID readings of air discharge samples ranged from 620 to 1,200 ppm. The vacuum pump operated at a continuous vacuum of 8 in. Hg with a corresponding flow rate of 54 cfm.

Pilot test data is summarized in Appendix A. Results of the influent and effluent samples indicated a total influent VOC concentration of 37,175 parts per billion (ppb). Per the VCA agreement, chemicals of concern include Benzene (limit 0.7 ppb); Toluene, m-Xylene and p-Xylene, o-Xylene (limit 5 ppb each); Naphthalene (limit 10 ppb) and Benzo(a)Pyrene (limit 0.002 ppb or non-detectable at the method detection limit). All chemicals of concern in the effluent were below allowable limits with the exception of m-Xylene and p-Xylene (7.5 ppb). Complete analytical results are presented in Appendix B.

Scope of Work

HVE Well Installations

Five HVE wells (HVE-1 and HVE –3 through HVE-6) will be installed at locations shown on Figure 2. The HVE system will initially utilize HVE-1, RW-1 (HVE-2), HVE-3 and HVE-4. Wells HVE-5 and HVE-6 will be used as monitoring points and will later be incorporated into the system, if necessary.

Boreholes will be advanced to a depth of 20 feet below grade each using a truck-mounted drill rig equipped with 6-1/4" I.D. hollow stem augers. Standard (5 foot interval) split spoon samples will be collected during each boring. Soil samples will be stored in plastic bags and the headspace field analyzed using a PID. All drilling and sampling equipment will be decontaminated at the completion of drilling activities.

The wells will be constructed of 15 feet of 4-inch diameter, 20 slot, Sch 40 PVC well screen and approximately 5 feet of 4-inch diameter, Sch 40 PVC riser pipe. Well installations will include a silica sand pack and bentonite seal. The wells will be finished with 8-inch diameter curbboxes installed flush with grade. After installation, the wells will be developed using individual, disposable hand bailers. Well development water will be passed through activated granular carbon buckets prior to discharge on the ground surface.

Any petroleum-impacted soil generated during soil boring advancements will be staged in 55-gallon drums pending disposal. All drilling activities and well installations will be supervised by a Clemett or a third-party on-site geologist.

Trenching, Pipe Installation and Backfill

A two foot wide trench will be excavated to a depth of 4 feet blow grade to accommodate subsurface piping shown on Figure 3. Two-inch diameter, Sch 40 PVC pipe (laterals) will be installed from each HVE well to the location of the mobile HVE system. Four-inch diameter, Sch 40 PVC groundwater discharge pipe will be installed from the mobile HVE system location to the storm drain located to the south of extraction well HVE-4. The trench will be backfilled with approximately 1 foot of peastone. Remaining backfill will consist of clean excavated soil or other suitable clean fill from an off-site source and will be tamped to grade in 1 foot lifts. The trench will be repaved in order to maintain a surface seal and to prevent "short circuiting" of the system. The four HVE wells will be fitted with 1-inch diameter PVC drop tubes connected to the 2-inch laterals with pitless adaptors.

Mobile HVE System Construction and Installation

The mobile HVE system will be constructed in a dual-axle trailer and will consist of the following main components:

- One explosion-proof (XP) 10 hp Rietschle Macro VTB250 rotary vane vacuum pump with moisture separator. The pump is rated at 24 in. Hg continuous operation with a flow capacity of 130 to 175 cfm.
- One 100-gallon vapor diffuser tank.
- One 85-gallon vapor-phase carbon drum.
- One 100-gallon liquid diffuser tank.
- One XP 2-hp regenerative blower.
- Two 55-gallon liquid-phase carbon drums.
- One 55-gallon sump.
- Two dual-cartridge sediment filters.
- Four XP transfer pumps.
- One system control panel.

Petroleum-impacted groundwater and petroleum vapors extracted from the subsurface through the HVE wells will first enter the moisture separator. The vapor discharge of the vacuum pump will then enter the bottom of the vapor diffuser tank and will either exit through the discharge stack (minimum height 15 feet) or will be channeled to the vapor-phase carbon drum. Extracted groundwater will be transferred from the moisture separator to the liquid diffuser tank and then through the two liquid-phase carbon drums. The water in the vapor diffuser tank will continuously be transferred to the liquid diffuser tank and liquid-phase carbon drum and replaced with treated water from the sump.

During the first two weeks of operation, site inspections will be conducted on a daily basis. VOC concentrations in the discharge of the vacuum pump and in the discharge of the vapor diffuser will be recorded using a Photovac 2020 (PID). The assumed benzene concentration in the vapor diffuser discharge (2% of the total VOC concentration, per NYSDEC Air Guide-29) will be compared to allowable benzene emissions for the given discharge stack height and air flow rate. The vapor diffuser discharge will be diverted to the vapor-phase carbon drum should benzene concentrations exceed allowable limits.

