

**UST REMOVAL
PROPOSED REMEDIATION REPORT
ENFORCEMENT CASE LS 2836**

**100 Bosworth Street
Providence, Rhode Island**

prepared for

**Mr. Piero Maggiasco
46 Kent View Drive
Hope Valley, R.I. 02831**

prepared by

**Triangle Environmental
175 Metro Center Blvd., Suite 7
Warwick, Rhode Island 02886
Phone: (401)-737-0570
FAX: (401)-732-5607**



October 23, 1992

Mr. David Sheldon CPG, Senior Engineer
Leaking Tank Enforcement Program
Division Of Water Resources
Department Of Environmental Management
291 Promenade Street
Providence, RI

Re: Property located on 100 Bosworth Street
Providence, RI
Leaking Tank Enforcement Case LS 2836
UST Removal/Proposed Remediation

As per Section 15 of The Regulations for Underground Storage Facilities used for Petroleum Products and Hazardous Materials, a permanent closure was performed at the above mentioned site. The required paperwork regarding permanent underground storage tank closures was filed with the Department Of Environmental Management. A copy of the necessary paperwork is included in Attachment 1. Excavation for the tank closure was scheduled for September 31, 1992, however, the excavation began on September 28, 1992.

Closure Background

The closure involved removing a single 15,000 gallon steel underground storage tank containing #6 fuel oil. The tank was no longer in service but contained approximately 30" of liquid. Of the 30" of liquid in the tank, approximately 12" was free product. At one time the oil in this tank was used to heat the adjacent buildings. At the present time, a 10,000 gallon underground storage tank located adjacent to the 15,000 gallon tank, is being used to heat the current facilities. This tank was precision tested on 7/23/92 by Precision Testing Co., utilizing the Petro Tite II method. The testing method and the Precision Testing Co. have been approved by the Department of Environmental Management. The results indicated that the 10,000 gallon tank tested tight. A copy of the tightness test is included as Attachment 2.

The exact location of the 15,000 gallon tank had to be determined prior to performing the closure. On August 17, 1992 the northern and southern ends of the tank were exposed as well as the western side of the tank. The tank is situated end to end parallel with Curtis Street.

The tank, when exposed, was tightly situated in between a retaining wall and an existing building which housed the boiler for the heating system. An overhead wire directly above the tank was also a point of concern. In order to remove the tank without disturbing the existing surrounding structures, the closure had to be performed very carefully. The location of the 15,000 gallon underground storage tank with respect to the surrounding area is included as Figure 1.

Tank Closure

On September 28, 1992, excavation commenced regarding the closure of the 15,000 gallon underground storage tank. The tank was pumped free of liquid prior to excavating the project area. The remaining sludge could not be removed until the tank was exposed. The area adjacent to the south side of the tank was excavated to a depth of 10'-12'. Due to machine malfunction the excavation ceased for the remainder of the day.

On September 29, 1992, the excavation continued and digging was difficult along the side of the tank. The objective was to excavate as much soil along the south side of the tank so that it could be moved to the excavated area for removal. However, as the excavation continued, oil (#6) saturated soil at the groundwater table was exposed to a depth of approximately 10' below grade. At that time you arrived on site to review the closure activities. After further review of the excavation, it was agreed to by all parties (DEM & Triangle Environmental) involved, that all oil saturated soil would have to be removed and placed on poly for proper disposal.

The tank removal was to be completed prior to removing any oil saturated soil. Eventually the tank was repositioned to the middle of the excavation and a portion of it removed from the hole. The tank was damaged during the repositioning and only half of the tank could be removed from the excavation. During the tank removal, a small amount of excavated soil remained in the tank. This soil contained oil and was shoveled into 55 gallon drums for proper disposal. The remaining portion of the tank was removed from the excavated hole and cut on site.

Upon completion of the tank removal, the oil saturated soil was exposed and ready for removal. The tank removal was time consuming and darkness prevented any oil saturated soil from being removed from the excavation. The excavated hole was barricaded and left open overnight. An inspection of the tank once out of the ground revealed that the oil leaked at the end of the tank where the steel overlapped.

