



TWIN STATE ENVIRONMENTAL CORP.

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960774 10 16 AM '98
WASTE MANAGEMENT
DIVISION

June 9, 1998

Mr. Ed Dixon, Plant Manager
Lucille Farm Products, Inc.
P.O. Box 125
Swanton, Vermont 05488

**RE: Initial Site Investigation
Lucille Farm Products, Inc., Swanton, Vermont
TSEC Project # 97-097, SMS Site #97-2305**

Dear Mr. Dixon:

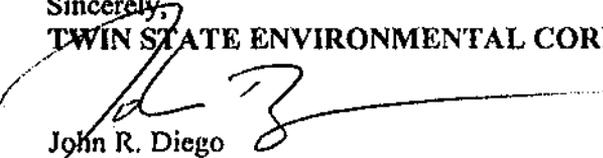
Enclosed is the Site Investigation Report that was prepared to evaluate the environmental condition of the above mentioned SITE following the removal of two (2) #2 fuel oil underground storage tanks (USTs). This investigation was initiated under State of Vermont Agency of Natural Resources (ANR), Sites Management Section (SMS), Site Investigation Expressway Notification Program.

Soil and groundwater contamination was observed near surface in the former UST excavation during tank removal activities in November 1997. Our recent subsurface investigation in March 1998 has indicated that petroleum contamination has impacted soil in the immediate vicinity of the former UST cavity and groundwater beneath the SITE. A surface drainage culvert was identified which may have acted as a pathway for contaminant migration. Based on results of analysis of water discharged from this culvert, TSEC does not believe that additional investigation is warranted.

We have recommended that a bi-annual groundwater and surface water sampling program be implemented at the SITE.

Please call to discuss our findings or other matters of concern.

Sincerely,
TWIN STATE ENVIRONMENTAL CORPORATION


John R. Diego
Vice President

encl.
cc: Mr. Bob Butler, ANR, SMS

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| Phase (check one) | Type (check one) |
|--|--|
| <input checked="" type="checkbox"/> Site Investigation | <input type="checkbox"/> Work Scope |
| <input type="checkbox"/> Corrective Action Feasibility Investigation | <input checked="" type="checkbox"/> Technical Report |
| <input type="checkbox"/> Corrective Action Plan | <input type="checkbox"/> PCF Reimbursement Request |
| <input type="checkbox"/> Corrective Action Summary Report | <input type="checkbox"/> General Correspondence |
| <input type="checkbox"/> Operations & Monitoring Report | |

INITIAL SITE INVESTIGATION REPORT

June 9, 1998

Lucille Farm Products
Swanton Industrial Park
Jonergin Drive
Swanton, Vermont
SMS Site #97-2305
TSEC #97-097

Prepared for:
Lucille Farm Products, Inc.
P.O. Box 125
Swanton, Vermont 05488
Contact: Mr. Ed Dixon
(802) 868-7301

Written By:

Andrew Shively
Staff Scientist

Reviewed By:

John R. Diego
Vice President

1.0 INTRODUCTION

This Initial Site Investigation (ISI) Report has been prepared by Twin State Environmental Corporation (TSEC) on behalf of Lucille Farm Products, Inc. (LFP) to present the findings of environmental conditions encountered during a recent subsurface site investigation at the LFP cheese manufacturing facility located in Swanton, Vermont (SITE) (see SITE Location Map, Figure 1). This investigation was initiated in response to conditions encountered during the removal of two (2) on-SITE underground storage tanks (USTs). Both USTs contained #2 Fuel Oil at the time of closure with one (1) UST (UST #2) reportedly containing #4 Fuel Oil during its operational history.

The USTs were removed from the SITE between November 5 and 6, 1997 by Leonard DuBois Construction of Swanton, Vermont. A UST Closure Assessment report was prepared by TSEC which reported that contaminated soil was encountered adjacent to the tank fill pipes as indicated by elevated photoionization detector (PID) utilizing headspace methodology. A perched groundwater unit was observed within 2.0 feet of ground surface and separate phase product was observed near the surface on top of the perched water table adjacent to the fill pipes.

2.0 SCOPE OF SERVICES

The following scope of services was performed by TSEC during this investigation:

- Ten (10) Geoprobe[®] borings were advanced to investigate soil and groundwater contamination resulting from the former USTs. Recovered soil samples were field screened using a PID equipped with a 10.6 eV lamp. One (1) composite sample was submitted for analysis of Total Petroleum Hydrocarbons (TPH) by modified USEPA Method 8100 utilizing the TSEC mobile laboratory, and one (1) discreet soil sample was submitted for analysis of volatile organic compounds (VOCs) by modified USEPA Method 8021 utilizing the TSEC mobile laboratory. One (1) composite soil sample was submitted for analysis of TPH and VOCs by a certified fixed-base laboratory as a Quality Assurance / Quality Control (QA/QC) procedure.
- Two (2) 1½ x ½-inch diameter prepacked groundwater monitoring wells, and one (1) 1-inch PVC monitoring well were installed into three (3) of the above mentioned borings.
- Groundwater samples were collected from two (2) of the three (3) newly installed monitoring wells. Two (2) surface water samples were collected from the surface drainage features west and south of the former UST locations. Samples were

submitted for analysis at Endyne, Inc. of Williston, Vermont (Endyne) by USEPA Method 8020 for VOCs and by USEPA Method 8100M for TPH.

- Elevations and locations of the three (3) on-SITE monitoring wells and seven (7) soil borings were surveyed by rod and stadia with respect to existing SITE structures. The data obtained has been used to create a site map, and a groundwater flow map. A contaminant distribution map has also been included as based on soil boring data and aqueous sample analytical data.
- A survey of sensitive receptors was conducted, focusing on surface water features, residential basements (if present), and private drinking water wells.
- A summary report of the above-mentioned work was prepared.

3.0 SITE LOCATION AND DESCRIPTION

| | |
|----------------------|---|
| SITE Owners: | Lucille Farm Products, Inc. |
| SITE Address: | Swanton Industrial Park (Jonergin Drive) Swanton, Vermont |
| Latitude: | 44° 55' 37.87" N |
| Longitude: | 73° 07' 46.92" W |
| Zoning: | Industrial |
| Utilities: | Water - Municipal Subsurface Connection Sewer - Municipal Subsurface Connection Electric - Overhead Connection Telephone - Overhead Connection Natural Gas- Private Subsurface Connection |
| Structures: | One (1), multi-story cheese manufacturing facility with attached tower milk storage vessels. |

The SITE is located on the west side of Jonergin Drive, within the Swanton Industrial Park, Swanton, Vermont (see SITE Location Map, **Figure 1**). Structures on SITE consist of a multi-story cheese manufacturing facility of approximately 32,500 square feet with six (6) attached tower milk storage vessels ranging in capacity of 25,000 to 1 million gallons (see **Figure 2**, SITE Plan). Portions of the SITE were reported to have been developed with fill material for the construction of the LFP facility.

SITE topography is relatively flat and is bounded on three (3) sides by a seasonal wetlands feature exhibiting surface drainage and marsh grasses. The nearest surface water and potential receptor is this wetland feature, which is located within 50 feet west and 100 feet south of the former UST location. Surface drainage of the wetlands feature

is primarily to the south and its terminal effluence discharges to the Missiquoi River. The river is located approximately 1,000 feet east, and 2,500 feet south of the SITE.

The site is industrially zoned and is situated within an industrial land use area. The properties adjacent to the SITE consist of manufacturing and distribution facilities to the west, north and east. A residential neighborhood is located approximately 700 feet to the south at the southern boundary of the above mentioned wetlands feature.

4.0 SUBSURFACE EXPLORATION AND RESULTS

The subsurface exploration program was developed to gather data to provide a better understanding of the hydrogeology and contaminant distribution on SITE. The focus of the exploration program was to define the degree and extent of shallow subsurface contamination resulting from the former UST system.

4.1 ADVANCEMENT OF SOIL BORINGS

TSEC installed ten (10) soil borings on SITE on March 4, 1998 using Geoprobe® direct push technology. Three (3) of the borings were converted into permanent monitoring wells. The borings were installed in the following locations and are depicted on the **Figure 3**, Soil Boring and Sampling Location Plan.

- Soil Boring **B-1** was advanced in the former UST #2 cavity to assess the maximum degree of contamination present on SITE and to obtain a composite sample for laboratory analysis. The boring was completed as Monitoring Well **MW-1**. This boring was advanced to a total depth of 12.75 feet below ground surface (ft bgs).
- Soil Boring **B-2** was advanced east of former UST #2 to assess the extent of contaminant migration towards the manufacturing facility. This boring was advanced to a total depth of 8.0 ft bgs.
- Soil Boring **B-3** was advanced west of the former UST #2 to assess the extent of contaminant migration towards the wetlands feature. This boring was advanced to a total depth of 8.0 ft bgs.
- Soil Boring **B-4** was advanced west of the area between former UST # 2 and UST # 1 to assess the extent of contaminant migration towards the wetlands feature. This boring was advanced to a total depth of 8.0 ft bgs.
- Soil Boring **B-5** was advanced west of the former UST # 1 to assess the extent of contaminant migration towards the wetlands feature. This boring was advanced to a total depth of 8.0 ft bgs.

- Soil Boring **B-6** was advanced downgradient and south of the former USTs to assess the extent of contaminant migration in the area of an abandoned subsurface drainage culvert. This boring was completed as *MW-2*. This boring was advanced to a total depth of 12.0 ft bgs.
- Soil boring **B-7** was advanced south, southwest of the former USTs to assess the extent of contaminant migration towards the wetlands feature. This boring was advanced to a total depth of 8.0 ft bgs.
- Soil boring **B-8** was advanced west, southwest of former UST # 2, along the boundary of the wetlands feature, to further assess the extent of contaminant migration towards the wetlands feature. This boring was completed as *MW-3*. This boring was advanced to a total depth of 8.0 ft bgs.
- Soil boring **B-9** was advanced west of former UST # 2 to further assess the extent of contaminant migration towards the wetlands feature. This boring was advanced to a total depth of 4.0 ft bgs.
- Soil boring **B-10** was advanced west of former UST # 1 to further assess the extent of contaminant migration towards the wetlands feature. This boring was advanced to a total depth of 4.0 ft bgs.

Further details of the soil borings and monitor wells are presented below and in **Appendix A: Boring Logs**. Due to the presence of a snow bank, it was not feasible to advance a boring in the area between B-6 and B-7. As well, due to the presence of facility construction materials, it was not feasible to advance a boring to the north of B-10. Following completion of each boring, the borehole was backfilled with recovered material and sand. The borehole was sealed with a bentonite plug from 0.5 ft bgs to surface.

Borings were advanced to depths ranging from 4.0 to 12.75 feet bgs. All borings were logged, describing soil strata conditions, and analyzed with a PID using conventional jar headspace techniques. Soil samples were obtained from the 0.0 to 4.0 ft bgs at all soil borings for analysis of TPH by USEPA Method 8100 utilizing the TSEC mobile laboratory. One discreet sample was obtained from 6.0 to 8.0 ft bgs at B-1 for analysis of VOC's by USEPA Method 8021 utilizing the TSEC mobile laboratory. Results of the mobile laboratory analysis will be further discussed in Subsection **4.2 Mobile Laboratory Analytical Results**.

General soil conditions encountered west of the former USTs consisted of a silty gravel and gravel base from surface to 1.0 ft bgs overlying very fine to fine sandy silt with some gravel. A horizon of very fine sandy silt and organic detritus was encountered in varying thickness at depths ranging from 1.75 to 4.0 ft bgs at B-8 and B-5, respectively.

General soil conditions encountered east and south of the former USTs consisted of a silty gravel and gravel base from surface to 1.0 ft bgs, overlying very fine to fine sandy silt with some gravel. A horizon of fragmented organic detritus and gravel lens was encountered in varying thickness at depths ranging from 1.0 to 1.5 ft bgs at B-6 and B-2, respectively.

Groundwater was encountered between 2.5 and 4.5 ft bgs during the advancement of borings B-1 and B-8, respectively. Following installation of MW-1 and MW-2, groundwater was observed to be within 6 inches of the top of casing.

Contaminated soil was encountered during the installation of borings B-1, B-2, B-3, B-4 and B-8 as evidenced by positive PID headspace readings above 2.0 parts per million volume (ppmv). Headspace analysis indicated a maximum PID reading of 119.9 ppmv in B-1 between 6.0 and 8.0 ft bgs. A heavy petroleum hydrocarbon (PHC) odor and product sheen was observed between 2.0 and 12.75 ft bgs in the samples retrieved from B-1. PID readings at all other borings ranged between non detect (ND) and 56 ppmv.

