



September 10, 1993

Mr. Chuck Schwer, Supervisor  
State of Vermont  
Agency of Natural Resources  
Department of Environmental Conservation  
Sites Management Section  
103 South Main Street  
Waterbury, VT 05671-0404

Re: Old Town Shed, Vergennes, Vermont - VTDEC Site #93-1397

Dear Mr. Schwer:

This letter report details the investigation of potential receptors of contamination due to petroleum released from former underground storage tanks (USTs) at the Old Vergennes Town Shed (Shed), located at the corner of West and Canal Streets in Vergennes, Vermont.

On May 21, 1993 two USTs were removed from the ground adjacent to the above referenced site. A 4,000 gallon gasoline tank and a 300 gallon fuel oil tank were removed on that date. Both USTs had been out of service for approximately 20 years. Both USTs contained several large holes, and had leaked an unknown volume of product into the surrounding soils. Approximately ten cubic yards of contaminated soil were removed from the tank pits and stockpiled on site at the time of the tank pull.

This report describes a follow up investigation performed in accordance with Griffin International's (Griffin's) work plan for assessment of subsurface contamination dated July , 1993. Information was gathered on potential receptors of contamination from the soil at the site of the Shed and the stockpiled soil. Griffin used the data to make the conclusions in this report regarding the potential effects to receptors of the contamination and the recommendations for monitoring the stockpiled soil at this site.

## **I. POTENTIAL RECEPTORS SURVEY**

On August 25, 1993, a Griffin engineer researched Vermont Department of Environmental Conservation (Vermont) records in Waterbury, regarding wetlands and public or private wells that were potential receptors of contamination from the former tank pits at the Shed or from the

stockpiled contaminated soils. At this time, soils maps for the area were also studied. In addition, on August 30, 1993, a Griffin engineer visited the site and conducted an investigation of potential receptors of contamination in the area. The investigation included visual observations of the areas surrounding both the Shed and the stockpiled soil, screening of the basement of the Shed for volatile organic compounds (VOCs) with a portable photoionization device (PID), and screening of the stockpiled soils with the PID. The results are outlined below.

**a.) Adjacent Buildings**

The basement of the Shed was screened for VOCs during the site investigation. No VOCs were detected with the PID anywhere in the basement.

The buildings nearest to the Shed are several residences which are approximately 75 feet from the tank pit, to the southeast across West Street. These residences are at the top of a steep upgrade that begins across West Street from the Shed. The ground elevation where the residences are built is approximately 15 feet above the ground surface where the Shed is built. This would put the basement floor elevation of the residences approximately 7 feet above the ground surface of the Shed. This would preclude migration of contaminants into the basements. PID readings in the former tank pits after contaminated soil was removed was low enough to preclude the movement of vapors into the cellars as well.

The nearest building to the southwest along West Street is approximately 300 feet from the Shed and upgradient of it. It does not appear to be at risk of contamination. To the northeast of the Shed is an electrical sub station approximately 150 feet distant. This building does not appear to be along the likely downgradient path, which appears to be to the north or northwest. This building does not appear to be at risk of contamination. To the north and northwest are two city owned garage buildings, and further to the north is a sewage treatment plant. These buildings range from approximately 150 feet distant for the garages to approximately 250 feet distant for the treatment plant. These buildings have no basements, being constructed with slab-on-grade foundations. While the two garages are most likely to be in the downgradient path of any migrating contaminants, their distance and lack of basements would significantly reduce their risk of contamination.

**b.) Nearby Wells**

I was informed at the time of the tank pull that all residences and buildings in the immediate vicinity of the Shed are served by municipal water and sewer services. At the time of the receptor survey, I visually observed the buildings around the Shed and along West Street to the southwest, looking for wells. I traveled along West Street to where it ends at the Panton Road, a distance of approximately one-quarter mile, and saw no wells. A search of the VTDEC well log records revealed a few private wells in Vergennes. The two nearest, with owners listed as Clarence Brill and Paul Brunett, are approximately 2,000 and 2,500 feet distant respectively. Copies of these well logs and their location map appear in the Attachments.