On September 30, 1992, an area was cleared for the placement of oil saturated soil on poly. Approximately 20-25 yards of oil saturated soil was removed from the excavation and placed on poly until properly disposed. A poly sheet was also placed over the soil for proper coverage. The hole was then backfilled on site. Approximately 5 to 6 - 55 gallon drums of oil saturated soil was contained on site.

On October 1, 1992 the previously excavated hole was reopened in order for representatives of Triangle Environmental to verify that the oil saturated soil was properly removed and that the required fill was placed in the excavation. Based on this excavation, Triangle Environmental was satisfied that the removal of oil saturated soil had been performed.

A sample was obtained from the oil saturated soil for analysis in order to properly dispose of the material on poly and in the 55 gallon drums. A copy of the Closure Form from RIDEM is included as Attachment 3.

Remediation

The previous report for this site stated that groundwater flow is in a southerly direction. Triangle Environmental proposes to verify the direction of groundwater flow by measuring the depth to groundwater from all the accessible wells on site. In order to determine any change in depth of groundwater in the wells or direction of groundwater flow, Triangle Environmental will use an existing bench mark from the previous plan. As shown on the attached plan there were six (6) monitoring well (MW) installed at the project site by GZA Drilling Inc. on March 26, 1992. There are five (5) MW's located on the project site at this time. These MW's are listed as #1, #2, 3, #5, and #7 on Figure 1. Monitoring well #8 was destroyed during the closure of the 15,000 gallon UST.

As determined in the field during the tank closure, the cause of free product at the project site was a leak in the 15,000 gallon #6 oil underground storage tank. Therefore, the remediation of this site is focusing only on the contamination originating from this #6 oil.

As noted in previous correspondence, free product was observed in MW #2 & MW #5. This would be the obvious assumption if the direction of groundwater flow is in a southerly direction (after verification by Triangle Environmental).

↘

The remediation method recommended by Triangle Environmental would be the installation of recovery trench - product recovery system. A trench would be installed between MW #2 & MW #5. An intercepting trench would be installed downgradient of the excavation. Within this trench would be a 24" corrugated pipe lined with an impermeable material.

The remediation procedure would begin by excavating a trench approximately 10' - 14' deep into the groundwater at an area north of MW's #2 & #5 and south of the existing water hydrant. The digging would continue southerly until the oil saturated soil was no longer encountered. During the excavation, all oil saturated soil would be removed and placed on poly for proper disposal. As the trench is extended southerly, the previously excavated area would be lined with crushed stone. At the end of the excavation an intercepting crushed stone trench lined with a impermeable material would be installed. This trench would contain a 24" corrugated/perforated pipe and would extend from the groundwater surface to grade. The gravel lined trench would, over a period of time, collect and divert oil toward the 24" pipe w/intercepting trench. A site plan of the existing property is depicted in Figure 1. A diagram of the system is attached as Figure 2 of this report.

Initially this pipe would be monitored on a periodic (at least monthly) basis for free floating oil. The accumulated oil would be pumped into a vac truck for removal. Monitoring reports as well as pumped product would be submitted to your office for your review.

The installation of this system will not commence until your office has reviewed this correspondence. If you should have any questions regarding this report, please contact my office at 737-0570. In the meantime, my office will be awaiting your review, comments or approval.

Sincerely,

Michael A. Del Rossi, P.E.
Partner

Attachments

cc: Piero Maggiasco
Jim St.Thomas, Eastland Bank

ATTACHMENT #1

PERMANENT CLOSURE APPLICATION FOR UNDERGROUND STORAGE FACILITIES

A: Date of application: 9/11/92 UST Facility I.D. _____

B: Proposed date of tank closure: 9/31/92
(Reminder: This date must be confirmed by phone with DEM at least 3 business days in advance of the closure.)