Samples collected from soil borings B-5, B-6, B-7, B-9 and B-10 did not exhibit positive PID headspace readings above 2.0 ppmv. A graphical presentation of on-SITE analysis results is presented in **Figure 5, Soil Contaminant Distribution Plan**.

4.2 MOBILE LABORATORY ANALYTICAL RESULTS

4.2.1 Method Summary

Soil samples were analyzed via a modified EPA Method 8100 for total petroleum hydrocarbons (TPH) as #2 Fuel Oil. Hydrocarbons were extracted from the soil by adding a 25 ml aliquot of methylene chloride to a known mass of soil and agitating the sample to facilitate contact between the soil and the extraction solvent. The extract was then poured through anhydrous sodium sulfate to remove water from the extract. A 2.0 microliter (ul) aliquot of the extract was directly injected into a temperature programmable gas chromatograph with a flame ionization detector for qualitative and quantitative analysis. Prior to analysis of SITE samples a calibration standard of known concentration was prepared and analyzed. The calibration standard was prepared gravimetrically using # 2 Fuel Oil in a methylene chloride solvent. A 2.0 ul aliquot of the standard was injected in to the GC to determine the retention time range and area response for #2 Fuel Oil. The information was then entered into the GC's software program for comparison against unknown samples. A method blank was also analyzed by injecting 2.0 ul of methylene chloride to determine if the solvent was free of target analytes.

The SITE sample analyzed for VOC's (B-1/6-8') was qualitatively and quantitatively assessed against a calibration standard containing analytes found in modified EPA Method 8021. Compound identification was performed by comparison of retention times for each target analyte against the calibration standard. Analyte concentration was calculated by comparing the area response of the target analyte to the area response of the calibration standard at a known concentration.

4.2.2 Data Interpretation

The soil samples analyzed using this method showed no detectable concentrations of TPH as #2 Fuel Oil below 50 mg/kg (ppm). A soil sample from the tank cavity area which had the highest Photoionization Detector (PID) response was also screened in the mobile laboratory for volatile organic compounds (VOCs) via modified EPA Method 8021. The results of this analysis showed the presence of toluene, ethylbenzene, and xylenes; the overall chromatographic profile was consistent with the volatile fraction of #2 Fuel Oil. The quantitative results of the VOC analysis should be considered estimated since the concentrations were obtained by comparing the area response of each peak to a prior calibration standard. The TPH and VOC results have been summarized in **Tables 1 and 2**.

4.2.3 Method QA/QC

Prior to analysis of TPH samples a GC blank was analyzed to insure that the injector port and column were free of contamination. A calibration standard was prepared from neat #2 Fuel Oil and analyzed to determine the area response and retention time window at a known concentration. This information was entered into the GC library for comparison against SITE samples. A reagent blank was analyzed following the calibration standard to measure any residual carry over of the calibration standard and to insure that the methylene chloride solvent was free of interference's. Both blanks analyzed were free of contaminants and interference's.

Duplicate sample analysis was performed on SITE samples B-1/12.5' and B-1/6-8'. Both initial and duplicate analysis showed no detectable concentrations above 50 mg/kg.

4.2.4 Correlation Between Mobile and Fixed-Base Laboratory Results

TPH 8100 - Due to the high water content in the soils, the methylene chloride, which is insoluble in water, used to extract the initial SITE samples acted as a binding agent potentially limiting the extraction efficiency for samples analyzed in the mobile laboratory. The fixed-base laboratory mixes anhydrous sodium sulfate with the sample and then uses a sonication extraction procedure that would break apart the soil particles to increase the surface area and facilitate more contact with the methylene chloride

solvent which allows for lower detection limits, and, in the case of samples that bind upon contact with the solvent, a higher degree of extraction efficiency. This may account for the difference in TPH values detected in the B-1/6-12' sample.

VOCs - The VOC data showed good correlation between the mobile and fixed-base laboratory. Toluene, ethylbenzene, and xylenes were detected by each method. Although the concentrations of each analyte varied between methods, the variance is not significantly different due to the following; heterogeneity of the sample, the samples were not taken from the sampling container for analysis, and the mobile laboratory data should be considered estimated as described in section 4.2.2.

4.3 MONITOR WELL INSTALLATION

Three (3) of the above mentioned borings were completed as monitoring wells. Two (2) wells (MW-1 and MW-3) are constructed of 1½ x ½-inch diameter prepacked groundwater monitoring wells. The remaining well was constructed of 1-inch diameter PVC.

Further construction details of the monitoring wells are presented below and in **Appendix A: Monitoring Well and Boring Logs**.

4.3.1 Monitoring Well Construction

As previously mentioned, two (2) of the newly installed wells (MW-1 and MW-3) are constructed of 1½ x ½-inch diameter schedule 40 polyvinylchloride (PVC) pre-packed monitoring wells with 0.010-inch machine slotted screen. These pre-packed monitoring wells consist of a ½-inch diameter inner screen surrounded by a clean sand filter pack, placed inside a 1½-inch diameter outer screen, and a ½-inch diameter schedule 40 PVC riser.

The remaining monitoring well was constructed of 1-inch diameter schedule 40 PVC with 0.010-inch machine slotted screen due to borehole collapse. Standard construction techniques were used which included placing a clean filter pack in the boring annulus around the screened interval.

When installing both the 1½ x ½-inch wells and the 1-inch well, a bentonite seal was placed above the screen, and the well was sealed with a locking expansion plug and protected a curb box set in concrete that is flush grade. The depths of the wells range from 8.0 to 12.0 ft bgs.

4.4 SITE GEOLOGY

A summary of the predominate geological units encountered during boring activities consisted of very fine to fine sandy silts with some gravel and clay. Reports published by the Vermont Geological Survey indicate that the surficial deposits in the SITE vicinity are comprised of Lucustrine and Marine clays and silts deposited during and following the last glacial interval designated the Burlington Stage of the Wisconsin Glacial Stage. Bedrock beneath the SITE is reportedly comprised of a Devonian age (365-405 million years ago) medium to coarse grained quartz monzonite known as the Nulhegan quartz monzonite. For a more detailed description of geological units, see Monitoring Well and Boring Logs, **Appendix A**.

4.5 SITE SURVEY

A Topcon AT-G6 auto level was used to perform a stadia survey to identify the location of the newly installed monitoring wells and boring with respect to existing site features. The collected data was used to create the SITE Plan (**Figure 2**) which includes the location of the newly installed wells, borings and existing SITE features. The concrete foundation of the southern most aboveground milk tower vessel was used as a benchmark with an assumed elevation of 100 feet.

5.0 COLLECTION OF GROUNDWATER SAMPLES

Groundwater sampling was performed at this SITE by TSEC on March 12, 1998. Samples were collected from the newly installed wells MW-2, MW-3, as well as from surface water features south and west of the former UST location. The samples were submitted to Endyne for analysis. Groundwater samples were analyzed by US EPA Method 8020 for VOCs, and by US EPA Method 8100M for TPH. The surface water samples were also analyzed by US EPA Method 8020 for VOCs, and by US EPA Method 8100M for TPH.

5.1 MONITORING WELL SAMPLE COLLECTION

Prior to sampling, depth to groundwater measurements were collected at all of the wells. Depth to water ranged from top of casing (TOC) to 1.83 ft bgs at monitoring wells MW-3 and MW-2, respectively. Ice was present at the TOC of MW-1 on the day of sampling, therefore a groundwater sample was not collected at this monitoring point.

To provide for a representative groundwater sample, each well was adequately purged of water with a low flow peristaltic pump with a dedicated discharge line. Purge water

from the wells was discharged directly to the ground surface. Sampling at each location was conducted using a clean disposable bailer.

Quality Assurance/Quality Control (QA/QC) samples incorporated into this sampling round included one (1) duplicate sample taken from monitoring well MW-2 and one (1) field blank. The samples were analyzed via US EPA Method 8020 for VOCs, and by US EPA Method 8100M for TPH. All chemical analyses for this round of groundwater sampling were performed by Endyne Inc. of Williston, Vermont. The results of the groundwater sampling round are presented in **Appendix B**.

5.2 SURFACE WATER SAMPLE COLLECTION

The surface water samples was collected from two (2) areas of the surface water feature by immersing a 40 ml clear glass vial into the water. The bottle was allowed to fill almost completely. Acid was added to the bottle, and the remainder of the bottle was filled using water collected in a clean, non-preserved 40 ml vial. The sample location S-1 is located within the surface drainage flow 50 feet west of the former location of UST #2 and sample location S-2 is located at the culvert effluent point 120 feet south of the former location of UST #2. The location of these sampling points are depicted on **Figure 3, Soil Boring and Sampling Location Plan**.

6.0 RESULTS OF SAMPLING ACTIVITIES

6.1 GROUNDWATER FLOW DIRECTION

Groundwater levels on SITE were measured by TSEC personnel on March 12, 1998. As previously mentioned, depth to groundwater measurements ranged from TOC to 1.83 ft bgs at wells MW-2 and MW-3 respectively. A full analysis of groundwater elevation data is presented in **Table 3 (Summary of Groundwater Elevations)**.

Based on measured depths to groundwater observed in monitoring wells on SITE at the time of installation and sampling, groundwater underlying the SITE has been calculated to flow to the southeast in the overburden aquifer, towards the drainage culvert. A graphical presentation of the groundwater elevation data is included on the Groundwater Flow Direction Plan provided as **Figure 4**.

6.2 ANALYTICAL RESULTS

6.2.1 Groundwater Results

VOC results received from Endyne indicate that target compounds are present in one (1) of the two (2) monitoring wells (MW-2 and MW-3) sampled during this episode. Neither benzene, nor ethylbenzene were present above the method detection limit (MDL) of 1 microgram per liter ($\mu\text{g/l}$) in monitoring wells MW-2 or MW-3. Toluene, and total xylenes were present at 1.3 and 3.1 $\mu\text{g/l}$ respectively in MW-3. Methyl-tert-butyl ether (MTBE) was not present above the MDL of 10 $\mu\text{g/l}$ in any sample collected. Duplicate results from MW-2 were also returned with non-detection (ND) above the respective compounds MDLs. A graphical representation of dissolved phase contaminants is presented in **Figure 6**, Aqueous Contaminant Distribution Plan.

Groundwater samples collected from monitoring wells were also analyzed for TPH. TPH values range from less than a trace below the quantitation limits of 0.41 mg/l or 410 $\mu\text{g/l}$ in the sample collected from MW-3, to ND in the sample collected from MW-2.

A summary table is provided as **Table 4**; the complete analytical laboratory report from Endyne is provided as **Appendix B**.

6.2.2 Surface Water Results

The water sample collected from the S-1 surface water sampling point did not contain any detectable concentrations of VOCs but did contain a trace below quantitation limits concentration of TPH. The water sample collected from the S-2 culvert effluent sampling point did not contain any detectable concentrations TPH but did contain a concentration of 1.3 $\mu\text{g/l}$ of toluene.

6.3 QA/QC RESULTS

6.3.1 Relative Percent Difference

The relative percent difference (RPD) was calculated for BTEX compounds, MTBE and TPH was below its detection limit in MW-1 and the duplicate; therefore, a RPD was not calculated.

6.3.2 Laboratory QA/QC

Prior to VOC analysis, the pH of the sample is tested to ensure proper preservation. Groundwater samples collected from monitoring wells MW-2 it's duplicate were not properly preserved to a $\text{pH} < 2$.

Values reported for monitoring wells MW-2 and its duplicate may represent lower quantities than are actually present. Subsequent sampling rounds will determine if the effect of improper preservation was significant.

7.0 RECEPTOR EVALUATION

Following the removal of the USTs and the initial discovery of petroleum contamination at the SITE, a sensitive receptor evaluation was conducted in the immediate vicinity. This investigation focused on surface water receptors, groundwater supply wells, and the adjacent on-SITE building.

Analytical data received from Endyne indicated that the surface water feature may be impacted by the contamination originating on-SITE. However, due to the limited degree of contaminants impacting the surface water feature and the natural attenuative capacities of the wetlands feature, and the extent of impact to the wetlands feature is considered to be minimal.

Based on the distance of residential dwellings from the SITE and the limited degree of impact detected during SITE investigation activities, an assessment of the breathing zones of the residential dwellings was not considered to be warranted.