During weekly site inspections, data will be collected and routine maintenance performed on the system. If use of the vapor-phase carbon drum is not required, air samples will be collected between the vacuum pump and the vapor diffuser, and from the diffuser discharge for field PID analysis. If use of the vapor-phase carbon drum is required, air samples will be collected between the vacuum pump and the vapor diffuser, between the diffuser and vapor-phase carbon drum, and from the discharge of the vapor-phase carbon drum for field PID analysis. Depth to water

measurements will be recorded in wells MW-1, HVE-5, MW-12, HVE-6, MW-6, MW-5, MW-10 and MW-11.

Groundwater influent and effluent samples will be collected on a monthly basis for laboratory analysis in accordance with USEPA Method 8021 with MTBE, full list. The dissolved-phased carbon drums will be changed out should analytical results indicate effluent VOC concentrations, which exceed groundwater standards.

All data recorded will be used to calculate recovery rates and monitor the effectiveness of the system. Summary tables and any recommendations concerning operation of the system will be included in quarterly reports.

FIGURES

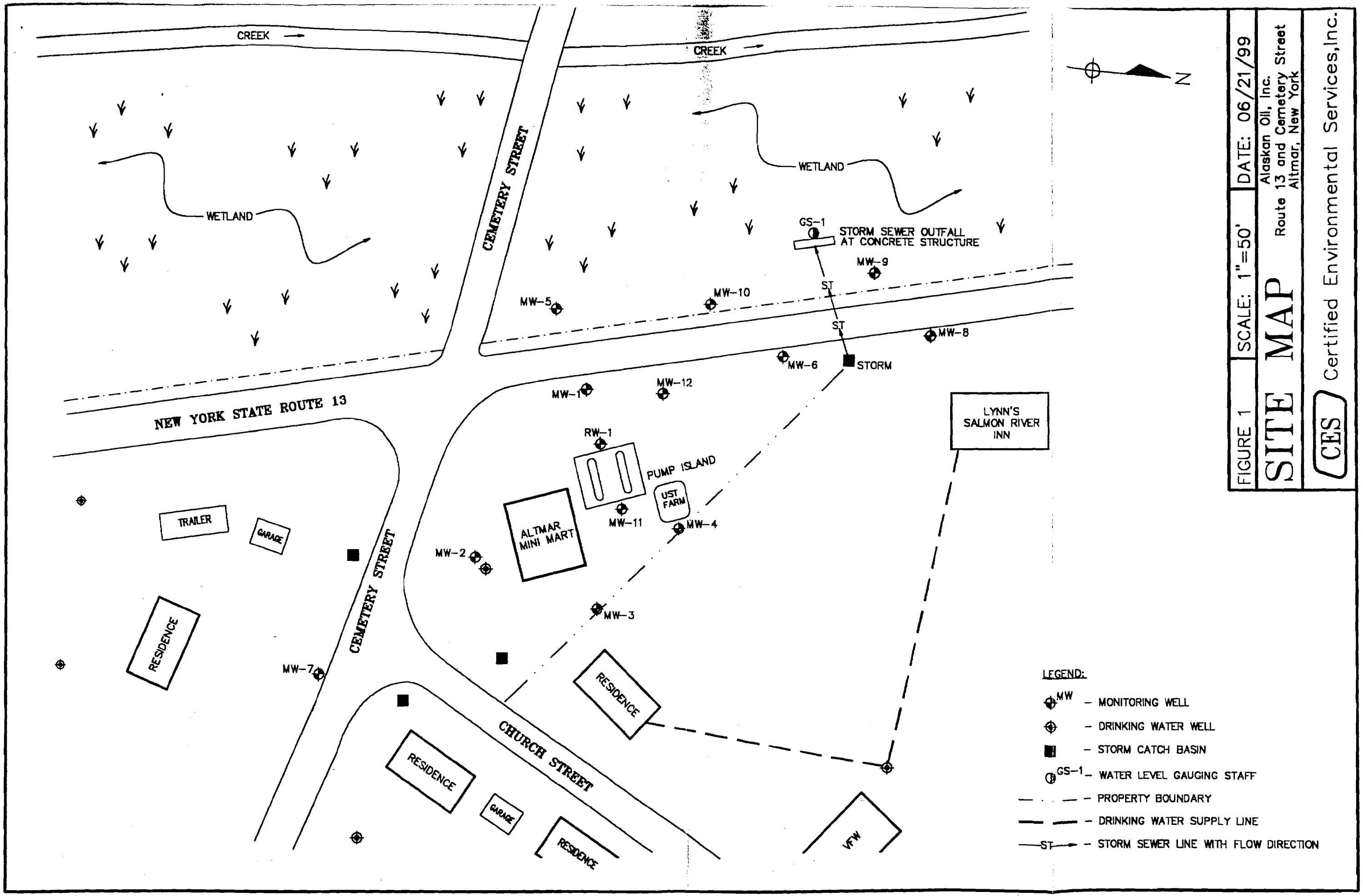


FIGURE 1 | SCALE: 1"=50' | DATE: 06/21/99

SITE MAP

Alaskan Oil, Inc.
Route 13 and Cemetery Street
Altmar, New York

CES Certified Environmental Services, Inc.