C: Facility Name: Pete Maggiacomo
Street Address: 100 Bosworth St.
City/Town: Providence, RI

D: Tank Owner: Pete Maggiacomo
Street Address: 100 Bosworth St.
City/Town/State: Providence, RI

E: FIRM/CONTRACTOR TO PERFORM TANK CLOSURE WORK

Name: Tanco, Inc
Address: 14 Hayward St.
Contact Person/Phone Number: RE WILBUR 781-4899

F: FIRM/CONSULTANT TO PERFORM TANK CLOSURE ASSESSMENT (check one)

____ Professional Engineer ____ Certified Professional Geologist

____ Other; A statement of qualifications must be submitted with this application.

Name: Tri Angle Engineering
Address: _____
Contact Person/Phone Number: 737-0570

G: DESCRIPTION OF TANKS TO BE CLOSED

TANK NO.	AGE	DATE LAST USED	VOLUME	CONSTRUCTION MATERIAL	STORED MATERIAL
<u>1</u>	<u>304</u>	<u>87</u>	<u>15000</u>	<u>Steel</u>	<u>#6</u>

(If there are more tanks being closed please list on an attachment)

H: FEE: NUMBER OF TANKS 1 X \$75.00 PER TANK = \$75.00/100

I. Have these tanks ever held non-petroleum, hazardous materials?

____ YES ☒ NO

If yes, then list materials: _____

J. After the closure(s) have been completed on the aforementioned tanks, will there be any underground storage tanks remaining in existence at this facility? ____ YES ____ NO

Will any new UST(s) be installed on the site?
____ YES ____ NO

CLOSURE PROCEDURE (select one):

1. ____ Precision test and fill with inert material
(Section 15.12).

Material used for filling tank: _____

NOTE: APPROVED PRECISION TEST MUST BE CONDUCTED AND
RESULTS MUST BE SUBMITTED PRIOR TO FILLING.

2. ☒ Excavate, clean, and dispose (Section 15.11)

a. Specify method of tank cleaning: _____

b. Specify method for disposing of tank sludges or
wastes generated by cleaning process. List name of waste
hauler (where applicable). _____

c. Specify whether cleaning will take place...
onsite ☒ off-site ____

i. If offsite, indicate location of final tank cleaning.
Firm/Address: _____

ii. Indicate firm which will transport tank(s) to site
indicated in c(i) above:
Firm/Address: _____

NOTE: FIRMS TRANSPORTING TANKS WHICH REQUIRE FURTHER
CLEANING MUST BE PERMITTED BY DEM (DIVISION OF
AIR AND HAZARDOUS MATERIALS) AS HAZARDOUS WASTE
TRANSPORTERS.

d. Will tank(s) be ...

rendered unfit for use and disposed of ☒ or reused ☐?

NOTE: REUSE OF A TANK IN THE GROUND REQUIRES COMPLIANCE WITH SECTION 12.03 OF STATE UST REGULATIONS.

Location for final tank(s) disposal:

Not to be used
Killingly St.
Johnston, RI

If tank is to be reused, specify:

Proposed use: _____

Name/address of intended user: _____

CERTIFICATION BY TANK OWNER

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME OF OWNER: (please print) Piero Piero MAGGIACOMO
SIGNATURE: Piero Maggiacomo
TITLE: PARTNER
ADDRESS: 46 KENT WILLOW DR
TELEPHONE: HOPE R.I. 02831
401-647-7660

DEM
DIVISION OF BUSINESS AFFAIRS USE ONLY

NO. OF TANKS _____ X 75.00 = _____ (TOTAL FEE)

