MJW Consulting
P.O. Box 897
Mays Landing, NJ 08330
609-625-8109 FAX: 609-625-9051
Email: mjwatmjw@aol.com

August 18, 2008

Office of Brownfield Reuse
Unregulated Heating Oil Tank Program
P.O. Box 028
401 E. State Street, 6th Floor
Trenton, NJ 08625-0028
ATTN: Gary Sanderson

Subject: **Remedial Investigation Report**
Residential Underground Storage Tank Release
One 275 Gallon #2 Heating Oil Tank
Site Address: 223 N. Wyoming Avenue (Bl 206.02, Lot 13); Ventnor, NJ
NJDEP Case #: 08-04-01-0719-55

Dear Case Manager,

The contaminated soil removal at 223 N. Wyoming Avenue in Ventnor, New Jersey was completed on June 30, 2008. A 275 gallon #2 heating oil tank caused a heating oil release to subsurface soils that was reported on April 1, 2008. Heating oil from this exempt tank caused staining of soils and resulted in the above NJDEP case number being assigned to the site. Based on the results of post soil remediation sampling, 223 N. Wyoming Avenue is now free of soil contamination above the NJDEP applicable soil standard. Groundwater results satisfy the Class IIA standard. There are a total of 5.31 ppb of base/neutral organics. This level is less than the 500 ppb allowed under the Class IIA standard. Therefore, the groundwater currently meets the Class IIA standard. We are forwarding the soil and groundwater results to allow an NJDEP review of the current site conditions. MJW Consulting recommends that this case be concluded with an Unconditional No Further Action determination. Following is a summary of the remedial activities conducted to date.

The tank is exempt from both NJDEP and federal UST regulations. Because groundwater was assumed to be impacted, as demonstrated by the attached soil data and photography, we have included both soil and groundwater documentation. The following attachments are included to document the cleanup effort performed by MJW Consulting at this residence:

MJW Remedial Action Information
Appendix 1: Site Map and Sampling Key
NJDEP Imap of public Water Supplies
Topographical Map (7-1-95)
Appendix 2: ACUA Landfill disposal receipt for 11.62 tons of contaminated soil
M.T. Welsh Liquid Waste disposal (NHM000268)

Daley's Pit Clean Fill Receipt (6-30-08)
AmeriCycle Scrap Receipt (3-25-08)
Appendix 3: Ventnor Construction Permit (#80000174)
MJW Certification
Appendix 4:
Figure 1: Rusted interior from having been filled with water for 20 years
Figure 2: Corrosive holes noted after removal
Figure 3: Open excavation after remediation completed
Figure 4: Sump placed near center of excavation
Appendix 5: QC Inc. analytical data with quality control information

A summary of the work performed is presented below.

Tank Removal

On March 20, 2008 the site was mobilized and the tank was cut open for cleaning. The tank ran parallel to Wyoming Avenue. It was 26 inches deep, 44 inches wide and five feet long. There was 12 inches of overburden soil/concrete on top of the UST. Therefore, the base of the tank was 38 inches below grade. 165 gallons (15 inches) of water and tank sludge was stick measured in the UST. A total of 165 gallons of waste material was cleaned from the tank and transported off-site by M.T. Welsh Construction, for delivery to the Siemens facility in Delaware. A receipt for this waste disposal is attached.

After cleaning, the tank was removed and internally inspected by MJW Consulting and the Ventnor construction office. The exterior of the tank showed metal corrosion, typical of an older tank. There were numerous corrosive holes noted during the tank inspection. There was obvious soil staining under the tank base but we did not note an oil sheen on the groundwater below the UST. A formal site assessment was performed by MJW Consulting. The soil sampling indicated that the area below the UST footprint was heavily contaminated. The level of soil contamination was sufficient to warrant a cleanup based on a DRO level of 14,000 ppm.

The excavation was caution taped and left open on March 20, 2008. Ventnor inspected the tank to verify that it is clean and then approved MJW Consulting to remove the UST from the site. The City of Ventnor does not comment with regard to environmental issues.

On March 25, 2008 we returned to the site and backfilled the tank excavation with pea gravel. The tank was cut and a piece showing the corrosive holes was left on site for inspection by the insurance company that was asked to cleanup the site. The remainder of the tank was transported to AmeriCycle Recycling and disposed of as scrap metal. A receipt for the tank disposal is located under Appendix 4.

The insurance provider declined the homeowners claim and MJW then contracted to remediate the property.

Remedial Action

On June 30, 2008 the tank bed was excavated to 24 inches below the groundwater and then was expanded outward to a total excavation 89 inches wide and 113 inches long. We removed those soils that were obviously contaminated based on PID readings and sense of smell. 11.62 tons of petroleum contaminated soil was removed. There is 36 inches separating the side wall of the tank from the front garage wall. A 44 inch wide tank was located in the area in front of the garage. The final excavation depth was 60 inches below grade surface (BGS). The contamination was unable to move deeper into the ground because groundwater at this site is at approximately three feet BGS. Side walls of the excavation were examined to determine if soil contamination was spreading horizontally. The soils under the house and the garage did not exhibit elevated levels of petroleum hydrocarbon relative to the other directions. These directions (toward the beach and Wyoming Avenue) were further excavated. As can be seen from the Site Map under Appendix 1, we excavated further from the tank footprint in these two directions. These areas can be seen in the photography under Appendix 4. Figure 4, Appendix 4 shows the sump piping before pea gravel was used to replace the contaminated soils and also allow groundwater withdraw and sampling.