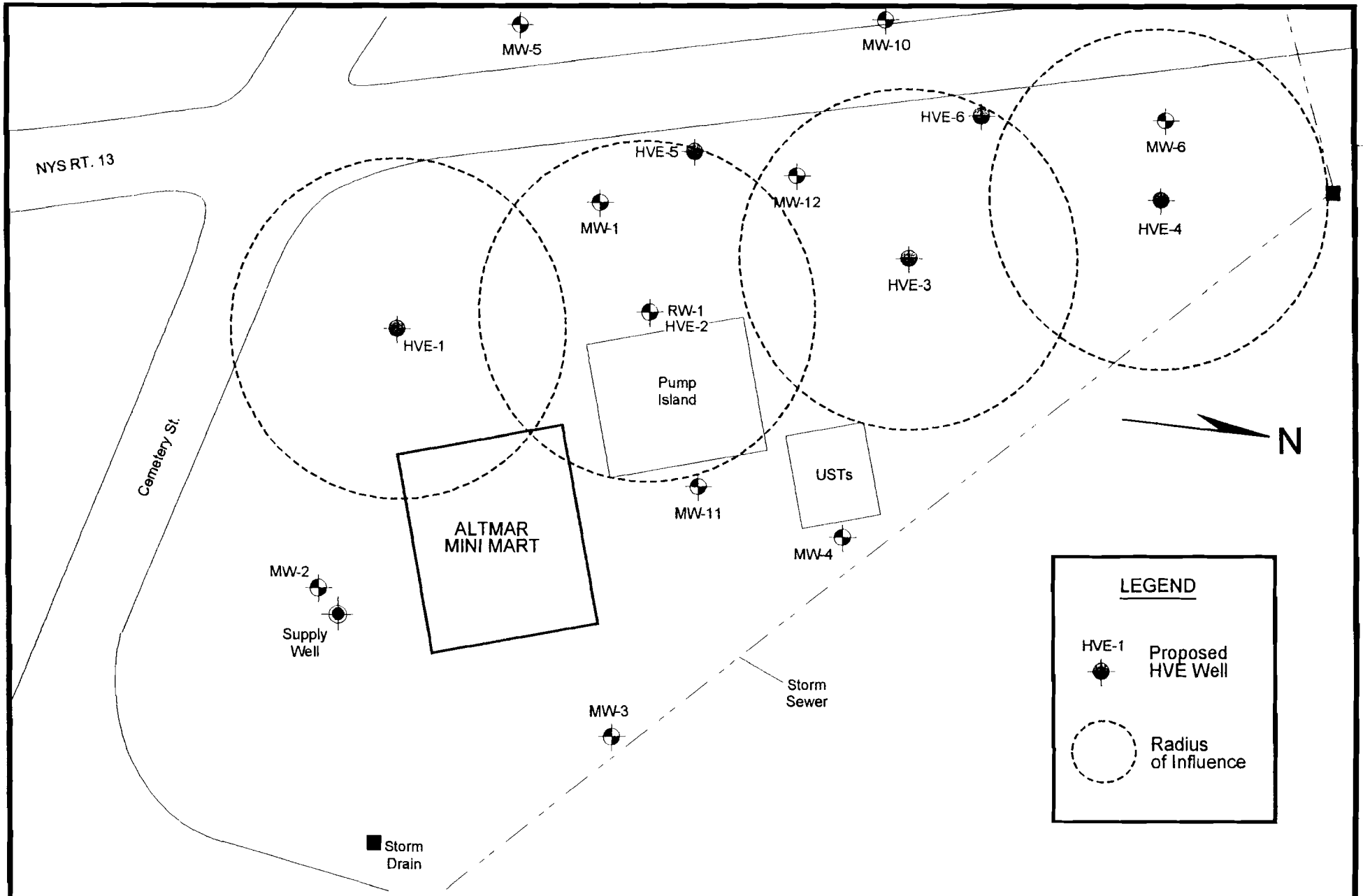


FIGURE 2	SITE MAP	Alaskan Oil, Inc.	Clemett AND CO., INC.
SCALE 1" = 30'	with Proposed HVE Well Locations	Rt. 13 & Cemetery Rd.	Geoscience Department
DATE April 2000		Altmar, NY	