No other sensitive receptors were identified during this investigation

8.0 SUMMARY AND CONCLUSIONS

Based on the information and analytical data obtained during this investigation, TSEC concludes the following:

- The initial source of the contamination, the former USTs at the site, have been removed.
- Groundwater quality in monitoring wells MW-2 and MW-3 does not exceed the Vermont Groundwater Enforcement Standards for benzene, toluene, total xylenes, and MTBE.
- TPH concentrations in groundwater range from 410 µg/l (MW-3) to non-detect (ND)(MW-2).

- Based on the limited degree and extent of the contaminants in shallow groundwater, it does not appear as though there is a threat of significant impact to groundwater within the vicinity of the SITE.
- The sample collected from the surface water sampling location S-1 did not contain any detectable concentrations of target BTEX compounds but did contain a trace below quantitation limits concentration of TPH. The sample collected from the culvert effluent sampling location S-2 did not contain any detectable concentrations of TPH but did contain a toluene concentration of 1.3 µg/l. However, with groundwater flowing to the southeast, there is potential for the culvert system to have acted as a preferential pathway for contaminant migration.
- With municipal water supplying the SITE and all adjacent properties, it does not appear as though any private or public drinking water sources are at risk of impact from the degree of contamination on-SITE.

9.0 RECOMMENDATIONS

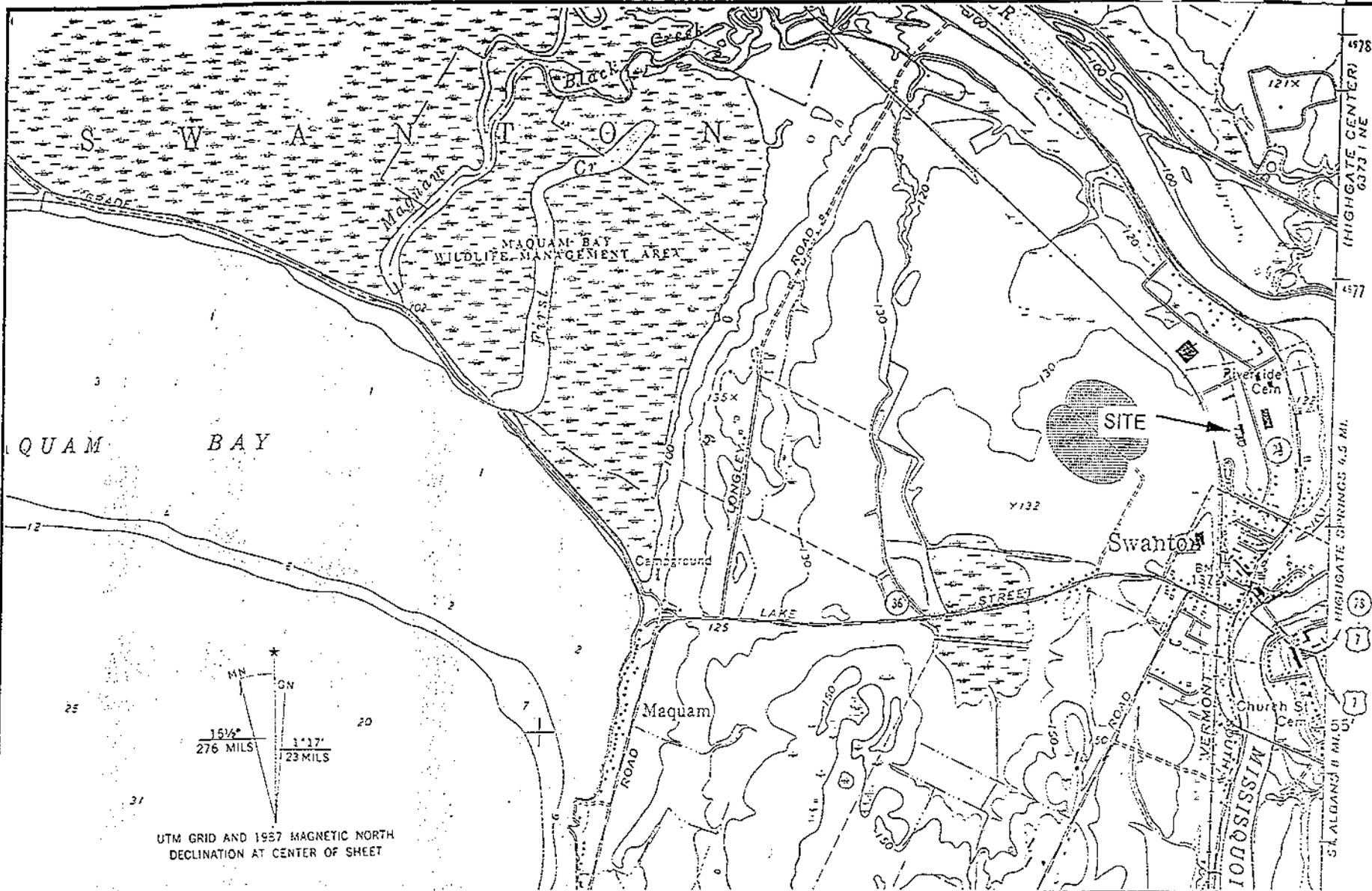
Due to the presence of contamination in both soil and groundwater at the SITE, TSEC recommends the following:

- Based on the limited degree and extent of groundwater contamination present, a bi-annual monitoring program is suggested for a duration of one year. This program would include the sampling of the three (3) on-SITE groundwater monitoring wells and the two (2) surface water sampling locations for BTEX, MTBE and TPH. All samples would be analyzed via US EPA Method 8020 for BTEX and MTBE, and via US EPA Method 8100 for TPH. Sampling episodes should be conducted in the spring and fall on the year.

If groundwater water quality, surface water quality and flow direction are documented to be stable following one (1) year of monitoring, Lucille Farm Products should request A Site Management Activity Complete (SMAC) designation from the SMS.

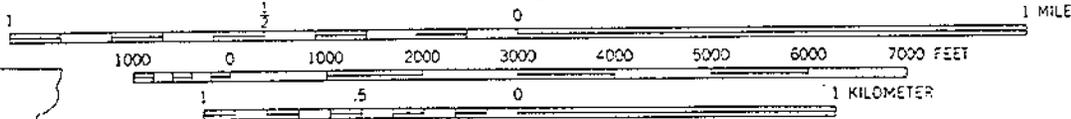
as:\project\97-097\0398SIR.doc

FIGURES



UTM GRID AND 1987 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000



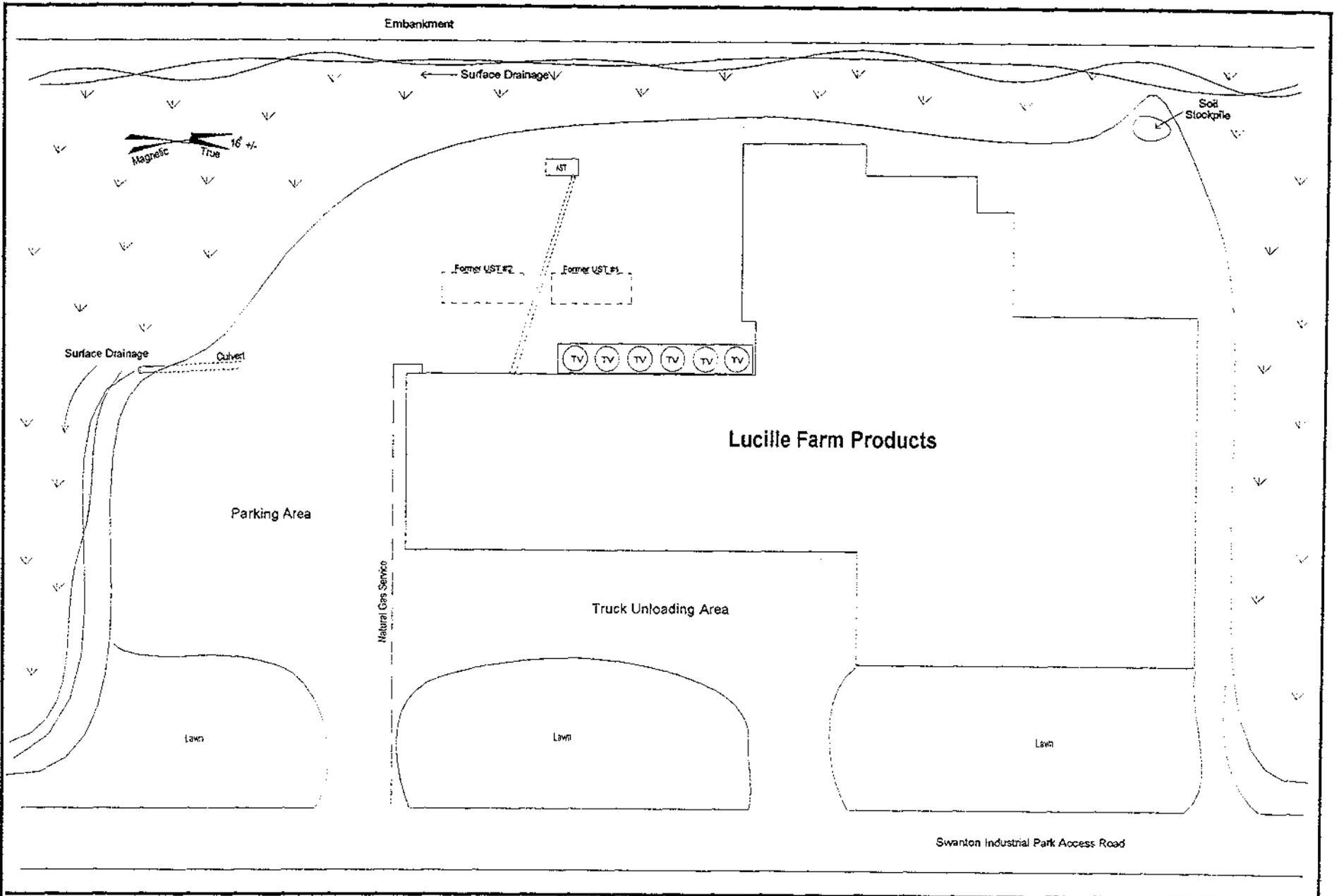
QUADRANGLE LOCATION
 Source: USGS Topographical Survey Map, East Alburg Quadrangle
 as.project:197-49762.ecr.sld

CONTOUR INTERVAL 10 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS LOW WATER 92.5 FEET

| | |
|-----------------------|-----------------|
| Project No: 97-007 | Designed By: AS |
| | Checked By: JD |
| | Approved By: JD |
| | Drawn By: AS |
| | Scale: as shown |
| Date: 11/1/87 | |

TWIN STATE ENVIRONMENTAL CORP.
 1A Huntington Rd.
 P.O. Box 713
 Richmond, Vermont
 (802) 434-3350