**c.) Nearby Surface Waters**

Otter Creek winds from east of the Shed to the north and around to the west in this area. Its nearest point to the Shed is to the northeast and is approximately 450 feet distant at this point. The soil stockpile is to the northwest of the Shed, and is approximately 175 to 200 feet east of Otter Creek. The stockpiled soil is polyencapsulated. Otter Creek does not appear to be at significant risk of contamination from the Shed due to its distance and the soil conditions at the site. The stockpiled soil had a few small tears in the poly and should probably be moved farther away from Otter Creek.

**d.) Nearby Wetlands**

A study of nearby wetlands was made during research at the Department of Environmental Conservation offices in Waterbury on August 25, 1993. An enlargement of the wetlands inventory map for the area appears in the Attachments. It shows four small wetlands in the vicinity of the stockpiled soil. These wetlands are approximately 200 feet to the north of the soil stockpile, but were not apparent during my site visit.

**e.) Site Soil Survey**

During my research at the VTDEC offices in Waterbury, soils maps for the area were studied. These revealed that the area surrounding the Shed and the former tank pits is underlain with Vergennes clay, with a thin strip of gravelly material along the bank to the northeast of the Shed. The gravelly material may be fill brought in to protect or build up the bank. The underlying clay soils have very low permeability and high adsorptive capacity which will combine to severely retard the migration of contaminants from the source. A copy of the soil map appears in the Attachments.

**II. STOCKPILED SOIL**

During the site inspection, the stockpiled soil was screened for VOCs with a PID. Ten samples from around and within the pile were screened. The readings ranged from 0.2 ppm to 8.8 ppm with an average of 3.13 ppm. This represents a significant reduction in VOC levels from when the soils were stockpiled in May 1993.

A few small holes were observed in the poly covering the soil, and the stockpile may be too close to Otter Creek in its present location. I was informed that there are other areas within the city's property at the site where the soil can be relocated if necessary.

**III. CONCLUSIONS**

Based on the above findings, Griffin has reached the following conclusions:

- 1.) Potential receptors of contamination from the former USTs at the Shed and the soil stockpiled at the time of the tank pull include the Shed and Otter Creek.
- 2.) Residual petroleum contamination in the former tank pits poses little, if any, risk to potential receptors.
- 3.) Significant reduction of residual petroleum contamination in the stockpiled soil has occurred since they were stockpiled in May, 1993.
- 4.) The stockpiled soil may be too close to Otter Creek to meet VTDEC guidelines for treatment of petroleum contaminated soil.

#### IV. RECOMMENDATIONS

Based on the above findings, Griffin makes the following recommendations:

- 1) Simultaneous replacement of poly covering and movement of the stockpiled soil to a place further from Otter Creek.
- 2) Continued monitoring of the stockpiled soil at six month intervals.
- 3) No additional investigation of subsurface petroleum contamination is necessary at this site.

Sincerely,



Michael Cassara, P. E.