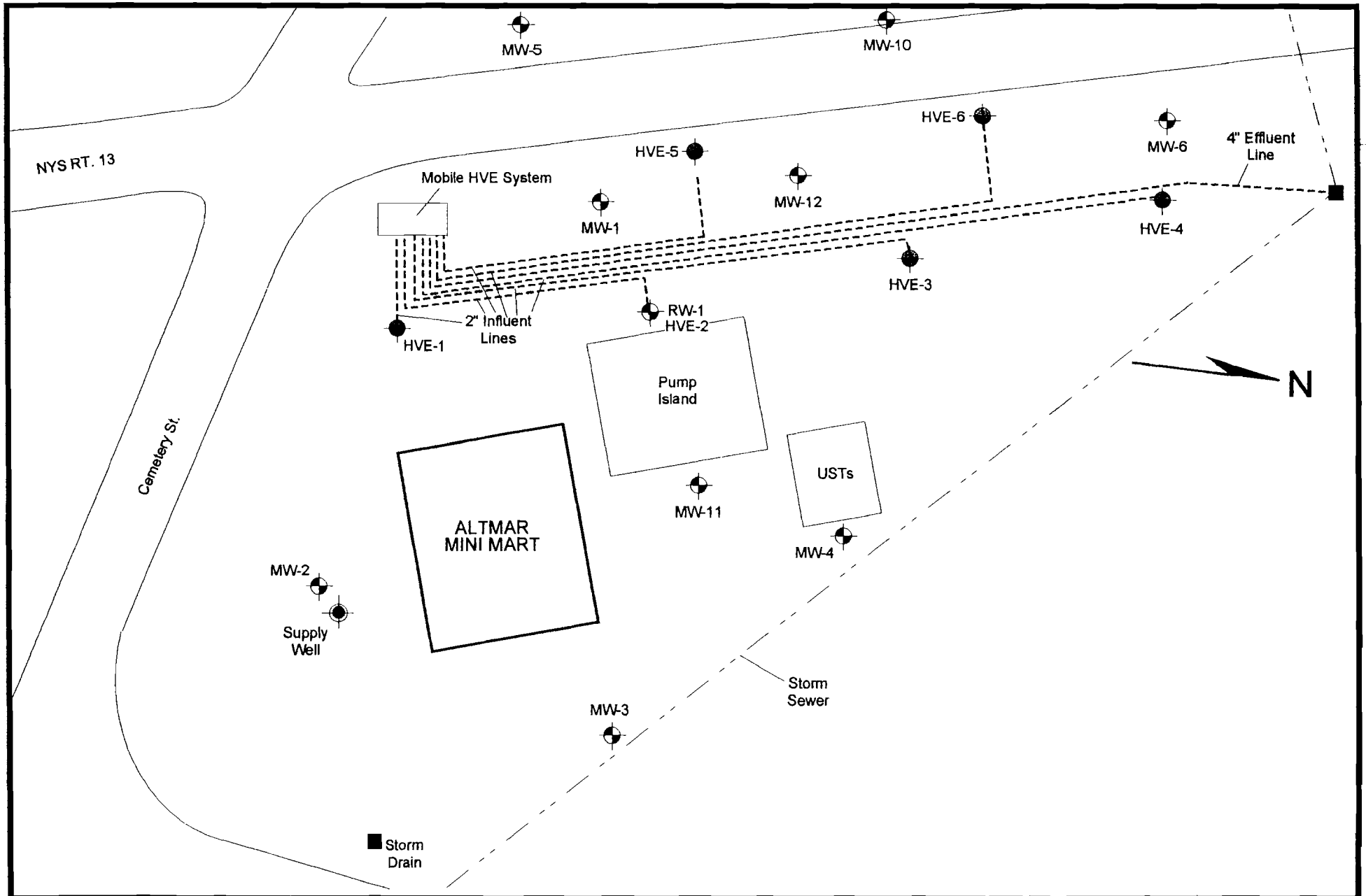
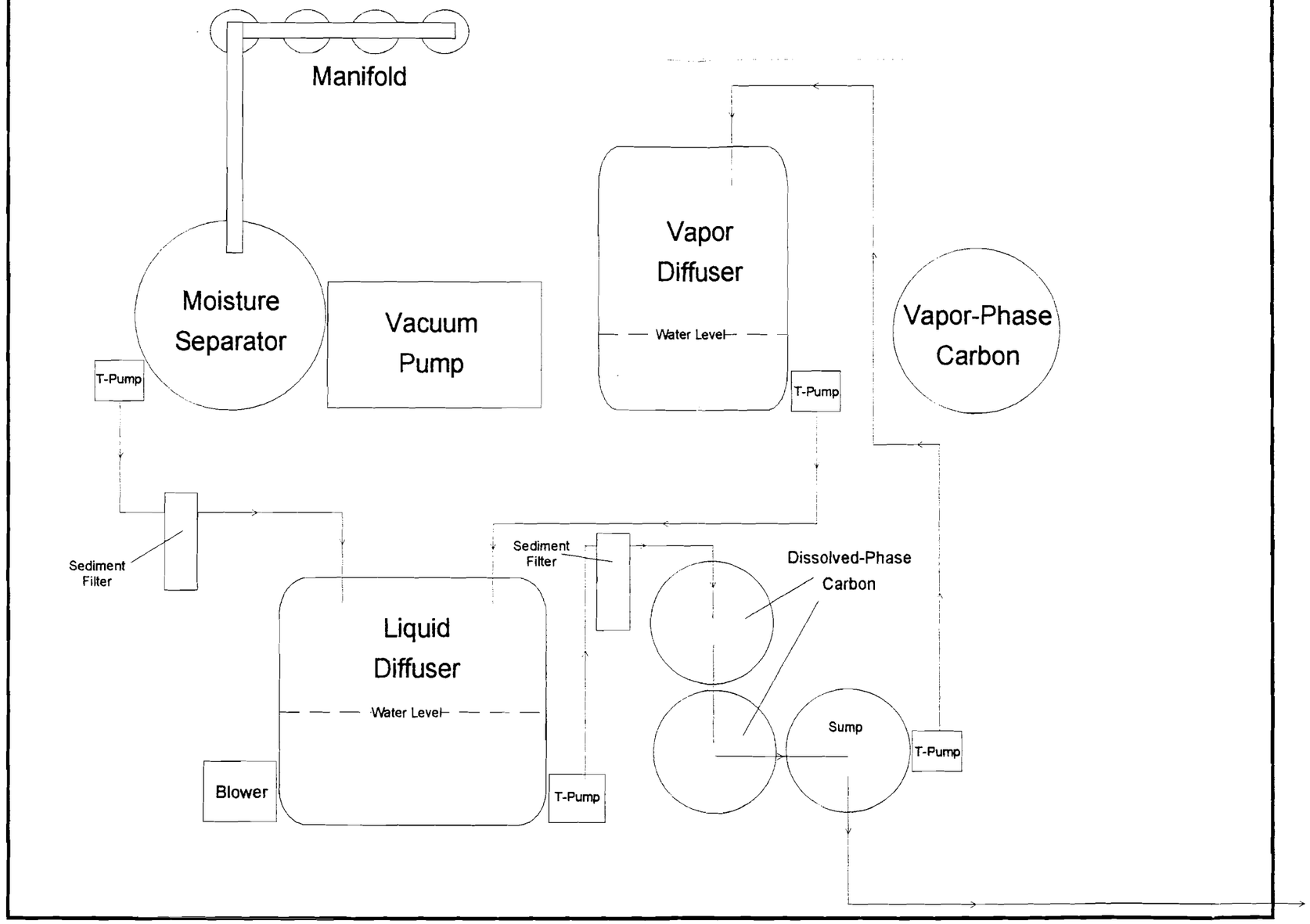