FULL PAYMENT RECEIVED ON _____ (DATE)

to be
delivered
to Nancy
9/14/92

ATTACHMENT #2

Data Chart for Tank System Tightness Test

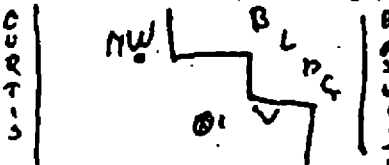
PLEASE PRINT

OWNER Property <input checked="" type="checkbox"/> Tank(s) <input type="checkbox"/>	100 BOSWORTH STREET REALTY PARTNERSHIP (401)944-5655 <small>Name Address Zip Representative Telephone</small> Mr. Piero Maggiasco 46 Kent View Drive, Hope RI 02831 <small>Name Address Zip Representative Telephone</small>																					
OPERATOR	100 Bosworth Street Realty Partnership (401)944-5655 <small>Name Address Zip Telephone</small> 100 Bosworth Street, Prov. RI																					
3. REASON FOR TEST <small>(Explain Fully)</small>	Compliance with Federal, State and Local Regulations. Criteria Established by National Fire Protection Association # 329.																					
4. WHO REQUESTED TEST AND WHEN	Mr. Piero Maggiasco Owner 100 Bosworth Street Realty July 1992 <small>Name Title Company or Association Date</small> 46 Kent View Drive, Hope RI 02831 (401)944-5655 <small>Address Zip Telephone</small>																					
5. TANK INVOLVED <small>Use additional lines for manifolded tanks</small>	Identify by Orientation	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass																
	Rear Right Building	10,000	Reichert & Son	#2 Fuel Oil	16 Yrs.	Steel																
6. INSTALLATION DATA	Location	Cover	Fills	Vents	Siphons	Pumps																
	Rear Right Building	Exposed	3"	2"	None	Suction																
	<small>North inside driveway, Rear of station, etc.</small>	<small>Concrete, Black Top, Earth, etc.</small>	<small>Size, Thread make, Drop tubes, Remote Fills</small>	<small>Size, Manifolded</small>	<small>Which tanks?</small>	<small>Suction, Remote, Make it known</small>																
7. UNDERGROUND WATER	Depth to the water table from grade 103" NW Is the water over the tank? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
8. FILL-UP ARRANGEMENTS	Tanks to be filled 0700 hr. 07 Date Arranged by Mr. Piero Maggiasco (401)944-5655 <small>Name Telephone</small> Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead. Reichert & Son Terminal or other contact for notice or inquiry _____ <small>Company Name Telephone</small>																					
9. CONTRACTOR, MECHANICS, any other contractors involved	_____ _____ _____																					
10. OTHER INFORMATION OR REMARKS	Test results reflect the condition of the system on the date tested only. No conclusions for future condition can be drawn from these test results. <small>Additional information on any items above. Officers or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.</small>																					
11. TEST METHOD	<input checked="" type="checkbox"/> PETRO TITE II <input type="checkbox"/> PETRO COMP <input type="checkbox"/> QUICK CHECK 2000																					
11a. TEST RESULTS	Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Tank Identification</th> <th>Tight</th> <th>Net Volume Change Per Hour</th> <th>Date Tested</th> </tr> </thead> <tbody> <tr> <td>10,000/#2 Fuel Oil</td> <td>YES</td> <td>-0.042 GPH</td> <td>07-23-92</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						Tank Identification	Tight	Net Volume Change Per Hour	Date Tested	10,000/#2 Fuel Oil	YES	-0.042 GPH	07-23-92								
Tank Identification	Tight	Net Volume Change Per Hour	Date Tested																			
10,000/#2 Fuel Oil	YES	-0.042 GPH	07-23-92																			
12. SENSOR CERTIFICATION 06-24-91 Date 597 Serial No. of Thermal Sensor	13. CONTRACTOR CERTIFICATION Technician 1. Antonio B. Martinez Precision Testing Company <small>Testing Contractor or Company By Signature</small> 120 Naples Avenue, Warwick RI 02886 <small>Address</small> 12-13-93 Certification # _____ Certification # _____																					

15. TANK TO TEST

Per of P.D.G.
Identity by location
#2 F.O.
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD



16. CAPACITY

Maximal Capacity 10,000
Gallons
By most accurate capacity chart available 10,094
Gallons

From
☐ Station Chart
☐ Tank Manufacturer's Chart
☐ Company Engineering Data
☒ Charts supplied with
☐ Other

17. FILL-UP FOR TEST

Back Water Bottom before Fill-up 0 in. 0 Gallons 120 in. Tank Diameter Inventory 10,094 Gallons
140 0
7.0. 7
10,111