Attachments

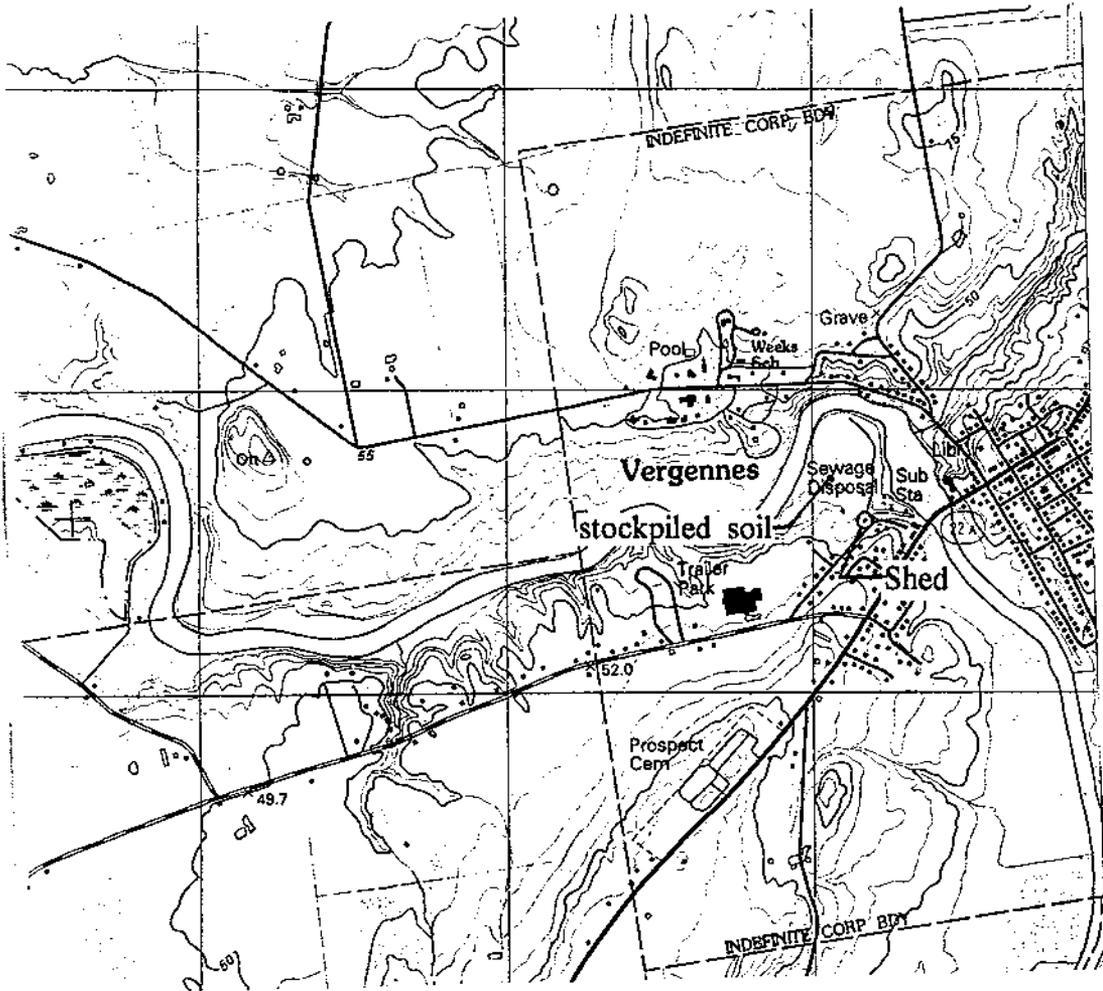
cc: Mr. Mel Holley

**ATTACHMENT 1**

**SITE LOCATION MAP**

**Site Location Map**  
**Old Town Shed**  
**Vergennes, Vermont**  
**Inspection Date: August 30, 1993**

Map Source: USGS Westport Quadrangle, 7.5 minute Series  
Scale: 1 : 25,000



**ATTACHMENT 2**

**WELL LOGS AND LOCATION MAP**

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(For Driller's Use)

State of Vermont  
DEPARTMENT OF WATER RESOURCES

WELL COMPLETION REPORT

(This report must be completed and submitted to the Department of Water Resources, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of well. Complete or line out all blanks.)

DO NOT FILL IN

#5

NOV 15 1978

WELL OWNER: Clarence Brill Vergennes RD 2 Box 316  
Name Mailing Address

TOWN IN WHICH WELL IS LOCATED: Vergennes (Please locate well on a large scale map to accompany this report. Maps are available on request.)

DATE WELL WAS COMPLETED: 7/20/78

PROPOSED USE OF WELL:  Domestic  Agricultural  Business Establishment  
 Municipal  Industrial  Other (Specify)  
DRILLING EQUIPMENT:  Cable Tool  Rotary  Air Percussion  
 Other (Specify)

TOTAL DEPTH OF WELL: 275 ft. STATIC WATER 25 FT  
CASING DETAILS: Length 65 ft. Diameter 6 in. Material Steel  
Weight 20 lb./ft.

SCREEN DETAILS: Make \_\_\_\_\_ Material \_\_\_\_\_ Length \_\_\_\_\_ ft.  
Diameter \_\_\_\_\_ in. Slot Size \_\_\_\_\_

METHOD OF SEALING CASING TO SCREEN OR BEDROCK: Drive shoe into ledge

FINAL YIELD TEST:  Bailed, or  Pumped, or  Compressed Air  
1 Hours at 10 gallons per minute  
Water level during yield test 260

WELL LOG

Depth From	Ground Surface	Give description of formations penetrated, such as: peat, silt, sand, gravel, clay, hardpan, shale, limestone, granite, etc. Include size of gravel (diameter) and sand (fine, medium, coarse, color of material, structure (loose, packed, cemented, hard). For example: Surface to 27 ft. fine, packed, yellow sand; to 134 ft. gray granite.
Surface to	<u>50</u> ft.	<u>Clay</u>
<u>50</u>	to <u>275</u> ft.	<u>ledge, Black State</u>
	to _____ ft.	
	to _____ ft.	
	to _____ ft.	