FIGURE 3	SITE MAP with Underground Piping Layout	Alaskan Oil, Inc. Rt. 13 & Cemetery Rd. Altmar, NY	Clemett AND CO., INC. Geoscience Department
SCALE 1" = 30'			
DATE April 2000			



KEY

Air/Vapor

Groundwater

FIGURE	4
SCALE	Not to Scale
DATE	April 2000

Mobile HVE System Schematic

Clement AND CO., INC.
Geoscience Department

APPENDIX A

HVE Pilot-Scale Test Data

3/8/00 **Altmar, NY.** **HVRS Test**

Water Table Depression:

Location	0900 / static	1000	1200	1400	1600
MW-1	5.14	5.49	5.75	5.75	5.77
MW-5	6.08	6.08	6.08	6.08	6.08
MW-10	6.26	6.26	6.26	6.26	6.28
MW-11	5.88	5.88	5.98	5.98	5.98
MW-12	5.79	5.99	6.08	6.08	6.09

Vacuum – " w/c:

	0905	0912	0920	0930	0940	0950	1000	1010	1020	1030	1040	
MW-1	3.8	5.6	5.9	5.9	5.9	5.8	6.1	5.9	5.8	6.1	5.9	5.93
MW-11	1.0	1.7	2.6	3.5	5.1	5.1	5.8	5.8	6.2	6.7	6.5	4.84
MW-12	1.4	2.5	2.9	2.9	2.7	2.2	2.5	2.3	2.4	2.4	2.3	2.46
												4.41

PID Readings: (ppm)