A relatively small amount of soil disposal was required to resolve this matter because the area where the leakage began was completely covered by concrete, thus preventing rainwater from spreading the pollution. Secondly, we knew that a relatively small release had occurred here because the tank waste was clear water resting on the tank sludge. For these reasons, we attempted to resolve the contamination issue without structurally supporting the building.

The contaminated soils were disposed of at the ACUA landfill and an equivalent amount of pea gravel was used to build a sampling and recovery sump in the center of the excavation. Five soil samples and one round of groundwater data was submitted to QC, Inc. Laboratories on July 3, 2008.

Following is a discussion of the soil and groundwater results.

Remedial Investigation

A Memorandum of Agreement dated August 19, 2008 is attached herewith. This agreement will allow NJDEP oversight to review the Remedial Investigation report and to assure that the cleanup is fully approved by the Department.

Soil Investigation

MJW Consulting obtained four side wall samples and one sample from the center of the excavation, as shown in the attached drawing (Appendix 1). Samples were prepared and preserved in accordance with the Technical Requirements for Site Remediation and the Field Sampling Procedures Manual. The soil samples required analysis for volatile organics because the maximum site concentration was 1,050 ppm. Therefore, the one sample that exceeded the 1,000 ppm threshold was also analyzed for volatile organics. We requested the necessary quality

control data for an NJDEP review. A summary of the petroleum hydrocarbon analytical results using diesel range organic analysis (8015B) is presented below.

Soil Diesel Range Organic (8015B) Analytical Results for 223 N. Wyoming Avenue, Ventnor, NJ					
Soil Sample ID	Depth (feet)	PID (units)	DRO level (ppm)	Moisture (% Solid)	NJDEP RDCSCC (ppm)
S1	4' to 4.5'	0	121	74.15	1,000- 10,000
S2	4' to 4.5'	0	ND	75.51	1,000- 10,000
S3	4' to 4.5'	0.2	317	80.35	1,000- 10,000
S4	4' to 4.5'	0.9	**1,050**	84.71	1,000- 10,000
S5	5' to 5.5'	0.3	ND	84.36	1,000- 10,000

Bold= Above the Allowable NJDEP standard

Five soil samples, S1 through S5, were taken after the initial soil removal on June 30, 2008. The maximum site concentration remaining in the ground was 1,050 ppm at sampling point S4. This sample location is at the end of the excavation nearest the side wall of the house. The excavation was five feet deep in the center and sloped upward toward the edges of the remediation area. Therefore, the side wall soil samples were taken at four to 4.5 feet below grade. Because the 1,000 ppm level was exceeded we released a contingency analysis of the soils from S4 for volatile organics using method method 8260A. Following are the results of this analysis.

Soil Volatile Organic and Diesel Range Organic Analytical Results for Sample S4 223 N. Wyoming Avenue, Ventnor, NJ				
Compound	Soil Sample ID S4 (ppm)	NJDEP RDCSCC (ppm)	NJDEP NRDCSCC (ppm)	NJDEP IGWSCC (ppm)
DRO	1,050	1,000-10,000	1,000-10,000	1,000-10,000
Base Compounds	ND	By Compound	By Compound	By Compound
Total TIC's	ND	1,000	1,000	1,000

The above results allow the 10,000 ppm limit to be applied to sampling point S4. There were no volatile organic base compounds detected. These compounds each have there own allowable

limits under the three soil standards. Likewise, the total of all tentatively identified compounds (TIC's) was also non-detect, compared to the 1,000 ppm limit that applies for all three soil standards. Based on these results, the total TIC's also pass this test. Based on the results of volatile organic analysis for sampling point S4, the 10,000 ppm limit can be used because the breakdown analysis proves that an increased human health risk is not presented by using the upper limit of the standard. And, by meeting each of the three soil standards the use may continue, unrestricted.

In summary, one soil result exceeded the NJDEP allowable concentration of 1,000 ppm. Given these results, the need for additional investigation of soil was necessary. The above volatile organic results prove that additional remediation is not necessary to resolve the soil issue. However, the residual soil petroleum hydrocarbons may have a negative impact on the ability of the groundwater to meet the Class IIA standard. To answer this question a groundwater sampling point was installed in the area of the excavation where we believe the groundwater contamination would most likely accumulate. The sump was located near the south end of the tank fooprint, where the soil levels were originally at there highest. This monitoring point was purged and sampled on July 2, 2008. Following is a discussion of the sample data obtained from this sump.