YIELD TEST DATA IN G.P.M.	
If yield was tested at different depth during drilling, List Below	
ft.	G.P.M.
ft.	G.P.M.
<u>275</u> ft.	<u>10</u> G.P.M.

WATER ANALYSIS: Has water been analyzed?  Yes  No If Yes, Where \_\_\_\_\_  
Include Analysis

DRILLED BY: Spafford & Sons Russ Shaw  
Signature  
DOING BUSINESS AS: Water Wells Company

DATE OF REPORT: 7/28/78 WELL DRILLERS LICENSE NO. 42

3091  
(For Driller's Use)

DEPARTMENT OF WATER RESOURCES  
AND ENVIRONMENTAL ENGINEERING  
WELL COMPLETION REPORT

W.R. 15 U.S.G.S. \_\_\_\_\_  
Field Location  Map area 4c9  
Latitude \_\_\_\_\_ " Elev. \_\_\_\_\_  
Longitude \_\_\_\_\_ " Topo. \_\_\_\_\_  
Scale: 62,500  25,000  24,000   
Data in Town Files

This report must be completed and submitted to the Department of Water Resources and Environmental Engineering, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of the well.

DEC 21 1984

Location map attached to WCR \_\_\_\_\_

1. WELL OWNER Paul Bourgeth Name Permanent Mailing Address RD 3 Vergennes, Vt.  
OR  
WELL PURCHASER \_\_\_\_\_ Name Permanent Mailing Address \_\_\_\_\_

2. LOCATION OF WELL: TOWN Stowe SUBDIVISION \_\_\_\_\_ LOT NO. \_\_\_\_\_

3. DATE WELL WAS COMPLETED 1/20/84

4. PROPOSED USE OF WELL:  Domestic,  Other \_\_\_\_\_

5. REASON FOR DRILLING WELL:  New Supply,  Replace Existing Supply,  Deepen Existing Well,  Test or Exploration,  
 Provide Additional Supply,  Other \_\_\_\_\_

6. DRILLING EQUIPMENT:  Cable Tool,  Rotary with A-P,  Other \_\_\_\_\_

7. TYPE OF WELL:  Open Hole in Bedrock,  Open End Casing,  Screened or Slotted;  Other \_\_\_\_\_

8. TOTAL DEPTH OF WELL: 323 feet below land surface.

9. CASING FINISH:  Above ground, Finished,  Above ground, Unfinished,  Buried,  In Pit,  Removed,  None used,  Other \_\_\_\_\_

10. CASING DETAILS: Total length 285 ft. Length below L.S. 283 ft. Dia. 6 in. Material Steel Wt. \_\_\_\_\_ lb./ft.

11. LINER OR INNER CASING DETAILS: Length used \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. Material \_\_\_\_\_ weight \_\_\_\_\_ lb./ft.

12. METHOD OF SEALING CASING TO BEDROCK:  Drive Shoe,  Grout - type \_\_\_\_\_, Drilled \_\_\_\_\_ in. hole \_\_\_\_\_ ft. in Bedrock  
 Other \_\_\_\_\_

13. SCREEN DETAILS: Make and Type \_\_\_\_\_, Material \_\_\_\_\_, Length \_\_\_\_\_ ft., Diameter \_\_\_\_\_ in.,  
Slot Size \_\_\_\_\_, Depth to top of screen in feet below land surface \_\_\_\_\_ ft., Gravel pack if used: Gravel Size or Type \_\_\_\_\_

14. YIELD TEST:  Bailed,  Pumped,  Compressed Air, for \_\_\_\_\_ Hours at 10 Gallons per minute  
Measured by  Bucket,  Orifice pipe,  Wlar,  Meter  Permanent Airline installed

15. STATIC WATER LEVEL: \_\_\_\_\_ feet below land surface, Date or Time measured \_\_\_\_\_, Overflows at \_\_\_\_\_ G.P.M.

16. WATER ANALYSIS: Has the water been analyzed?  Yes  No, if Yes, Where \_\_\_\_\_

17. SPECIAL NOTES: \_\_\_\_\_

18. WELL LOG

19. SITE MAP

Show permanent structure such as buildings, septic tanks, and/or other land marks and indicate not less than two distances to the well. Indicate local street name and subdivision lot number.