0905	0912	0920	0930	0940	0950	1000	1010	1020	1030	1040
805	800	900	620	860	1100	980	957	800	1200	1120

HVRS Vacuum & Flow rate:

8" Hg Vac continuous @ 2700 fpm x .02 = 54 cfm

APPENDIX B

Laboratory Analytical Results

CES Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Barton & Loguidice, P.C.
Box 3107
Syracuse, NY 13220-
Attn: Mr. David Hanny

PROJECT NAME: AOI/PEF, #326-Altmar
DATE: 03/10/2000

SAMPLE NUMBER- 209311 SAMPLE ID- Influent SAMPLE MATRIX- WA
DATE SAMPLED- 03/08/00 TIME SAMPLED- 0918
DATE RECEIVED- 03/08/00 SAMPLER- James Saxton RECEIVED BY- CAM
TIME RECEIVED- 1147 DELIVERED BY- James Saxton TYPE SAMPLE- Grab

ANALYSIS	METHOD	ANALYSIS DATE	TIME	BY	RESULT	UNITS
EPA 8021 Scan	EPA 8021	03/10/00		BLD		
Benzene	EPA 8021	03/10/00		BLD	2400	ug/L
Toluene	EPA 8021	03/10/00		BLD	6500	ug/L
Ethylbenzene	EPA 8021	03/10/00		BLD	900	ug/L
m-Xylene & p-Xylene	EPA 8021	03/10/00		BLD	11250	ug/L
o-Xylene	EPA 8021	03/10/00		BLD	6200	ug/L
Isopropylbenzene	EPA 8021	03/10/00		BLD	< 250	ug/L
n-Propylbenzene	EPA 8021	03/10/00		BLD	275	ug/L
1,3,5-Trimethylbenzene	EPA 8021	03/10/00		BLD	2100	ug/L
tert-Butylbenzene	EPA 8021	03/10/00		BLD	< 250	ug/L
1,2,4-Trimethylbenzene	EPA 8021	03/10/00		BLD	6300	ug/L
sec-Butylbenzene	EPA 8021	03/10/00		BLD	< 250	ug/L
p-Isopropyltoluene	EPA 8021	03/10/00		BLD	< 250	ug/L
n-Butylbenzene	EPA 8021	03/10/00		BLD	1050	ug/L
Naphthalene	EPA 8021	03/10/00		BLD	2000	ug/L
Methyl-t-Butyl Ether	EPA 8021	03/10/00		BLD	< 1500	ug/L

NYSDOH LAB ID NO. 11246

APPROVED BY: Patrick C. Sweet

(Terms and Conditions on Reverse Side)

CES Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Barton & Loguidice, P.C.
Box 3107
Syracuse, NY 13220-
Attn: Mr. David Hanny

PROJECT NAME: AOI/PEF, #326-Altmar
DATE: 03/10/2000

SAMPLE NUMBER- 209312 SAMPLE ID- Effluent SAMPLE MATRIX- WA
DATE SAMPLED- 03/08/00 TIME SAMPLED- 0929
DATE RECEIVED- 03/08/00 SAMPLER- James Saxton RECEIVED BY- CAM
TIME RECEIVED- 1147 DELIVERED BY- James Saxton TYPE SAMPLE- Grab

ANALYSIS	METHOD	ANALYSIS DATE	TIME	BY	RESULT	UNITS
EPA 8021 Scan	EPA 8021	03/10/00		BLD		
Benzene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
Toluene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
Ethylbenzene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
m-Xylene & p-Xylene	EPA 8021	03/10/00		BLD	7.5	ug/L
o-Xylene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
Isopropylbenzene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
n-Propylbenzene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
1,3,5-Trimethylbenzene	EPA 8021	03/10/00		BLD	16	ug/L
tert-Butylbenzene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
1,2,4-Trimethylbenzene	EPA 8021	03/10/00		BLD	41	ug/L
sec-Butylbenzene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
p-Isopropyltoluene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
n-Butylbenzene	EPA 8021	03/10/00		BLD	43	ug/L
Naphthalene	EPA 8021	03/10/00		BLD	< 25	ug/L
Methyl-t-Butyl Ether	EPA 8021	03/10/00		BLD	< 25	ug/L

NYSDOH LAB ID NO. 11246

APPROVED BY: _____

(Terms and Conditions on Reverse Side)

CES Certified Environmental Services, Inc.
1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Barton & Loguidice, P.C.
Box 3107
Syracuse, NY 13220-
Attn: Mr. David Hanny

PROJECT NAME: AOI/PEF, #326-Altmar
DATE: 03/10/2000

SAMPLE NUMBER- 209310 SAMPLE ID- Trip Blank SAMPLE MATRIX- WA
DATE SAMPLED- 03/08/00 TIME SAMPLED- 0650
DATE RECEIVED- 03/08/00 SAMPLER- James Saxton RECEIVED BY- CAM
TIME RECEIVED- 1147 DELIVERED BY- James Saxton TYPE SAMPLE- Grab