FIGURE 1
 SITE Location MAP
 Lucielle Farm Products
 Swanton, VT



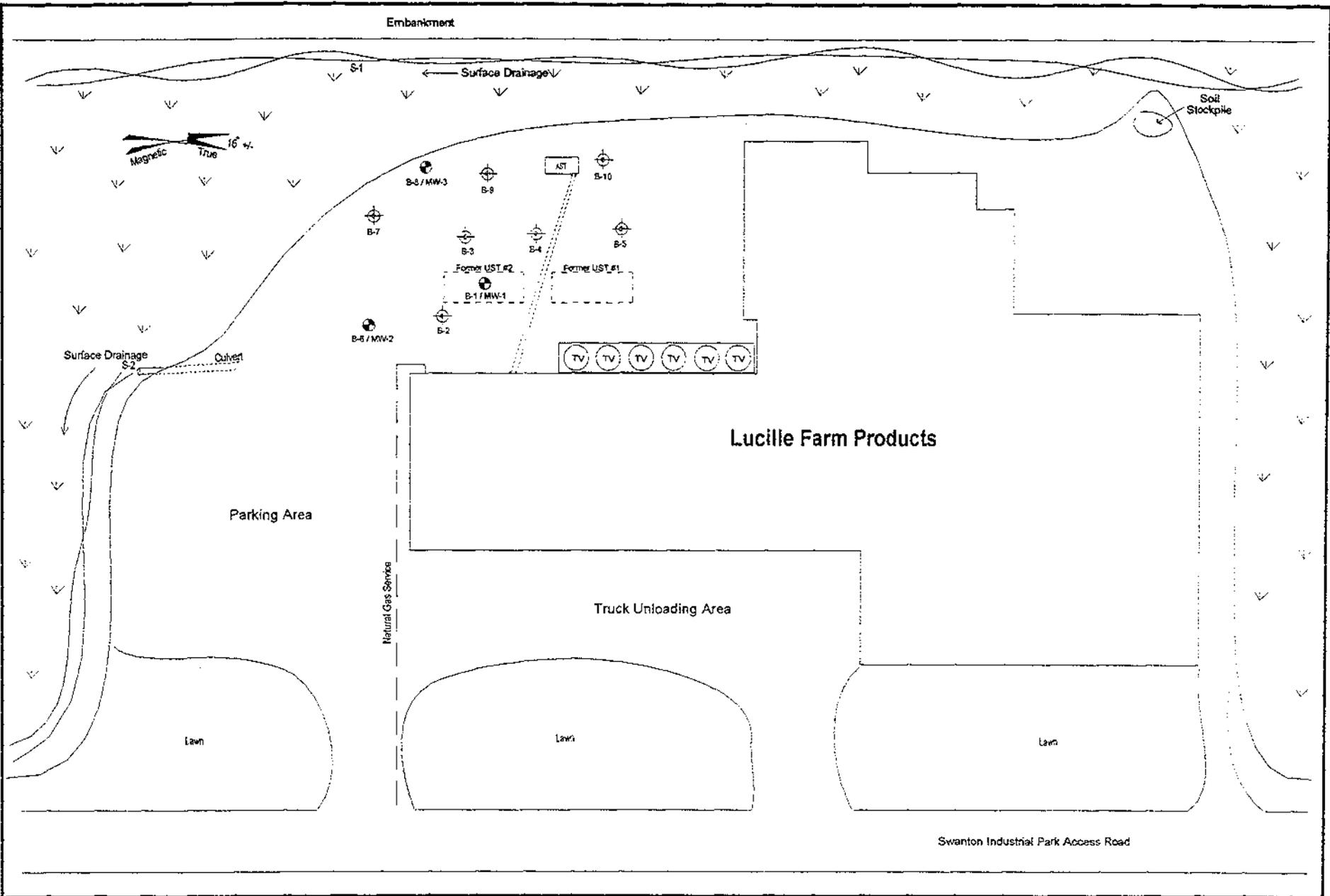
Legend:

-  # 2 Fuel Oil Aboveground Storage Tank
-  Aboveground Milk Tower Vessel
-  Marsh Vegetation
-  Former UST Location
-  Suction and Return Lines
-  Surface Drainage and Flow Direction
-  Drainage Culvert Outfall



as:\project\97097\siteplan.skd

| | | | |
|---------------------|------------------------------|--|--|
| Project # 97-097 | Designed by: AS | TWIN STATE ENVIRONMENTAL CORP. 65 Huntington Rd. P.O. Box 719 Richmond, Vermont (802) 434-3360 | Figure 2 SITE Plan Lucille Farm Products Swanton, Vermont |
| | Checked by: KJB | | |
| | Approved by: JD | | |
| | Drawn by: AS | | |
| | Scale: 1:50 Date: 3/10/98 | | |



Legend:

-  #2 Fuel Oil Aboveground Storage Tank
-  Aboveground Milk Tower Vessel
-  Marsh Vegetation
-  Former UST Location
-  Suction and Return Lines
-  Surface Drainage and Flow Direction
-  Culvert
-  B-1 / MW-1 Groundwater Monitoring Well
-  B-4 Soil Boring
-  S-2 Surface Water Sample Location

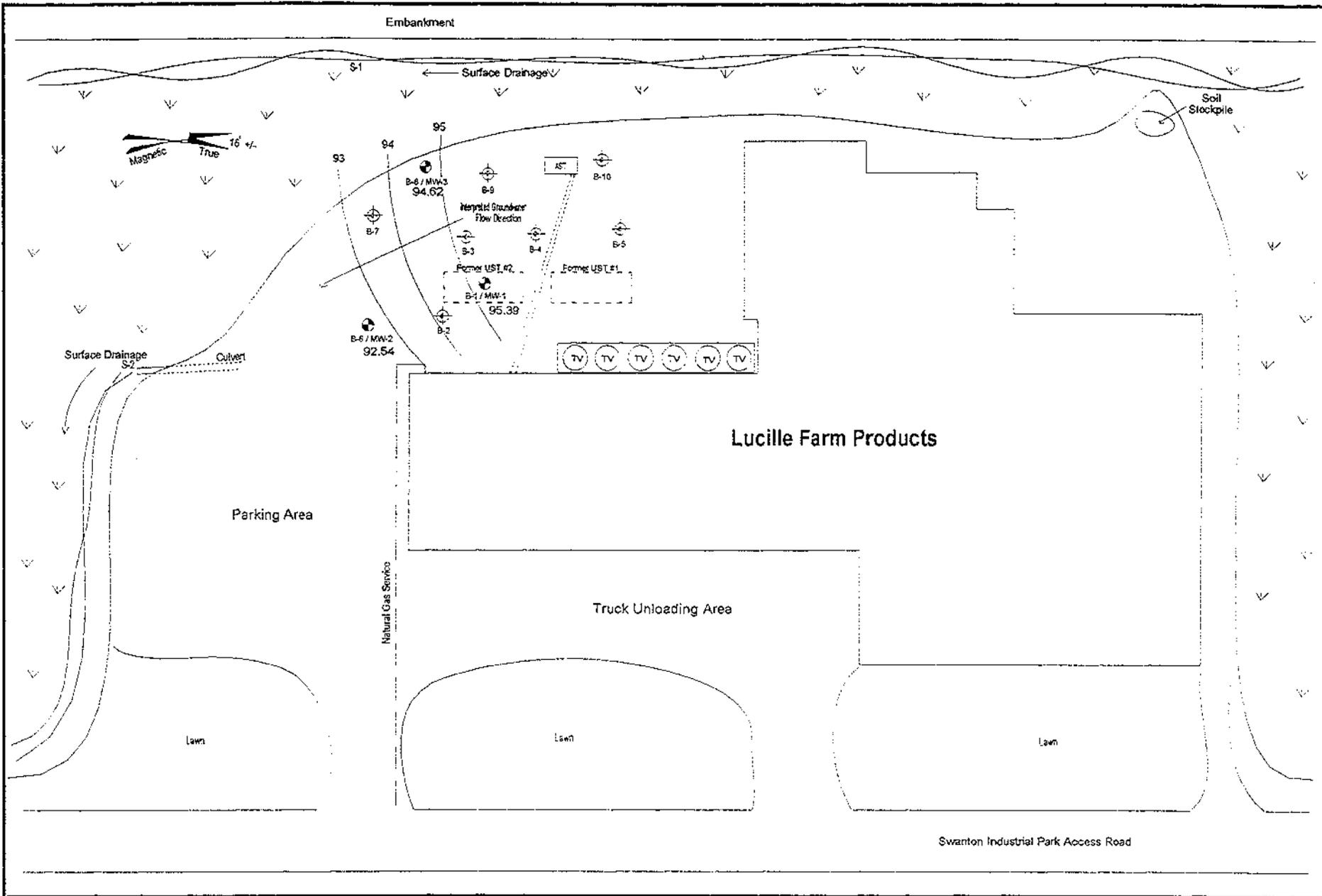


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| | |
|---------------------|-----------------|
| Project # 97-097 | Designed by: AS |
| | Checked by: KJB |
| | Approved by: JD |
| | Drawn by: AS |
| | Date: 3/10/98 |

TWIN STATE ENVIRONMENTAL CORP.
66 Huntington Rd.
P.O. Box 719
Richmond, Vermont
(802) 434-3350

Figure 3
Soil Boring and Sampling
Location Plan
Lucille Farm Products
Swanton, Vermont



Legend:

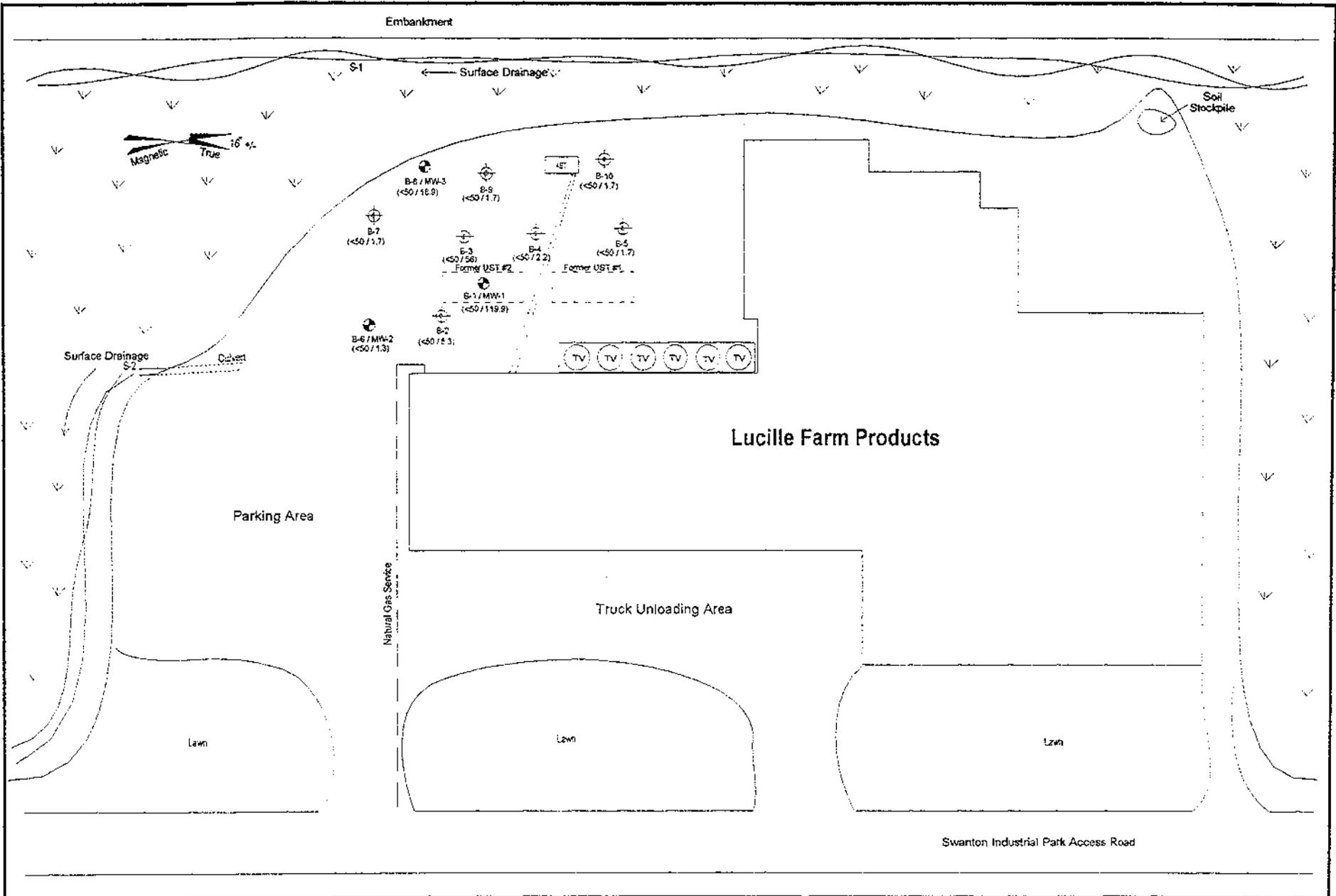
-  #2 Fuel Oil Aboveground Storage Tank
-  Aboveground Milk Tower Vessel
-  Marsh Vegetation
-  Former UST Location
-  Suction and Return Lines
-  Surface Drainage and Flow Direction
-  Culvert
-  B-1 / MW-1 Groundwater Monitoring Well
-  B-4 Soil Boring
-  93 Groundwater Elevation and contour



| | |
|---------------------|-----------------|
| Project # 97-097 | Designed by: AS |
| | Checked by: KJB |
| | Approved by: JD |
| | Drawn by: AS |
| | Date: 3/10/98 |

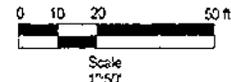
TWIN STATE ENVIRONMENTAL CORP.
65 Huntington Rd.
P.O. Box 719
Richmond, Vermont
(802) 434-3350

Figure 4
Groundwater Flow Direction Plan
Lucille Farm Products
Swanton, Vermont



Legend:

