



Minnesota Pollution Control Agency

Celebrating our 25th anniversary and the 20th anniversary of the Clean Water Act

September 3, 1992

Mr. Brad Ragan
Brad Ragan Tire Center
5110 Service Drive
Winona, Minnesota 55987

Dear Mr. Ragan:

RE: Petroleum Tank Release Site Closure
Site: Brad Ragan Tire Center, 5110 Service Drive, Winona
Site ID#: LEAK00002049

The Minnesota Pollution Control Agency (MPCA) staff has determined that the cleanup performed in response to the petroleum tank release at the site referenced above has adequately addressed the petroleum contamination, and therefore the file regarding this release will be closed.

On October 25, 1989, a petroleum tank release was reported to the MPCA. Since then, the following corrective actions have been taken in response to the release:

- An 8,000 gallon diesel fuel underground storage tank (UST) and a 5,000 gallon #2 fuel oil UST were excavated and removed from the above-mentioned site on October 25, 1989.
- Approximately 117 tons of petroleum contaminated soil were excavated to a depth of approximately 11 feet below grade. Soil contamination levels of up to 384 parts per million (ppm), total petroleum hydrocarbons, were detected from the base of the final excavation. The 117 tons of petroleum contaminated soil were thermally treated at Mathy's Construction, Onalaska, Wisconsin.
- Six soil borings were advanced on the site. Sediments at the site consist of sand with intermittent gravels. One sample from boring B-1, advanced through the former tank excavation, indicated contamination levels of 2,200 ppm total hydrocarbons as fuel oil at approximately 15 feet below grade.
- Three of the borings were completed as monitoring wells. Ground water was found to be present at approximately 12 to 15 feet below grade. Ground water flow direction is to the northwest toward the Mississippi River. The monitoring wells were sampled on four occasions. The only petroleum contaminants above-detectable limits in the ground water, were from monitoring well MW-1, which detected benzene at 1 microgram/liter ($\mu\text{g/L}$) and

Mr. Brad Ragen
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September 3, 1992

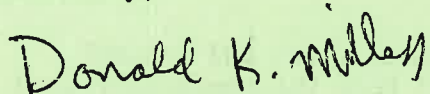
total hydrocarbons as gasoline at 2 µg/L on October 24, 1990. Low levels of methylene chloride were also detected, but the presence of this contaminant was ascribed to laboratory contamination.

Based on the currently available information, we concur with the conclusions of Twin City Testing Corporation, that these actions have adequately addressed the petroleum tank release. Therefore, MPCA staff does not intend to require any more investigation or cleanup work in response to this release. However, the MPCA reserves the right to reopen this file and require additional work if in the future more work is determined to be necessary, and this letter does not release any party from liability for this contamination.

Because you performed the requested work, the state may reimburse you for a major portion of your costs. The Petroleum Tank Release Cleanup Act establishes a fund which in certain circumstances provides partial reimbursement for petroleum tank release cleanup costs. This fund is administered by the Petroleum Tank Release Compensation Board (Petro Board). More specific eligibility rules are available from the Petro Board (612/297-1119 or 612/297-4203).

Thank you for your cooperation with the MPCA in responding to this petroleum tank release to protect the public health and the environment of the state of Minnesota. If you have any questions regarding this correspondence, please call me at 612/297-8577.

Sincerely,



Donald K. Milless
Pollution Control Specialist Senior
Tanks and Spills Section
Hazardous Waste Division

DKM:baj

cc: Ed Kohner, Fire Chief, Winona
Jim Pomeroy, City Clerk, Winona
Kevin Dixon, Winona County Solid Waste Officer, Winona
Lin Nelson, Twin City Testing, Rochester



twin city testing
corporation

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

May 1, 1992

Brad Ragan Tire
5110 Service Drive
Winona, MN 55987

Subj: Quarterly Monitoring Progress Report
Brad Ragan Tire
Winona, Minnesota
MPCA Leak ID #LEAK00002049

Dear Mr. Johnson:

Enclosed are two copies of our Quarterly Monitoring Progress Report for the referenced project. We were authorized by you to perform this assessment in April, 1990.

If you have any questions concerning the information in this report, or if we can be of any additional service, please contact us at 507-288-7060.

Sincerely,

TWIN CITY TESTING CORPORATION

Lin M. Nelson
Project Manager

Enclosure

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MPCA, HAZARDOUS
WASTE DIVISION

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PROGRESS REPORT

for

Brad Ragan Tire

**Project Site:
5110 Service Drive
Winona, Minnesota
TCT #4800 92-06**

1.0 INTRODUCTION AND BACKGROUND

Twin City Testing Corporation (TCT) is pleased to present the results of our continued environmental assessment of Brad Ragan Tire in Winona, Minnesota. This work was performed in accordance with our workplan and authorized by Mr. Jim Johnson of Brad Ragan Tire on April 9, 1990, for the above referenced site.