ANALYSIS	METHOD	ANALYSIS DATE	TIME	BY	RESULT	UNITS
EPA 8021 Scan	EPA 8021	03/10/00		BLD		
Benzene	EPA 8021	03/10/00		BLD	< 0.7	ug/L
Toluene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
Ethylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
m-Xylene & p-Xylene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
o-Xylene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
Isopropylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
n-Propylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
1,3,5-Trimethylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
tert-Butylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
1,2,4-Trimethylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
sec-Butylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
p-Isopropyltoluene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
n-Butylbenzene	EPA 8021	03/10/00		BLD	< 1.0	ug/L
Naphthalene	EPA 8021	03/10/00		BLD	< 5.0	ug/L
Methyl-t-Butyl Ether	EPA 8021	03/10/00		BLD	< 5.0	ug/L

NYSDOH LAB ID NO. 11246

APPROVED BY: _____
(Terms and Conditions on Reverse Side)

Chain Of Custody Record 36431

48 hour

Client: Barton + Loguidice (Alas-Kan Oil)		Client Project # / Project Name: 1 AOI - Altmar					No. of Containers	8021										Special Turnaround Time: ~~24 hour~~ (Lab Notification required)
Client Contact: Scott Nostrand	Phone #: 457-5200	Site Location (city/state): Altmar New York						1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	
Sample Location:	Date	Time	Matrix	Grab or Comp.	Internal Use Only													Remarks
Trip Blank 209310	3/8/00	0650	Water	Grab			2	X										
Influent 209311	↓	0918	↓	↓			2	X										
Effluent 209312	↓	0929	↓	↓			2	X										

Parameter and method	sample bottle:	type	size	pres.
8021 STARS List	2x40 ml Vial	Vial	40ml	HCL

Sampled by: (Please Print): James I. Saxton

Company: Barton & Loguidice

Internal Use Only

Delivery (check one):
- ☐ Sampled
- ☐ Pickup ☐ Dropoff
- ☐ CC _____

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
(James Saxton)	3/8/00	1147	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date 3/8/00	Time 1147	Rec'd for Lab by: (Signature) Christine Miguel

Note: The numbered columns above cross-reference with the numbered columns in the upper right-hand corner.

Barton & Loguidice, P.C.

Consulting Engineers

April 28, 2000

Mr. Harry Warner
NYSDEC Region 7
615 Erie Boulevard West
Syracuse, New York 13204

Re: Proposed Site Investigation Work Plan
7211 Oswego Road, Spill No. 9913955

File: 650.001

Dear Mr. Warner:

On Friday, April 21, 2000, the owner conducted additional test pitting activities to further delineate the site. During your site visit on that day you suggested, to Mr. Lee Van Boden of 7211 Oswego Road Properties, LLC., that groundwater samples should be collected to determine if groundwater impacts exist. Barton & Loguidice, P.C. (B&L) is providing assistance to 7211 Oswego Road Properties, LLC. related to the performance of a groundwater investigation at 7211 Oswego Road, (Spill No. 9913955).

Scope of Investigation

A total of three temporary wells will be installed at the site in the locations shown on Figure 1. TW-1 is located within the identified soil plume. TW-2 and TW-3 are located near the property boundary at suspected side and downgradient locations, respectively. The temporary wells will be installed using direct push methods. Soil samples will be collected continuously for the purpose of establishing subsurface lithologies for each of the wells. Soil color, texture, density, and moisture content will be recorded. Additionally, the soil samples will be screened using a photo-ionization detector (PID) to check for the presence of organic vapors in the soils.

The temporary wells will be installed into the probe holes and will consist of 1-inch diameter PVC with five feet of screen. The screen will be installed to intersect the water table. A fine grain sand pack will be installed around the screen. A bentonite seal will extend from the top of the sand pack to the ground surface. The wells will be surveyed to establish relative elevations for the purpose of determining the groundwater flow direction at the site.

290 Elwood Davis Road Box 3107 Syracuse, New York 13220 315-457-5200 Fax: 315 451 0032 e-mail: BandL@dreamscape.com

Groundwater samples will be obtained from the temporary wells approximately 24 hours after installation. These samples will be analyzed for volatile petroleum hydrocarbons using EPA Method 8021 (DEC STARS compounds only).

Waste Handling

All petroleum contaminated soil generated during the investigation, will be staged on site on polyvinyl sheeting, and left on site for disposal by the Owner.