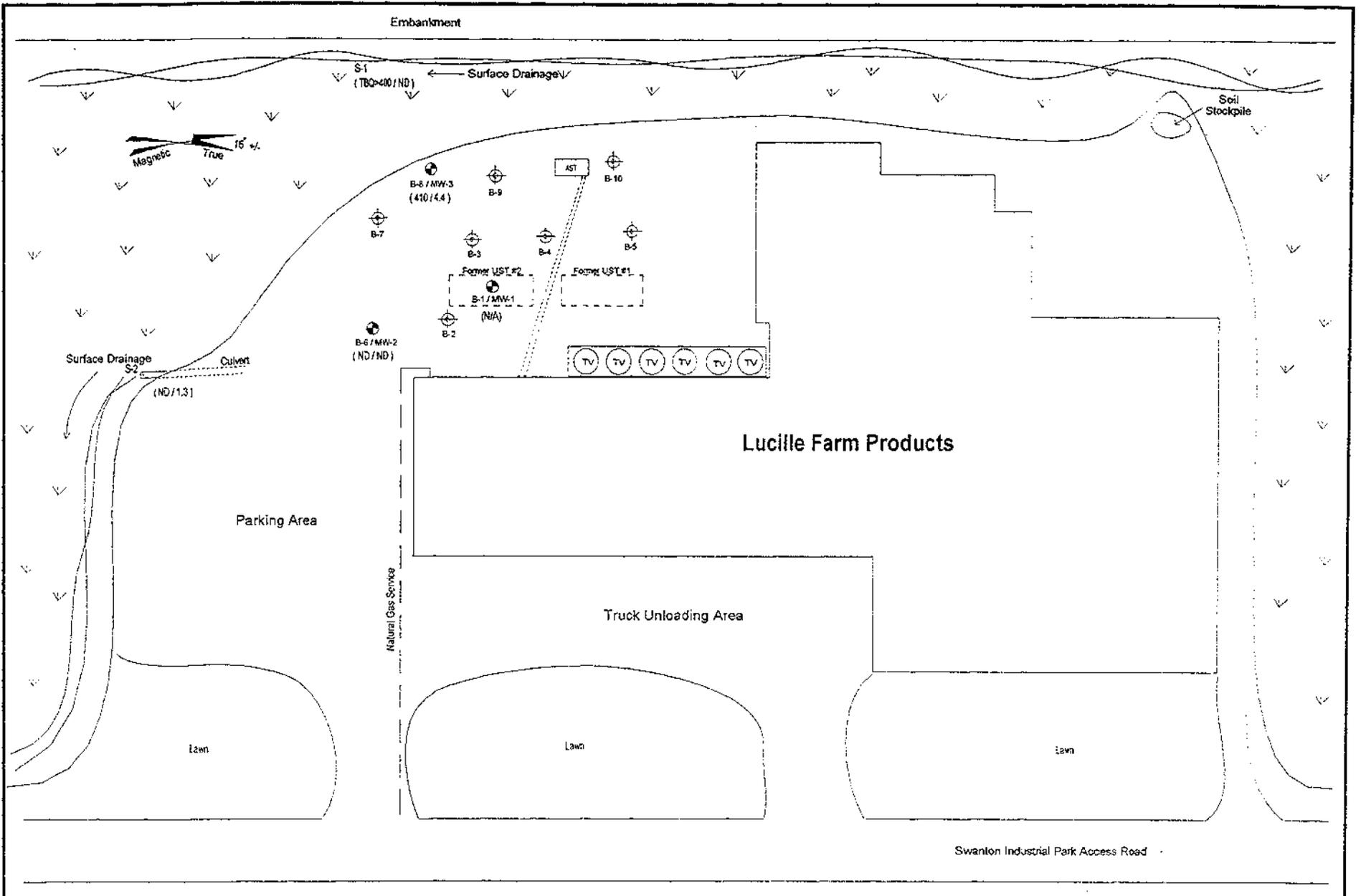
- # 2 Fuel Oil Aboveground Storage Tank
- Aboveground Milk Tower Vessel
- Marsh Vegetation
- Former UST Location
- Suction and Return Lines
- Surface Drainage and Flow Direction
- Drainage Culvert Outfall
- Groundwater Monitoring Well
- Soil Boring
- TPH by Mobil Lab / Peak VOC by PID



| | |
|------------------|-----------------|
| Project # 97-097 | Designed by: AS |
| | Checked by: KJB |
| | Approved by: JD |
| | Drawn by: AS |
| | Date: 3/10/98 |

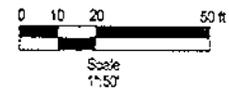
TWIN STATE ENVIRONMENTAL CORP.
 65 Huntington Rd.
 P.O. Box 719
 Richmond, Vermont
 (802) 434-3350

Figure 5
 Soil Contaminant
 Distribution Plan
 Lucille Farm Products
 Swanton, Vermont



Legend:

-  # 2 Fuel Oil Aboveground Storage Tank
-  Aboveground Milk Tower Vessel
-  Marsh Vegetation
-  Former UST Location
-  Suction and Return Lines
-  Surface Drainage and Flow Direction
-  Culvert
-  Groundwater Monitoring Well
-  Soil Boring
-  TPH / BTEX in ppb



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| | |
|---------------------|-----------------|
| Project # 97-097 | Designed by: AS |
| | Checked by: KJB |
| | Approved by: JD |
| | Drawn by: AS |
| | Date: 3/10/98 |

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Richmond, Vermont
(802) 434-3350

Figure 6
Aqueous Contaminant
Distribution Plan
Lucille Farm Products
Swanton, Vermont

TABLES

Table 1
Twin State Environmental Corporation Mobile Laboratory
 Analytical Results
 Petroleum Hydrocarbons by GC/PID/FID
 (Results in mg/kg)

| Sample ID | Date Collected | Date Extracted | Date Analyzed | Gasoline | Kerosene | Diesel/ Fuel Oil | Lube Oil | DLM |
|---------------|----------------|----------------|---------------|----------|----------|---------------------|----------|-----|
| B-1/12.5' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-1/6-8' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-1/12.5' DUP | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-1/6-8' DUP | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-2/2-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-3/0-35" | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-4/0-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-5/1-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-6/0-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-7/0-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-8/0-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-9/0-3' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| B-10/0-4' | 03/04/98 | 03/04/98 | 03/04/98 | -- | -- | <50 | -- | 1 |
| | | | RL (mg/kg) | | | 50 | | |

Notes:

DLM = Detection Limit Multiplier

RL = Reporting Limit

TABLE 3

SUMMARY OF GROUNDWATER ELEVATIONS

Lucille Farm Products, Inc.

Swanton, Vermont

March 12, 1998

| Well Identification | Top of Riser Elev. | Depth to Product | Depth to Water | Depth of Well | Thickness of Water Table in Well | Water Table Elev. |
|---------------------|--------------------|------------------|----------------|---------------|----------------------------------|-------------------|
| MW-1 | 95.39 | ND | 0.00 | 12.00 | 12.00 | 95.39 |
| MW-2 | 94.37 | ND | 1.83 | 11.00 | 9.17 | 92.54 |
| MW-3 | 94.62 | ND | 0.00 | 6.75 | 6.75 | 94.62 |

Notes:

Elevation data are referenced to a TBM and are in units of feet.

ND - Not detected.

NA - Not applicable.

Measurements recorded are referenced to a marking on top of PVC riser for each well.

Depth to fluid measurements were obtained using a Solinst Interface Probe.

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TABLE 4

SUMMARY OF WATER QUALITY

Lucille Farm Products, Inc.
Swanton, Vermont

March 12, 1998

| Test | Benzene | Toluene | Ethyl- benzene | Total Xylenes | Total BTEX | MTBE | TPH (1) |
|-------------|--------------------|---------|-------------------|------------------|---------------|------|---------|
| Sample ID | Concentration, ppb | | | | | | |
| MW-2 | <1 | <1 | <1 | <1 | — | <10 | <0.4 |
| MW-3 | <1 | 1.3 | <1 | 3.1 | 4.4 | <10 | 0.41 |
| S-1 | <1 | <1 | <1 | <1 | — | <10 | TBQ |
| S-2 | <1 | 1.3 | <1 | <1 | 1.3 | <10 | <0.4 |
| DUP-1 | <1 | <1 | <1 | <1 | — | <10 | <0.4 |
| Field Blank | <1 | 1.4 | <1 | <1 | 1.4 | <10 | <0.4 |
| VGES (1) | 5.0 | 1,000 | 700 | 10,000 | — | 40 | — |

Notes:

- (1) VGES - Vermont Groundwater Enforcement Standard.
 - (2) All samples were tested using EPA Method 8020 for BTEX and MTBE, as well as, EPA Method 8100 for TPH.
 - (3) TPH values reported as parts per million (mg/L) with a method detection limits of 0.4 mg/L.
 - (4) TBQ - Indicates a compound response which is not above the method detection limit of 0.4 mg/L.
- Bold and italic numbers indicate concentrations that exceed VGES standards.*

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APPENDIX A



TWIN STATE ENVIRONMENTAL CORPORATION

65 Huntington Road, P.O. Box 719 Richmond, Vermont 05477
 (802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|---|-------------------|----------------------------------|---------------|-----------------|
| WELL/BORING NO: | B-1 / MW-1 | WELL DEPTH: | 12.0 ft | BORING DEPTH: | 12.75 ft |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | 1.45 ft on March 4, 1998 | | |
| PROJECT NO: | 97-097 | SCREEN DIA: | 1 1/2-inch | DEPTH: | 2.0-12.0 ft bgs |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | 0.010 slot Schedule 40 PVC | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | Schedule 40 PVC | | |
| DRILLING CO: | TSEC | RISER DIA: | 1/2-inch | DEPTH: | 0.5-2.0 ft bgs |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | Flush mounted aluminum road box. | | |
| SAMPLING METHOD: | Macrocore Sampler | RISER CAP: | Expansion Plug | | |
| REMARKS: | Boring B-1 was completed as Monitoring Well MW-1 using a prepacked well screen. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND | |
|---|--------------|--|------------|--|--|---|----------------------|
| 0 | | 0.0-2.0 | | 3.0 ft recovery | 0.0-1.0: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | CEMENT GROUT | |
| 1 | | Comp. | HS 35.1 | | 1.0-2.0: M/C SAND with trace fine gravel. Moist, tan, loose. | NATIVE BACKFILL | |
| 2 | | | | | | 2.0-3.0: M/C SAND with trace fine gravel. Wet, tan-brown, loose. PHC odor and sheens. | BENTONITE SEAL |
| 3 | | 2.0-4.0 | | | | | SAND PACK |
| 4 | | Comp. | HS 86.7 | | | | WELL SCREEN |
| 5 | | | | | 3.0 ft recovery | 4.0-5.5: M/C SAND with trace fine gravel. Wet, brown, loose. PHC odor and sheens. | RISER PIPE |
| 6 | | 4.0-8.0 | | | | 5.5-7.0: VF/F sandy SILT with trace of clay and gravel. Wet, brown-black, loose. PHC odor and sheens. | HS HEAD SPACE |
| 7 | | Comp. | HS 119.9 | | | | WATER LEVEL (APPROX) |
| 8 | | | | | | | |
| 9 | | 8.0-12.0 | HS 10.2 | | 1.0 ft recovery | 8.0-9.0: M/C SAND with trace fine gravel. Wet, brown-black, loose. Concrete on tip of cutting shoe. Refusal at 12.75. PHC odor and sheens. | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | End of Boring = 12.75 feet End of Sampling = 12.75 feet | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
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| 22 | | | | | | | |
| 23 | | | | | | | |
| 24 | | | | | | | |
| 25 | | | | | | | |
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 V.LOOSE 4-10 LOOSE 10-30 M.DENSE 30-50 DENSE >50 V.DENSE | | COHESIVE SOILS BLOWS/FT DENSITY <2 V.SOFT 2-4 SOFT 4-8 M.STIFF 8-15 STIFF 15-30 V.STIFF >30 HARD | | PROPORTIONS USED TRACE 0-10% LITTLE 10-20% SOME 20-35% AND 35-50% | | NOTES: 1. See Figure 2 for well and boring locations. 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used. 3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths. 4. Comp. signifies composite sample. | |