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

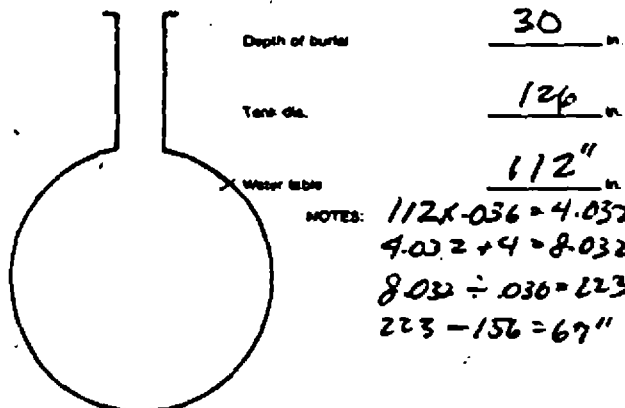
☐ Water in tank ☐ Line(s) being tested with LVLLT
☐ High water table in tank excavation

See manual sections applicable. Check before and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to disassembled tanks.

Complete section below:

- Is four pound rule required? Yes ☒ No ☐
- Height to 12" mark from bottom of tank 67 in.
- Pressure at bottom of tank 4 P.S.I.
- Pressure at top of tank 5 P.S.I.



NOTES: 112X-036 = 4.032
4.032 + 4 = 8.032
8.032 ÷ .036 = 223
223 - 156 = 67"

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressure.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to grade 156 in.
Add 80" for "T" probe only 30 in.
Total tubing to assemble - approximate in.

20. EXTENSION HOSE SETTING

Tank top to grade 30 in.
Extend hose on suction tube 6" or more below tank top in.

*If fill pipe extends above grade, use top of fill.

22. Thermal Sensor reading after circulation digits
Between
23. Digits per °F in range of expected change digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed
Observed Sample Temperature
Corrected A.P.I. Gravity @ 60°F. From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM

☐ Stage I ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD

Type of Product #2 F.O.
Hydrometer Employed 4
Temperature in Tank After Circulation 75 °F
Temperature of Sample 71 °F
Difference (°F) -4 °F
Observed A.P.I. Gravity 27.2
Reciprocal 2298 Page 28
10,111 2298 4.3999/
Total quantity in full tank (16 or 17) Reciprocal Volume change in this tank per °F
Transfer to Line 25b.

24c. FOR TESTING WITH WATER see Table C & D

Water Temperature after Circulation
Table C
Coefficient of Water Table D
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) Total quantity in full tank (16 or 17) (b) Coefficient of expansion for involved product (c) Volume change in this tank per °F
26. (a) 4.39991 Volume change per °F (23 or 24b) (b) 1.000 Digits per °F in test (23) (c) .00439 Volume change per digit Compute to 4 decimal places This is test .0044

ATTACHMENT #3

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF OIL POLLUTION AND UNDERGROUND STORAGE TANKS
291 Promenade Street
Providence, Rhode Island 02908
(401) 277-2234

FACILITY ID _____

CERTIFICATE OF CLOSURE
FOR UNDERGROUND STORAGE FACILITIES

In compliance with Chapter 46-12 of the Rhode Island General Laws, as amended, and the Regulations for Underground Storage Facilities Used for Petroleum Products and Hazardous Materials,

Piero Moggialbord

owner/operator of an underground storage facility located at

100 Bosworth Street

Providence - RI

is issued this Certificate of Closure indicating that the storage tanks described below have been taken out of service permanently, in compliance with the Regulations for Underground Storage Facilities Used for Petroleum Products and Hazardous Materials.