Reporting

Upon receipt of the laboratory results, B&L will evaluate the data and prepare a summary report. The report will summarize the field activities conducted, the results of the laboratory analysis of groundwater samples, and present recommendations for site closure (or additional site characterization or remedial action, if appropriate).

Upon your approval of this Investigation Plan, we will schedule the installation of the temporary wells. Please call me to discuss the proposed investigation if you have any questions.

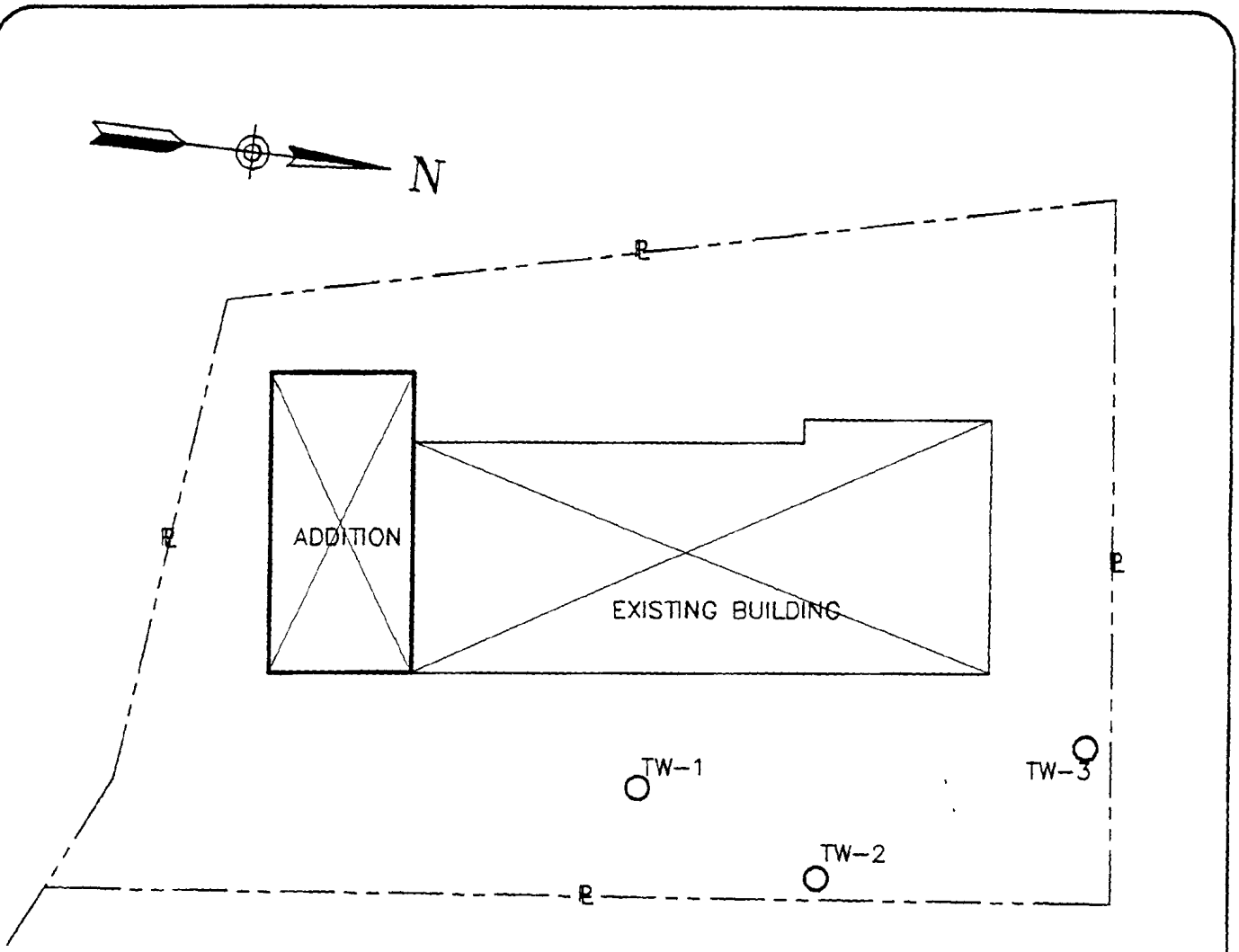
Very truly yours,

BARTON & LOGUIDICE, P.C.

James I. Saxton
Senior Environmental Scientist

JIS/nsk

cc: Mr. Lee Van Boden, 7211 Oswego Road Properties, LLC.



TW-1 ○ – PROPOSED TEMPORARY WELL

Barton & Loguidice, P.C.
Consulting Engineers
290 Elwood Davis Road / Box 3107, Syracuse, New York 13220

GROUNDWATER INVESTIGATION

7211 OSWEGO ROAD PROPOSED TEMPORARY WELLS

LIVERPOOL NEW YORK

Figure 1

Project No. 650.001