Groundwater Investigation

A temporary monitoring/recovery sump (TMW-1) was installed on June 30, 2008 in accordance with the departments requirements for groundwater analysis from a temporary sampling point. The location of the sump is shown on the Site Map under Appendix 1. The screened portion of the sump extended from grade level to 72 inches BGS. Groundwater was measured at a depth of approximately 36 inches below grade in the sump. On July 2, 2008 the sump was first purged and then sampled for volatile organics and base/neutrals (EPA 624 and BN-8270+15, 8270-SIM) in accordance with the NJDEP Field Sampling Procedures Manual. The sump was then capped to prevent unwanted access. On July 17, 2008 QC, Inc. Laboratories reported the results of first round groundwater analysis. Full analytical results are attached herewith and labeled Appendix 5. The summary data sheets have been reproduced and this information is provided under Appendix 5 of this report. This data proves that the Class IIA standard has been met for both volatile and base/neutral organic. All other results meet the NJDEP standards. Following is a summary of the first round groundwater results in comparison to the Class IIA standard.

223 N. Wyoming Avenue, Ventnor, Atlantic County Comparison of July 2, 2008 Groundwater Volatile and Semi Volatile Organic Concentrations with Class IIA Groundwater Standard (all units ppb)			
Sample ID⇨ Compound	TMW-1 7-2-08	Trip Blank	NJDEP Class IIA Standard
624 Base Compounds	ND	ND	By Compound
624 TIC's (ppb)	ND	ND	500
Highest Individual VO TIC	ND	ND	100
TVO	ND	ND	500
625 Base Compounds 2-Methylnaphthalene Benzo(G,H,I)Perylene	 0.04 (J) 0.02 (J)	 NS NS	 100 100
Base/Neutral Organics TICs	5.25	NS	500
Highest Individual B/N TIC	5.25	NS	100
Total Organic Compounds (ppb)	5.31	NS	500

ND= Not Detected NS= Not Sampled J= > MDL but < standard **Bold**=over the Class IIA Std.

Groundwater levels were non-detect for all volatile organic base compounds. Likewise, the volatile organic TICs were not detected. There were no compounds detected in the trip blank for volatile organics. Therefore, the volatile side of the groundwater results are acceptable. Two base compounds were detected in the base/neutral scan, but all were at concentrations were below the Class IIA standard. One base/neutral TIC was detected, but at a concentration of only 5.25 ppb. Because the standard requires that all base/neutral TIC compounds to be added together, the total of all base/neutral organic TICs is also 5.25 ppb. This level is only one percent of the 500 ppb allowed under the standard. There are no individual TICs that exceed the 100 ppb rule. Finally, we total all volatile and semi-volatile organics to arrive at the total of all organics, 5.31 ppb. This quantity is also below the 500 ppb total allowable under the Class IIA standard.

Based on these results, 223 N. Wyoming Avenue meets the Class IIA groundwater standard. Further analysis and/or remediation of the groundwater at 223 N. Wyoming Avenue should not be required.

Summary and Conclusions

We recommend a No Further Action determination be issued to Ms. Patricia M. O'Donnell to conclude this project. We believe that the oil tank was emptied of liquid and filled with water in the past (more than 20 years ago) as a method of closing the tank. When the UST was cut open by MJW, in March 2008, to be cleaned for removal, we noted that there was no oil products floating on the water in the tank. Over time the tank had corroded to failure and some of the water in the tank was able to escape into the surrounding soil and groundwater. However, only

the tank sludge was able to contaminate the surrounding soil and groundwater. Although, we found blackened soils and 14,000 ppm of diesel range organics in soils directly beneath the tank footprint, the pollution had not traveled outward on the groundwater because the amount of oil left in the ground was small. MJW first attempted to refer the remediation work to the home owners insurance company, but they declined Ms. O'Donnell's claim. We then offered to assist Ms. O'Donnell in obtaining grant money from the state of New Jersey, but she refused to use state funding. Instead, she insisted on contracting MJW Consulting to complete the remediation at her own expense. A relatively small amount of soil disposal was sufficient to bring the site into compliance with the current soil and groundwater standards.

In summary, the subsurface petroleum hydrocarbon soil contamination has been fully resolved through the removal and disposal of contaminated soil. Having removed the source of the release (the tank and the contaminated soil), MJW then sampled the soil and groundwater. The soils meet the three soil standards that could apply to this site. The residential standard that applies to the current use of the property as a single family residence and the other two soil standards that might apply in the future, if the property were redeveloped. The groundwater results currently meet the Class IIA standards in the first round sampling that was performed on July 2, 2008. Based on these results the property is now in full compliance with the NJDEP soil and groundwater standards.

This report concludes our agreement with regard to the reported No. 2 heating oil release at 223 N. Wyoming Avenue in Ventnor. We are forwarding a copy of this information to the Atlantic County Health Department (ACHD) and the Ventnor construction office to update their files.

Should you have further questions, please do not hesitate to call.

Sincerely,

Matthew J. Wristbridge
MJW Consulting

cc: Atlantic County Health Department; VIA Regular Mail
cc: Ventnor Construction office; VIA Regular Mail
cc: Patricia M. O'Donnell; Owner; VIA Regular Mail