TANK ID NUMBER	VOLUME	STORED MATERIAL	DATE LAST USED	STATUS OF TANK F-Filled R-Removed
<i>2</i>	<i>12,000 gal</i>	<i>#4 or #6 oil</i>	<i>7/12/92</i>	<i>R</i>
		<i>Oil contaminated soil at water / totals removed</i>		
<i>4</i>		<i>Ground water remediation</i>	<i>1/1</i>	
		<i>proposal pending per on-site</i>	<i>1/1</i>	
		<i>meeting w/ M. DelRocco & Owner</i>	<i>1/1</i>	

Signed this *28* day of *September*, 19 *92*

Reviewed by: *David Clark*

Approved: *G. Du Fort*

Asst Dir Chief, Division of Oil Pollution and
Underground Storage Tanks
Department of Environmental Management

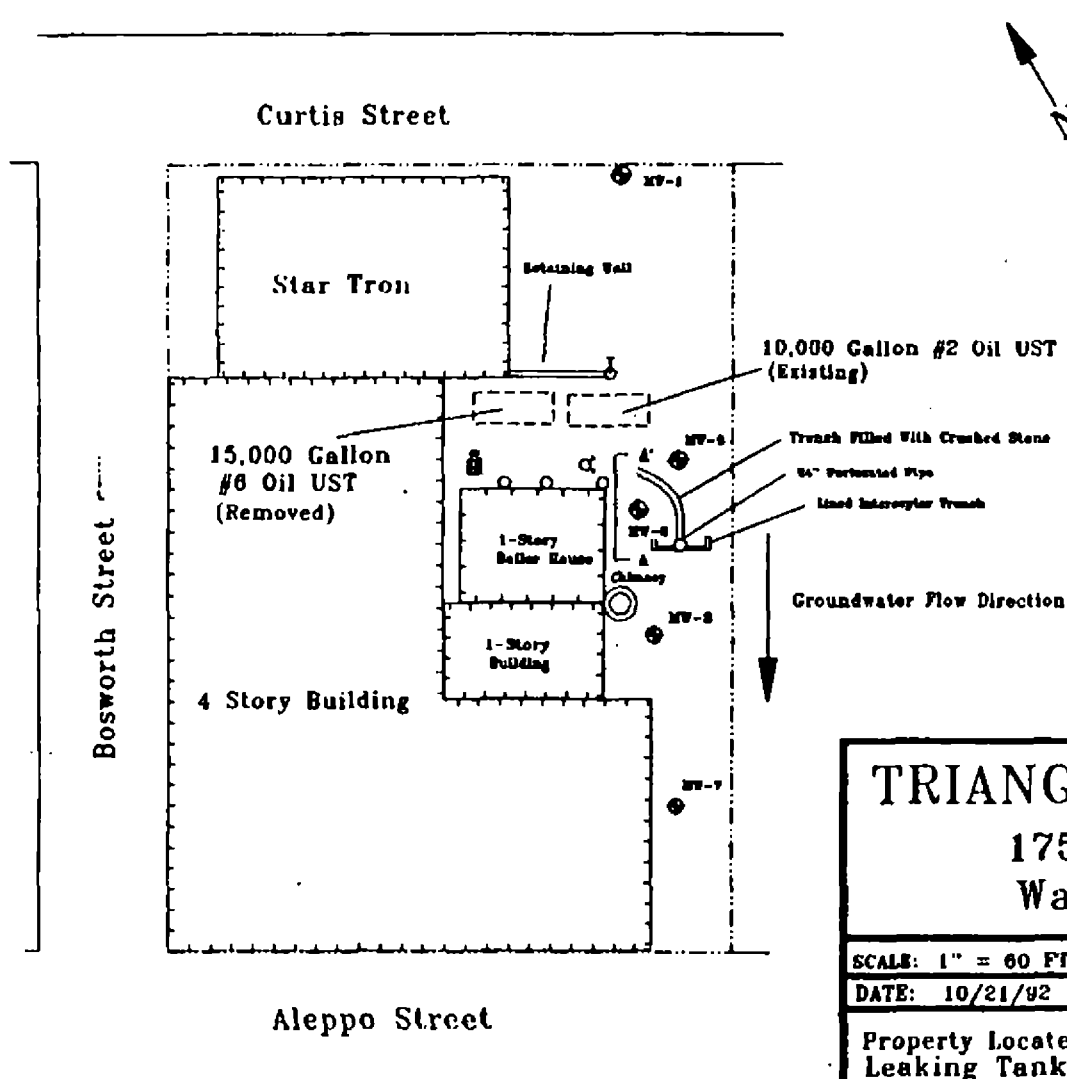
CLOSE1 _____

CLOSE2 _____

CLOSE2 _____

*1 - 10,000 gallon - #4 oil tank
still in service*

FIGURE 1