TWIN STATE ENVIRONMENTAL CORPORATION

65 Huntington Road, P.O. Box 719 Richmond, Vermont 05477
(802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|--|-------------------|-----|---------------|----------|
| WELL/BORING NO: | B-2 | WELL DEPTH: | N/A | BORING DEPTH: | 8.0 feet |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | N/A | | |
| PROJECT NO: | 97-097 | SCREEN DIA: | N/A | DEPTH: | N/A |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | N/A | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | N/A | | |
| DRILLING CO: | TSEC | RISER DIA.: | N/A | DEPTH: | N/A |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | N/A | | |
| SAMPLING METHOD: | Macrocore® | RISER CAP: | N/A | | |
| REMARKS: | A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND |
|---------------|--------------|-------------------|------------|-----------------------|---|----------------------|
| 0 | N | | | 3.5 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | CEMENT GROUT |
| 1 | O | | | | 0.5-1.0: Crushed GRAVEL. Moist, Grey, loose. | NATIVE BACKFILL |
| 2 | | 0.5-4.0 | | | 1.0-1.5: Fragmented linear organic DETRITUS and GRAVEL. Black, loose, damp. | BENTONITE SEAL |
| 3 | W | Comp. | IIS 5.3 | | 1.5-2.5: VF sandy SILT with some fine gravel. Damp, grey-brown, m. stiff. | SAND PACK |
| 4 | E | | | | 2.5-2.75: Clay ped. Green-grey, damp. | WELL SCREEN |
| 5 | L | 4.0-5.0 | | 4.0 ft recovery | 2.75-3.5: F/C silty SAND with little fine gravel. Moist, brown, m. dense. | RISER PIPE |
| 6 | L | Comp. | IIS 3.5 | | 4.0-4.5: F/C silty SAND with little fine gravel. Moist, grey-brown, loose. | HS HEAD SPACE |
| 7 | | 5.0-7.5 | | | 4.5-5.0: F/M silty GRAVEL. Moist, grey-green, m. dense. | WATER LEVEL (APPROX) |
| 8 | I | Comp. | IIS 2.2 | | 5.0-7.5: VF sandy SILT with some fine gravel. Damp, grey-green, very dense. | |
| 9 | N | 7.5-8.0 | IIS 0.8 | | 7.5-8.0: VF sandy SILT with some fine gravel. Damp, grey-brown, very dense. | |
| 10 | S | | | | End of Sampling = 8.0 feet | |
| 11 | T | | | | End of Boring = 8.0 feet | |
| 12 | A | | | | | |
| 13 | L | | | | | |
| 14 | L | | | | | |
| 15 | E | | | | | |
| 16 | D | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |

| GRANULAR SOILS | | COHESIVE SOILS | | PROPORTIONS USED | | NOTES: |
|----------------|---------|----------------|---------|------------------|--------|--------|
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | TRACE | 0-10% | |
| 0-4 | V.LOOSE | <2 | V.SOFT | LITTLE | 10-20% | |
| 4-10 | LOOSE | 2-4 | SOFT | SOME | 20-35% | |
| 10-30 | M.DENSE | 4-8 | M.STIFF | AND | 35-50% | |
| 30-50 | DENSE | 8-15 | STIFF | | | |
| >50 | V.DENSE | 15-30 | V.STIFF | | | |
| | | >30 | HARD | | | |

1. See Figure 2, SITE Plan, for boring locations
2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.
3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths.
4. Comp. signifies composite sample.



TWIN STATE ENVIRONMENTAL CORPORATION

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(802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

| | | |
|----------------------------------|--|------------------------|
| WELL/BORING NO: B-3 | WELL DEPTH: N/A | BORING DEPTH: 8.0 feet |
| PROJECT NAME: Lucille Farm Prod. | DEPTH TO WATER: N/A | |
| PROJECT NO: 97-097 | SCREEN DIA: N/A | DEPTH: N/A |
| INSTALL DATE: March 4, 1998 | SCREEN TYPE/SIZE: N/A | |
| TSEC REP: Andrew Shively | RISER TYPE: N/A | |
| DRILLING CO: TSEC | RISER DIA.: N/A | DEPTH: N/A |
| DRILLING METHOD: Geoprobe® | GUARD TYPE: N/A | |
| SAMPLING METHOD: Macrocore® | RISER CAP: N/A | |
| REMARKS: | A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND |
|---------------|--------------|-------------------|------------|-----------------------|---|----------------------|
| 0 | N | | | 3.0 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | CEMENT GROUT |
| 1 | O | 0.5-3.0 | | | 0.5-0.75: M/C SAND with some gravel. Moist, tan, loose. | NATIVE BACKFILL |
| 2 | | Comp. | HS 56 | | 0.75-1.0: Fragmented linear organic DETRITUS. Black, loose, damp. | BENTONITE SEAL |
| 3 | W | | | | 1.0-2.25: F/M silty GRAVEL with ice. Moist, grey, loose. | SAND PACK |
| 4 | E | | | | 2.25-2.75: F/M silty SAND and GRAVEL. Moist, grey-green, m. dense. | WELL SCREEN |
| 5 | L | 3.0-4.0 | HS 7.5 | | 2.75-3.0: F/C silty SAND with little fine gravel. Wet, grey-brown, m. dense. | RISER PIPE |
| 6 | L | 4.0-4.5 | HS 6.5 | 3.0 ft recovery | 4.0-4.5: F/C silty SAND with little fine gravel. Wet, grey-brown, loose. | HS HEAD SPACE |
| 7 | | 4.5-8.0 | | | 4.5-7.0: VF sandy SILT with little fine gravel. Moist, grey-green, dense. AND Horizons of F/M SAND with some fine gravel. Wet, tan, m. dense. | WATER LEVEL (APPROX) |
| 8 | I | Comp. | HS 1.7 | | | |
| 9 | N | | | | | |
| 10 | S | | | | | |
| 11 | T | | | | End of Sampling = 8.0 feet End of Boring = 8.0 feet | |
| 12 | A | | | | | |
| 13 | L | | | | | |
| 14 | L | | | | | |
| 15 | E | | | | | |
| 16 | D | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |

| GRANULAR SOILS | | COHESIVE SOILS | | PROPORTIONS USED | | NOTES: |
|----------------|---------|----------------|---------|------------------|--------|--------|
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | TRACE | 0-10% | |
| 0-4 | V.LOOSE | <2 | V.SOFT | LITTLE | 10-20% | |
| 4-10 | LOOSE | 2-4 | SOFT | SOME | 20-35% | |
| 10-30 | M.DENSE | 4-8 | M.STIFF | AND | 35-50% | |
| 30-50 | DENSE | 8-15 | STIFF | | | |
| >50 | V.DENSE | 15-30 | V.STIFF | | | |
| | | >30 | HARD | | | |

1. See Figure 2, SITE Plan, for boring locations
2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.
3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths.
4. Comp. signifies composite sample.



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MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|--|-------------------|-----|---------------|----------|
| WELL/BORING NO: | B-4 | WELL DEPTH: | N/A | BORING DEPTH: | 8.0 feet |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | N/A | | |
| PROJECT NO: | 97-097 | SCREEN DIA: | N/A | DEPTH: | N/A |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | N/A | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | N/A | | |
| DRILLING CO: | TSEC | RISER DIA.: | N/A | DEPTH: | N/A |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | N/A | | |
| SAMPLING METHOD: | Macrocore® | RISER CAP: | N/A | | |
| REMARKS: | A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND |
|---------------|--------------|-------------------|------------|-----------------------|---|---|
| 0 | N | | | 4.0 ft recovery | <u>0.0-0.5:</u> Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. <u>0.5-3.0:</u> VF sandy SILT with some fine gravel. Damp, dark brown, m. dense. <u>3.0-3.75:</u> SILT with organic detritus. Damp, brown-black, m. dense. <u>3.75-4.0:</u> VF sandy SILT with some fine gravel. Damp, brown, dense. | CEMENT GROUT NATIVE BACKFILL BENTONITE SEAL SAND PACK WELL SCREEN RISER PIPE HHS HEAD SPACE WATER LEVEL (APPROX) |
| 1 | O | 0.0-4.0 | | | | |
| 2 | | Comp. | HHS 2.2 | | | |
| 3 | W | | | | | |
| 4 | E | | | | | |
| 5 | L | 4.0-8.0 | | 4.0 ft recovery | <u>4.0-8.0:</u> VF sandy SILT with little fine gravel. Damp, light brown, v. dense. | |
| 6 | L | Comp. | HHS 1.3 | | | |
| 7 | | | | | | |
| 8 | I | | | | End of Sampling = 8.0 feet End of Boring = 8.0 feet | |
| 9 | N | | | | | |
| 10 | S | | | | | |
| 11 | T | | | | | |
| 12 | A | | | | | |
| 13 | L | | | | | |
| 14 | L | | | | | |
| 15 | E | | | | | |
| 16 | D | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |

| GRANULAR SOILS | | COHESIVE SOILS | | PROPORTIONS USED | | NOTES: |
|----------------|---------|----------------|---------|------------------|--------|--------|
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | TRACE | 0-10% | |
| 0-4 | V.LOOSE | <2 | V.SOFT | LITTLE | 10-20% | |
| 4-10 | LOOSE | 2-4 | SOFT | SOME | 20-35% | |
| 10-30 | M.DENSE | 4-8 | M.STIFF | AND | 35-50% | |
| 30-50 | DENSE | 8-15 | STIFF | | | |
| >50 | V.DENSE | 15-30 | V.STIFF | | | |
| | | >30 | HARD | | | |

1. See Figure 2, SITE Plan, for boring locations

2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.

3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths.

4. Comp. signifies composite sample.



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65 Huntington Road, P.O. Box 719 Richmond, Vermont 05477
(802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

| | | |
|---|-----------------------|------------------------|
| WELL/BORING NO: B-5 | WELL DEPTH: N/A | BORING DEPTH: 8.0 feet |
| PROJECT NAME: Lucille Farm Prod. | DEPTH TO WATER: N/A | |
| PROJECT NO: 97-097 | SCREEN DIA: N/A | DEPTH: N/A |
| INSTALL DATE: March 4, 1998 | SCREEN TYPE/SIZE: N/A | |
| TSEC REP: Andrew Shively | RISER TYPE: N/A | |
| DRILLING CO: TSEC | RISER DIA.: N/A | DEPTH: N/A |
| DRILLING METHOD: Geoprobe® | GUARD TYPE: N/A | |
| SAMPLING METHOD: Macrocore® | RISER CAP: N/A | |
| REMARKS: A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND |
|---------------|--------------|-------------------|------------|-----------------------|--|----------------------|
| 0 | N | | | 3.0 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | CEMENT GROUT |
| 1 | O | 0.5-4.0 | | | 0.5-1.0: Crushed GRAVEL. Wet, grey, loose. | NATIVE BACKFILL |
| 2 | | Comp. | HS 1.7 | | 1.0-3.0: VF sandy SILT with some fine gravel. Damp, brown, m. dense. | BENTONITE SEAL |
| 3 | W | | | | | SAND PACK |
| 4 | E | 4.0-8.0 | | 3.0 ft recovery | 4.0-4.5: VF sandy SILT with organic detritus. Damp, brown-black, m. dense. | WELL SCREEN |
| 5 | L | Comp. | HS 1.3 | | 4.5-7.0: VF sandy SILT with little fine gravel. Damp, brown, v. dense. | RISER PIPE |
| 6 | L | | | | | HS HEAD SPACE |
| 7 | | | | | | WATER LEVEL (APPROX) |
| 8 | I | | | | End of Sampling = 8.0 feet | |
| 9 | N | | | | End of Boring = 8.0 feet | |
| 10 | S | | | | | |
| 11 | T | | | | | |
| 12 | A | | | | | |
| 13 | L | | | | | |
| 14 | L | | | | | |
| 15 | E | | | | | |
| 16 | D | | | | | |
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|---|--|---|---|
| GRANULAR SOILS BLOWS/FT DENSITY 0-4 V.LOOSE 4-10 LOOSE 10-30 M.DENSE 30-50 DENSE >50 V.DENSE | COHESIVE SOILS BLOWS/FT DENSITY <2 V.SOFT 2-4 SOFT 4-8 M.STIFF 8-15 STIFF 15-30 V.STIFF >30 HARD | PROPORTIONS USED TRACE 0-10% LITTLE 10-20% SOME 20-35% AND 35-50% | NOTES: 1. See Figure 2, SITE Plan, for boring locations 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used. 3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths. 4. Comp. signifies composite sample. |
|---|--|---|---|