Depth from Land Surface		Water Bearing	Formation Description	Sketch
Feet	Feet			
Ground Surface	12		Hard pan	
	12		Sand & Gravel	
	29		Clay	
	225		Bedrock	
	280		red soft bed.	
	323			

20. TESTED YIELD

If the yield was tested at different depths during drilling, list below.

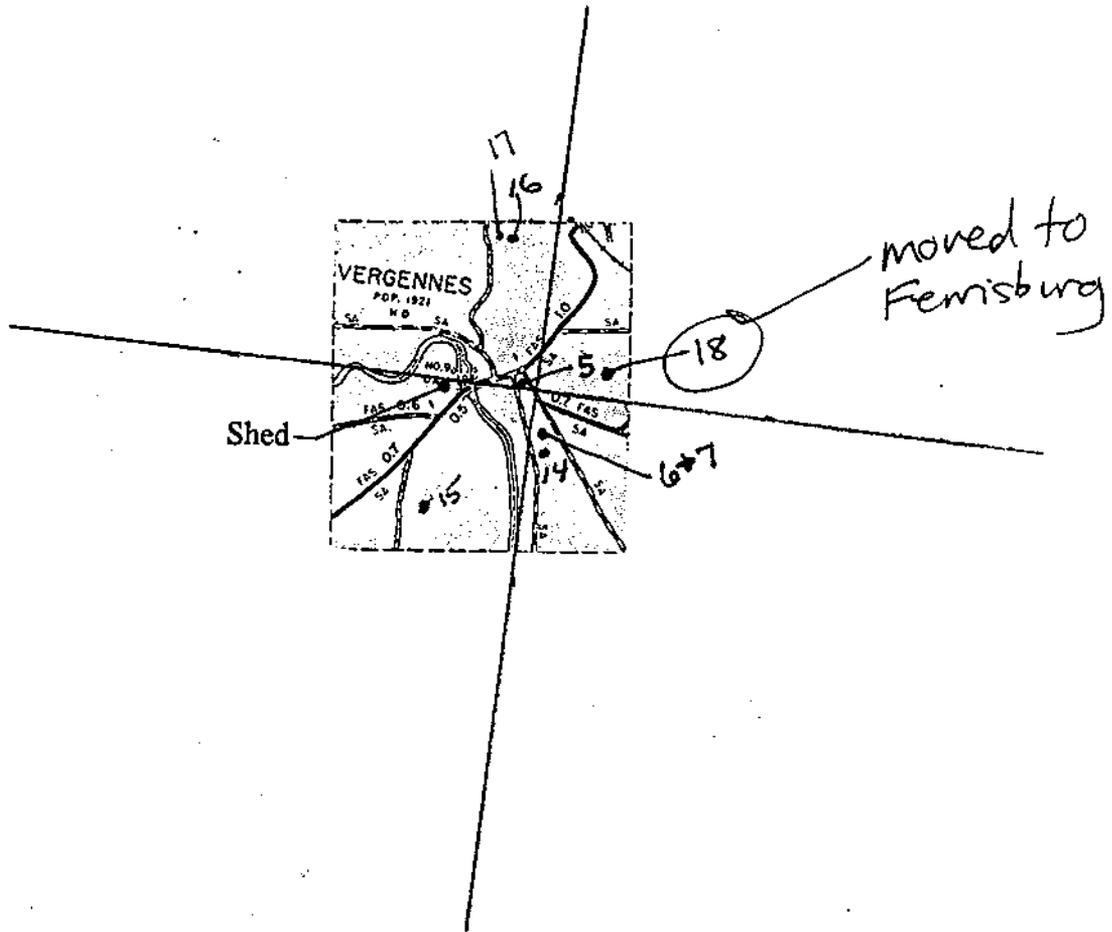
Feet	Gallons Per Minute

WELL DRILLED BY: H.A. March

DOING BUSINESS AS: H.A. March Corp  
Company or Business Name

REPORT FILED BY: [Signature]  
Authorized Signature

DATE OF REPORT: 2/1/84 WELL DRILLERS LIC. NO. 8



Vergennes

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ATTACHMENT 3

WETLANDS INVENTORY MAP



ATTACHMENT 4

SOILS MAP