LEGEND

- Monitoring Wells Installed By GZA
- Telephone Pole
- UST Vent Pipes
- Hydrant

TRIANGLE ENVIRONMENTAL

175 Metro Center Blvd.
Warwick, R.I. 02886

SCALE: 1" = 60 FT

DATE: 10/21/92

APPROVED BY: MADR

DRAWN BY: JET

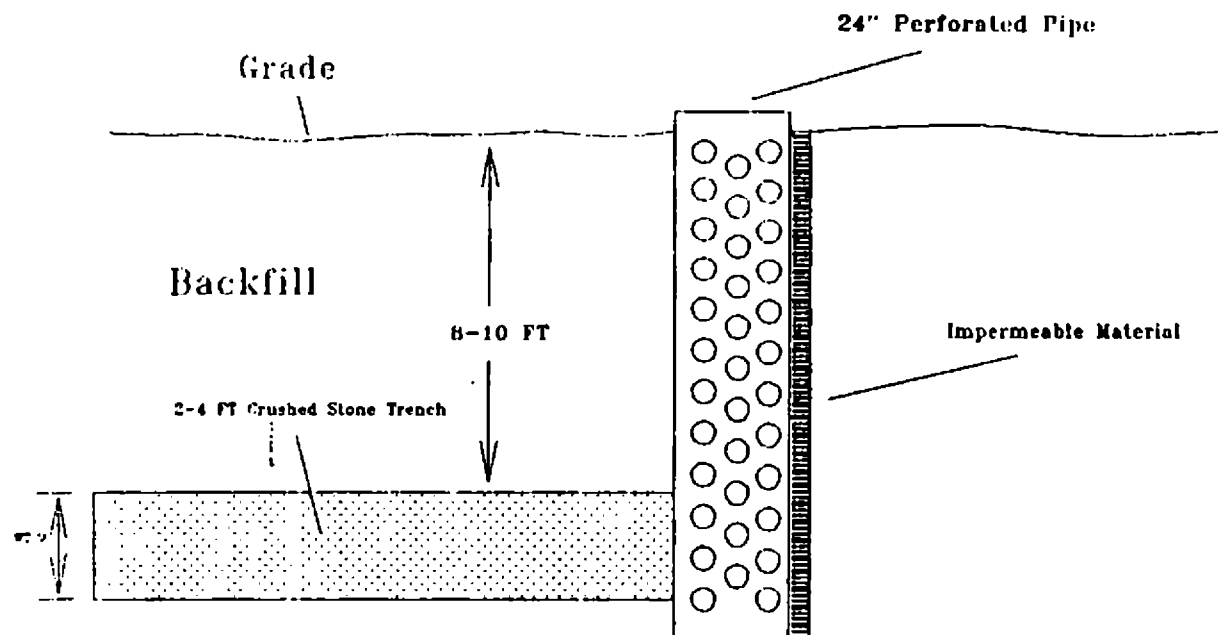
REVISED:

Property Located At 100 Bosworth Street, Providence, R.I.
Leaking Tank Enforcement Case LS 2836

Proposed Interceptor Trenches

DRAWING NO. 9248
Figure 1

FIGURE #2



TRIANGLE ENVIRONMENTAL

175 Metro Center Blvd.

Warwick, R.I. 02886

SCALE: Not To Scale

APPROVED BY: MADR

DRAWN BY: JET

DATE: 10/21/92

REVISED:

Property Located At 100 Bosworth Street, Providence, R.I.
Leaking Tank Enforcement Case LS 2836

Cross Section A - A'

DRAWING NO. 9248
Figure 2