TWIN STATE ENVIRONMENTAL CORPORATION

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MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|---|-------------------|-------------------------------------|----------------|-----------------|
| WELL/BORING NO: | B-6/MW-2 | WELL DEPTH: | 11.0 ft | BORING DEPTH: | 12.0 feet |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | 1.83 fbg | March 12, 1998 | |
| PROJECT NO: | 97-097 | SCREEN DIA: | 1-inch | DEPTH: | 1.5-11.0 ft bgs |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | 0.020 slot Schedule 40 PVC | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | Schedule 40 PVC | | |
| DRILLING CO: | TSEC | RISER DIA.: | 1-inch | DEPTH: | 0.5-1.5 ft bgs |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | Flushmount roadbox set in concrete. | | |
| SAMPLING METHOD: | Marcocore Sampler | RISER CAP: | Locking expansion plug. | | |
| REMARKS: | Boring B-6 was completed as Monitoring Well MW-2. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND | |
|---------------|--------------|-------------------|------------|-----------------------|--|---|--|
| 0 | | 0.0-4.0 | HS 1.3 | 4.0 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. 0.5-1.0: Crushed GRAVEL. Moist, Grey, loose. | | |
| 1 | | Comp. | | | | | |
| 2 | | | 4.0-5.5 | HS 0.0 | 4.0 ft recovery | 1.0-3.0: Fragmented linear organic DETRITUS and GRAVEL. Black, loose, damp. 3.0-4.0: VF sandy SILT with organic detritus. Moist, brown-black, m. stiff. 4.0-5.0: VF sandy SILT with organic detritus. Moist, brown-black, m. stiff. | |
| 3 | | | | | | | |
| 4 | | | 5.5-8.0 | HS 0.0 | 4.0 ft recovery | 5.0-5.5: F/M GRAVEL. Wet, brown, loose. 5.5-8.0: VF sandy SILT with some gravel. Damp, grey-brown, dense. | |
| 5 | | | | | | | |
| 6 | | | 8.0-9.5 | HS 0.0 | 4.0 ft recovery | 8.0-9.0: VF/M SAND with some fine gravel. Wet, tan-brown, loose. 9.0-9.5: F/M GRAVEL. Wet, brown, loose. | |
| 7 | | | | | | | |
| 8 | | | 9.5-12.0 | HS 0.0 | 4.0 ft recovery | 9.5-12.0: VF/F sandy SILT with some fine gravel. Damp, grey-green, dense. | |
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End of Sampling = 12.0 ft
 End of Boring = 12.0 ft

| GRANULAR SOILS | | COHESIVE SOILS | | PROPORTIONS USED | |
|----------------|---------|----------------|---------|------------------|--------|
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | TRACE | 0-10% |
| 0-4 | V.LOOSE | <2 | V.SOFT | LITTLE | 10-20% |
| 4-10 | LOOSE | 2-4 | SOFT | SOME | 20-35% |
| 10-30 | M.DENSE | 4-8 | M.STIFF | AND | 35-50% |
| 30-50 | DENSE | 8-15 | STIFF | | |
| >50 | V.DENSE | 15-30 | V.STIFF | | |
| | | >30 | HARD | | |

NOTES:
 1. See Figure 2, SITE Plan, for boring locations
 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.



TWIN STATE ENVIRONMENTAL CORPORATION

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MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|--|-------------------|-----|---------------|----------|
| WELL/BORING NO: | B-7 | WELL DEPTH: | N/A | BORING DEPTH: | 8.0 feet |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | N/A | | |
| PROJECT NO: | 97-097 | SCREEN DIA: | N/A | DEPTH: | N/A |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | N/A | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | N/A | | |
| DRILLING CO: | TSEC | RISER DIA.: | N/A | DEPTH: | N/A |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | N/A | | |
| SAMPLING METHOD: | Macrocore® | RISER CAP: | N/A | | |
| REMARKS: | A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND |
|---------------|--------------|-------------------|------------|-----------------------|--|----------------------|
| 0 | N | | | 3.0 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | CEMENT GROUT |
| 1 | O | 0.0-4.0 | | | 0.5-1.75: VF sandy SILT with some fine gravel. Damp, brown, m. dense. | NATIVE BACKFILL |
| 2 | | Comp. | HS 1.7 | | 1.75-3.0: VF sandy SILT with some fine gravel. Damp, grey-brown, m. dense. | BENTONITE SEAL |
| 3 | W | | | 3.0 ft recovery | 4.0-7.0: VF sandy SILT with some fine gravel. Damp, grey-brown, m. dense. | SAND PACK |
| 4 | E | 4.0-8.0 | | | | WELL SCREEN |
| 5 | L | Comp. | HS 1.3 | | | RISER PIPE |
| 6 | L | | | | | HS HEAD SPACE |
| 7 | | | | | | WATER LEVEL (APPROX) |
| 8 | I | | | | End of Sampling = 8.0 feet | |
| 9 | N | | | | End of Boring = 8.0 feet | |
| 10 | S | | | | | |
| 11 | T | | | | | |
| 12 | A | | | | | |
| 13 | L | | | | | |
| 14 | L | | | | | |
| 15 | E | | | | | |
| 16 | D | | | | | |
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| GRANULAR SOILS | | COHESIVE SOILS | | PROPORTIONS USED | | NOTES: |
|----------------|---------|----------------|---------|------------------|--------|--|
| BLOWS/FT | DENSITY | BLOWS/FT | DENSITY | TRACE | 0-10% | |
| 0-4 | V.LOOSE | <2 | V.SOFT | LITTLE | 10-20% | 1. See Figure 2, SITE Plan, for boring locations 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used. 3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths. 4. Comp. signifies composite sample. |
| 4-10 | LOOSE | 2-4 | SOFT | SOME | 20-35% | |
| 10-30 | M.DENSE | 4-8 | M.STIFF | AND | 35-50% | |
| 30-50 | DENSE | 8-15 | STIFF | | | |
| >50 | V.DENSE | 15-30 | V.STIFF | | | |
| | | >30 | HARD | | | |



TWIN STATE ENVIRONMENTAL CORPORATION

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MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|---|-------------------|----------------------------------|----------------|-----------------|
| WELL/BORING NO: | B-8 / MW-3 | WELL DEPTH: | 7.75 ft | BORING DEPTH: | 8.0 ft |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | 0.5 ft | March 12, 1998 | |
| PROJECT NO: | 97-097 | SCREEN DIA: | 4 1/2-inch | DEPTH: | 3.0-7.75 ft bgs |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | 0.010 slot Schedule 40 PVC | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | Schedule 40 PVC | | |
| DRILLING CO: | TSEC | RISER DIA: | 1/2-inch | DEPTH: | 0.5-3.0 ft bgs |
| DRILLING METHOD: | Geoprobe [®] | GUARD TYPE: | Flush mounted aluminum road box. | | |
| SAMPLING METHOD: | Macrocore Sampler | RISER CAP: | Expansion Plug | | |
| REMARKS: | Boring B-8 was completed as Monitoring Well MW-3 using a prepacked well screen. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND |
|---------------|--------------|-------------------|------------|-----------------------|---|---|
| 0 | | 0.0-4.0 | IIS 1.3 | 4.0 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | CEMENT GROUT NATIVE BACKFILL BENTONITE SEAL SAND PACK WELL SCREEN RISER PIPE IIS HEAD SPACE WATER LEVEL (APPROX) |
| 1 | | Comp. | | | 0.5-1.75: VF/F sandy SILT with some fine gravel and organic detritus. Damp, brown-grey, m. dense. | |
| 2 | | | | | | 1.75-2.75: VF/F sandy SILT with some fine gravel and organic detritus. Damp, grey, m. dense. |
| 3 | | | | | | 2.75-4.0: VF/F sandy SILT with some fine gravel. Damp, grey-brown, dense. |
| 4 | | | | | | 4.0-4.5: VF/F sandy SILT with some fine gravel. Moist, grey-brown, dense. |
| 5 | | | | | | 4.5-5.0: VF/F sandy SILT and fine GRAVEL. Wet, grey-brown, m. dense. |
| 6 | | 4.0-5.0 | | | 4.0 ft recovery | 5.0-7.5: VF/F sandy SILT with some fine gravel. Damp, brown, dense. |
| 7 | | Comp. | | IIS 18.9 | | 7.5-8.0: VF/F sandy SILT with some fine gravel. Damp, dark grey, dense. |
| 8 | | | 5.0-8.0 | | | |
| 9 | | | Comp. | IIS 0.4 | | |
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| GRANULAR SOILS | COHESIVE SOILS | PROPORTIONS USED | NOTES: 1. See Figure 2 for well and boring locations. 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used. 3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths. 4. Comp. signifies composite sample. |
| BLOWS/FT | DENSITY | TRACE | |
| 0-4 | V.LOOSE | 0-10% | |
| 4-10 | LOOSE | LITTLE 10-20% | |
| 10-30 | M.DENSE | SOME 20-35% | |
| 30-50 | DENSE | AND 35-50% | |
| >50 | V.DENSE | | |



TWIN STATE ENVIRONMENTAL CORPORATION

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MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|--|-------------------|-----|---------------|----------|
| WELL/BORING NO: | B-9 | WELL DEPTH: | N/A | BORING DEPTH: | 4.0 feet |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | N/A | | |
| PROJECT NO: | 97-097 | SCREEN DIA: | N/A | DEPTH: | N/A |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | N/A | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | N/A | | |
| DRILLING CO: | TSEC | RISER DIA.: | N/A | DEPTH: | N/A |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | N/A | | |
| SAMPLING METHOD: | Macrocore® | RISER CAP: | N/A | | |
| REMARKS: | A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND | |
|--|--------------|--|------------|---|--|---|--|
| 0 | N | | | 3.0 ft recovery | 0.0-0.5: VF sandy SILT with organic humus and vegetation. Moist, dark brown, m. dense. | | |
| 1 | O | 0.0-4.0 | | | 0.5-1.75: VF sandy SILT with some fine gravel. Damp, brown, dense. | | |
| 2 | | Comp. | HS 1.7 | | 1.75-3.0: VF sandy SILT with some fine gravel. Damp, grey-brown, v. dense. | | |
| 3 | W | | | | | | |
| 4 | E | | | | | | |
| 5 | L | | | | End of Sampling = 4.0 feet | | |
| 6 | L | | | | End of Boring = 4.0 feet | | |
| 7 | | | | | | | |
| 8 | I | | | | | | |
| 9 | N | | | | | | |
| 10 | S | | | | | | |
| 11 | T | | | | | | |
| 12 | A | | | | | | |
| 13 | L | | | | | | |
| 14 | L | | | | | | |
| 15 | E | | | | | | |
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| GRANULAR SOILS BLOWS/FT DENSITY 0-4 V.LOOSE 4-10 LOOSE 10-30 M.DENSE 30-50 DENSE >50 V.DENSE | | COHESIVE SOILS BLOWS/FT DENSITY <2 V.SOFT 2-4 SOFT 4-8 M.STIFF 8-15 STIFF 15-30 V.STIFF >30 HARD | | PROPORTIONS USED TRACE 0-10% LITTLE 10-20% SOME 20-35% AND 35-50% | | NOTES: 1. See Figure 2, SITE Plan, for boring locations 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used. 3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths. 4. Comp. signifies composite sample. | |



TWIN STATE ENVIRONMENTAL CORPORATION

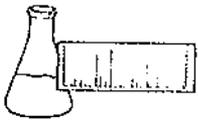
65 Huntington Road, P.O. Box 719 Richmond, Vermont 05477
 (802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

| | | | | | |
|------------------|--|-------------------|-----|---------------|----------|
| WELL/BORING NO: | B-10 | WELL DEPTH: | N/A | BORING DEPTH: | 4.0 feet |
| PROJECT NAME: | Lucille Farm Prod. | DEPTH TO WATER: | N/A | | |
| PROJECT NO: | 97-097 | SCREEN DIA: | N/A | DEPTH: | N/A |
| INSTALL DATE: | March 4, 1998 | SCREEN TYPE/SIZE: | N/A | | |
| TSEC REP: | Andrew Shively | RISER TYPE: | N/A | | |
| DRILLING CO: | TSEC | RISER DIA: | N/A | DEPTH: | N/A |
| DRILLING METHOD: | Geoprobe® | GUARD TYPE: | N/A | | |
| SAMPLING METHOD: | Macrocore® | RISER CAP: | N/A | | |
| REMARKS: | A 6.0 inch bentonite plug was installed at the boring terminus and and 6.0 inches bgs. The remainder of the annular space of the boring was backfilled with recovered materials. | | | | |

| DEPTH IN FEET | WELL PROFILE | SAMPLE DEPTH (FT) | PID (PPMV) | BLOWS/6" AND RECOVERY | SOIL DESCRIPTION AND NOTES | LEGEND | |
|--|--------------|--|------------|---|--|--|--|
| 0 | N | | | | | CEMENT GROUT | |
| 1 | O | 0.0-4.0 | | 4.0 ft recovery | 0.0-0.5: Silty crushed GRAVEL base. Wet, tan-grey, m. stiff. | NATIVE BACKFILL | |
| 2 | | Comp. | HS 1.7 | | 0.5-3.0: VF sandy SILT with some fine gravel. Damp, grey, dense. | BENTONITE SEAL | |
| 3 | W | | | | 3.0-3.5: VF sandy SILT with some fine gravel. Damp, grey-green, dense. | SAND PACK | |
| 4 | E | | | | 3.5-4.0: VF sandy SILT with some fine gravel. Damp, green-grey, dense. | WELL SCREEN | |
| 5 | L | | | | End of Sampling = 4.0 feet | RISER PIPE | |
| 6 | L | | | | End of Boring = 4.0 feet | HS HEAD SPACE | |
| 7 | | | | | | WATER LEVEL (APPROX) | |
| 8 | I | | | | | | |
| 9 | N | | | | | | |
| 10 | S | | | | | | |
| 11 | T | | | | | | |
| 12 | A | | | | | | |
| 13 | L | | | | | | |
| 14 | L | | | | | | |
| 15 | E | | | | | | |
| 16 | D | | | | | | |
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| GRANULAR SOILS BLOWS/FT DENSITY 0-4 V.LOOSE 4-10 LOOSE 10-30 M.DENSE 30-50 DENSE >50 V.DENSE | | COHESIVE SOILS BLOWS/FT DENSITY <2 V.SOFT 2-4 SOFT 4-8 M.STIFF 8-15 STIFF 15-30 V.STIFF >30 HARD | | PROPORTIONS USED TRACE 0-10% LITTLE 10-20% SOME 20-35% AND 35-50% | | NOTES: 1. See Figure 2, SITE Plan, for boring locations 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used. 3. Soils described as recovered from macro core liner. Depths of description as measured in series of total boring depths 4. Comp. signifies composite sample. | |

APPENDIX B



ENDYNE, INC.
MARK 2 0 1998

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Twin State Environmental Corp.
PROJECT NAME: Lucille Farm Products
DATE REPORTED: March 18, 1998
DATE SAMPLED: March 4, 1998

PROJECT CODE: TSEC1674
REF. #: 117,429

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated proper sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

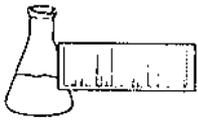
TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: March 18, 1998
CLIENT: Twin State Environmental Corp.
PROJECT: Lucille Farm Products
PROJECT CODE: TSEC1674
COLLECTED BY: Andy Schultz
DATE SAMPLED: March 4, 1998
DATE RECEIVED: March 5, 1998

| Reference # | Sample ID | Concentration (mg/kg) ¹ |
|-------------|--------------------------|------------------------------------|
| 117,429 | B-1 at 6-12 ft bgs; 9:10 | 179. |

Notes:

- 1 Values quantitated based on the response of #2 Fuel Oil. Method detection limit is 5.0 mg/kg.



ENDYNE, INC.

MAR 16 1998

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Twin State Environmental Corp.
PROJECT NAME: Lucille Farm Products
DATE REPORTED: March 12, 1998
DATE SAMPLED: March 4, 1998

PROJECT CODE: TSEC1673
REF. #: 117,428

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated proper sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate data was determined to be within Laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS BY EPA METHOD 8260

CLIENT: Twin State Environmental Corp.
PROJECT NAME: Lucille Farm Products
REPORT DATE: March 12, 1998
SAMPLER: Andy Shirely
DATE SAMPLED: March 4, 1998
DATE RECEIVED: March 5, 1998

PROJECT CODE: TSEC1673
ANALYSIS DATE: March 11, 1998
STATION: B-1 6-12ft bgs
REF.#: 117,428
TIME SAMPLED: 09:10

| <u>Parameter</u> | <u>Detection Limit (ug/kg)</u> | <u>Concentration As Received (ug/kg)</u> |
|---------------------|--------------------------------|--|
| Benzene | 10 | ND ¹ |
| Chlorobenzene | 10 | ND |
| 1,2-Dichlorobenzene | 10 | ND |
| 1,3-Dichlorobenzene | 10 | ND |
| 1,4-Dichlorobenzene | 10 | ND |
| Ethylbenzene | 10 | 18.3 |
| Toluene | 10 | 72.8 |
| Xylene | 20 | 76.3 |
| MTBE | 20 | ND |

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

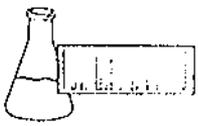
ANALYTICAL SURROGATE RECOVERY:

Dibromofluoromethane: 88.%
Toluene-d8: 106.%
4-Bromofluorobenzene: 98.%

PERCENT SOLIDS: 88.%

NOTES:

1 None detected



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REPORT OF LABORATORY ANALYSIS

CLIENT: Twin State Environmental Corp.
PROJECT NAME: Lucille Farms/97097
DATE REPORTED: March 19, 1998
DATE SAMPLED: March 12, 1998

PROJECT CODE: TSEC1772
REF. #: 117,697 - 117,702

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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LABORATORY REPORT

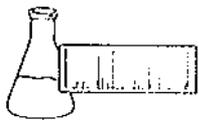
TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: March 19, 1998
CLIENT: Twin State Environmental Corp.
PROJECT: Lucille Farms/97097
PROJECT CODE: TSEC1772
COLLECTED BY: Rod Lindsay
DATE SAMPLED: March 12, 1998
DATE RECEIVED: March 12, 1998

| Reference # | Sample ID | Concentration (mg/L) ¹ |
|-------------|-------------|-----------------------------------|
| 117,697 | MW2; 1200 | ND ² |
| 117,698 | MW3; 1140 | 0.41 |
| 117,699 | S-1; 1115 | TBQ ³ |
| 117,700 | S-2; 1125 | ND |
| 117,701 | Dup-1; 1220 | ND |
| 117,702 | F.B.; 1100 | ND |

Notes:

- 1 Value quantitated based on the response of #2 Fuel Oil. Method detection limit is 0.4 mg/L.
- 2 None detected
- 3 Trace below quantitation limit



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MAR 20 1998

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REPORT OF LABORATORY ANALYSIS

CLIENT: Twin State Environmental Corp.
PROJECT NAME: Lucille Farms
REPORT DATE: March 16, 1998
DATE SAMPLED: March 12, 1998

PROJECT CODE: TSEC1771
REF.#: 117,691 - 117,696

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl. However, samples 117691 and 117695 were found to have a neutral pH.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Twin State Environmental Corp.
 PROJECT NAME: Lucille Farms
 CLIENT PROJ. #: 97097

DATE RECEIVED: March 12, 1998
 REPORT DATE: March 16, 1998
 PROJECT CODE: TSEC1771

| Ref. #: | 117,691 | 117,692 | 117,693 | 117,694 | 117,695 |
|---------------------|---------------|---------------|---------------|---------------|---------------|
| Site: | MW-2 | MW-3 | S-1 | S-2 | Dup-1 |
| Date Sampled: | 3/12/98 | 3/12/98 | 3/12/98 | 3/12/98 | 3/12/98 |
| Time Sampled: | 12:00 | 11:40 | 11:15 | 11:25 | 12:20 |
| Sampler: | R. Lindsay II |
| Date Analyzed: | 3/13/98 | 3/16/98 | 3/16/98 | 3/16/98 | 3/13/98 |
| UIP Count: | 0 | 2 | >10 | >10 | 0 |
| Dil. Factor (%): | 100 | 100 | 100 | 100 | 100 |
| Surr % Rec. (%): | 98 | 98 | 94 | 96 | 94 |
| Parameter | Conc. (ug/L) |
| Benzene | <1 | <1 | <1 | <1 | <1 |
| Chlorobenzene | <1 | <1 | <1 | <1 | <1 |
| 1,2-Dichlorobenzene | <1 | <1 | <1 | <1 | <1 |
| 1,3-Dichlorobenzene | <1 | <1 | <1 | <1 | <1 |
| 1,4-Dichlorobenzene | <1 | <1 | <1 | <1 | <1 |
| Ethylbenzene | <1 | <1 | <1 | <1 | <1 |
| Toluene | <1 | 1.3 | <1 | 1.3 | <1 |
| Xylenes | <1 | 3.1 | <1 | <1 | <1 |
| MTBE | <10 | <10 | <10 | <10 | <10 |

| Ref. #: | 117,696 | | | | |
|---------------------|---------------|--|--|--|--|
| Site: | F.B. | | | | |
| Date Sampled: | 3/12/98 | | | | |
| Time Sampled: | 11:00 | | | | |
| Sampler: | R. Lindsay II | | | | |
| Date Analyzed: | 3/16/98 | | | | |
| UIP Count: | 0 | | | | |
| Dil. Factor (%): | 100 | | | | |
| Surr % Rec. (%): | 95 | | | | |
| Parameter | Conc. (ug/L) | | | | |
| Benzene | <1 | | | | |
| Chlorobenzene | <1 | | | | |
| 1,2-Dichlorobenzene | <1 | | | | |
| 1,3-Dichlorobenzene | <1 | | | | |
| 1,4-Dichlorobenzene | <1 | | | | |
| Ethylbenzene | <1 | | | | |
| Toluene | 1.4 | | | | |
| Xylenes | <1 | | | | |
| MTBE | <10 | | | | |

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

CHAIN-OF-CUSTODY RECORD

25634

117,691 — 117,702

| | | |
|--|--|--|
| Project Name: <u>Lucille Farms</u> | Reporting Address: <u>SAME AS →</u> | Billing Address: <u>65 Huntington Rd. Ridgmont, VT 05477</u> |
| Site Location: <u>Swanton, VT</u> | Company: <u>Twin State Inc Corp.</u> | Sampler Name: <u>Rod Lindsay #</u> |
| Endyne Project Number: <u>TSEC 1771 97097</u> | Contact Name/Phone #: <u>Andy Shisly</u> | Phone #: <u>434-3350</u> |

| Lab # | Sample Location | Matrix | G R A B | C O M P | Date/Time | Sample Containers | | Field Results/Remarks | Analysis Required | Sample Preservation | Rush |
|---------|-----------------|--------|------------------|------------------|-----------------|-------------------|--------------|-----------------------|-------------------|---------------------|------|
| | | | | | | No. | Type/Size | | | | |
| 117,691 | MW-2 | L | X | | 2.12.98 1200 | 3 | 40ml 1000 | | | HCL/10 | |
| 117,692 | MW-3 | | | | 1140 | | | | | | |
| 117,693 | S-1 | | | | 1115 | | | | | | |
| 117,694 | S-2 | | | | 1125 | | | | | | |
| 117,695 | Dip-1 | | | | 1220 | | | | | | |
| 117,696 | F.B. | | | | 1100 | | | | | | |

| | | |
|----------------------------|------------------------|-----------|
| Relinquished by: Signature | Received by: Signature | Date/Time |
|----------------------------|------------------------|-----------|

| | | |
|---|---|-------------------------------|
| Relinquished by: Signature <u>[Signature]</u> | Received by: Signature <u>[Signature]</u> | Date/Time <u>3.12.98 1435</u> |
|---|---|-------------------------------|

New York State Project: Yes No Requested Analyses

| | | | | | | | | | | | |
|----|---|----|------------------|----|--------------|----|--------------------|----|------------------|----|----------------------|
| 1 | pH | 6 | TKN | 11 | Total Solids | 16 | Metals (Specify) | 21 | EPA 624 | 26 | EPA 8270 B/N or Acid |
| 2 | Chloride | 7 | Total P | 12 | TSS | 17 | Coliform (Specify) | 22 | EPA 625 B/N or A | 27 | EPA 8010/8020 |
| 3 | Ammonia N | 8 | Total Diss. P | 13 | TDS | 18 | COD | 23 | EPA 418.1 | 28 | EPA 8080 Pest/PCB |
| 4 | Nitrite N | 9 | BOD ₅ | 14 | Turbidity | 19 | BTEX | 24 | EPA 608 Pest/PCB | | |
| 5 | Nitrate N | 10 | Alkalinity | 15 | Conductivity | 20 | EPA 601/602 | 25 | EPA 8240 | | |
| 29 | TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides) | | | | | | | | | | |
| 30 | Other (Specify): <u>8020 AND 8100M TPH AS DRO</u> | | | | | | | | | | |