The Brad Ragan Tire site is located at 5110 Service Drive in Winona, Minnesota in the SW 1/4 of Section 18, T.107N, R.8W (see Figure 1). It is in a light industrial area on the northwest side of Winona, Minnesota. The site is bordered as follows:

South: Frontage road of Highway 61.

West: City street, and beyond by the Highway Department.

North: Vacant lot.

East: Commercial Building and Apartment Building.

Surface topography of the area is generally flat. According to the USGS topographic maps, the average surface elevation of the site is approximately 660 feet above mean sea level. The ground cover at the site is predominantly gravel.

The site is presently serviced by the City of Winona water and sewer utilities; however, the only utility near the project area is a natural gas line.

According to Minnesota Geological Survey (MGS) data, the main groundwater aquifers for the area are in the unconsolidated surficial deposits and in the Mount Simon Sandstone. These main aquifers in the Winona area are hydrogeologically interconnected. Regional groundwater flow in the unconsolidated aquifer is anticipated to be controlled by flow in the Mississippi River. Groundwater flow in the bedrock aquifer is anticipated to be to the northeast. Groundwater flow at the site, is to the northwest toward the Mississippi River.

Based on the Minnesota Department of Health (MDH) Data, several water wells are located within an approximate one mile radius from the site. The closest well is located approximately 1,200 feet to the north. According to the available log for the well, it is completed in the Cambrium Eau Claire Formation and Mount Simon Sandstone at depths of 145 to 235 feet below grade.

The area of this assessment formerly contained one 8,000 gallon diesel fuel and one 5,000 fuel oil underground storage tank. During the removal of the tanks in October, 1989, a TCT representative detected indications of hydrocarbon contamination beneath the base of the fuel oil tank, subsequent to tank removal. The excavation observation was reported to Brad Ragan Tire in TCT report #8300-90-062 dated December 29, 1989.

Subsequent to the discovery of hydrocarbon contamination, excavation crews removed approximately 4 feet of contaminated soils from beneath the tank, but contaminated soils were still encountered at this depth. Excavation was ceased at this depth because the building footings were encountered. Groundwater was not encountered. Analytical results for the soil sample collected from the base of the excavation, indicated total petroleum hydrocarbons as fuel oil at a concentration of 2,200ppm.

Since all the contaminated soils at the site could not be excavated, a remedial investigation

(RI) report was completed on October 17, 1990. The RI included the installation of three monitoring wells at the site location shown in Figure 2. The results of the RI indicated a generalized profile of unconsolidated fill (sand and silty sands), overlying coarse alluvium (medium to coarse grained sands). The water table was present at approximately 13 to 15 feet below grade, flowing in a northerly direction. The average hydraulic gradient of the aquifer was 0.001 ft/ft. Evidence of hydrocarbon contamination was detected only in the soil boring sample from beneath the former tank location. Concentrations of benzene, toluene, xylenes, and ethyl benzene were also detected in that same location. Fuel oil, benzene, toluene, xylenes, or ethyl benzene were not detected in the balance of the borings.

Recommendations from the RI indicated that neither further remedial excavation, nor soil remediation was warranted at that time. Although groundwater remediation was not recommended, quarterly sampling events was recommended to ensure groundwater was not impacted.

1.1 Scope of Work

TCT's scope of services for this phase of the project consisted of the following:

- Groundwater sampling of monitoring wells MW-1 through MW-3 at Brad Ragan Tire.
- Chemical analysis of the samples for benzene, ethyl benzene, toluene, xylenes(BETX) and total hydrocarbons as fuel oil(THFO).
- Preparing a report presenting field and laboratory data along with opinions and recommendations.

2.0 PURPOSE

The purpose of this report is to:

- Present the results from the most recent groundwater sampling event.
- Measure groundwater elevations to determine the groundwater flow direction.
- Identify any trends in contaminant concentrations.
- Make recommendations concerning continued assessment.

3.0 DEPTH TO GROUNDWATER MEASUREMENTS

On July 18, 1991 and February 5, 1992 a representative of TCT collected depth to groundwater measurements from monitoring wells MW-1, MW-2, and MW-3. These measurements along with previous recorded data are presented in Table 1. Groundwater level measurements indicate that the groundwater flow direction is to the northwest, toward Lake Goodview and the Mississippi River. Groundwater level and flow probably fluctuate dependent upon the stage of the Mississippi River. Evidence of groundwater fluctuations are documented by groundwater level variations of over one foot that were observed between the monitoring periods.

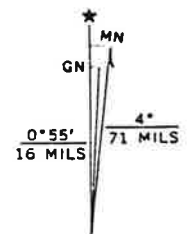
TABLE 1

GROUNDWATER ELEVATION DATA
5110 Service Drive
Winona, Minnesota
TCT# 4800 91-06

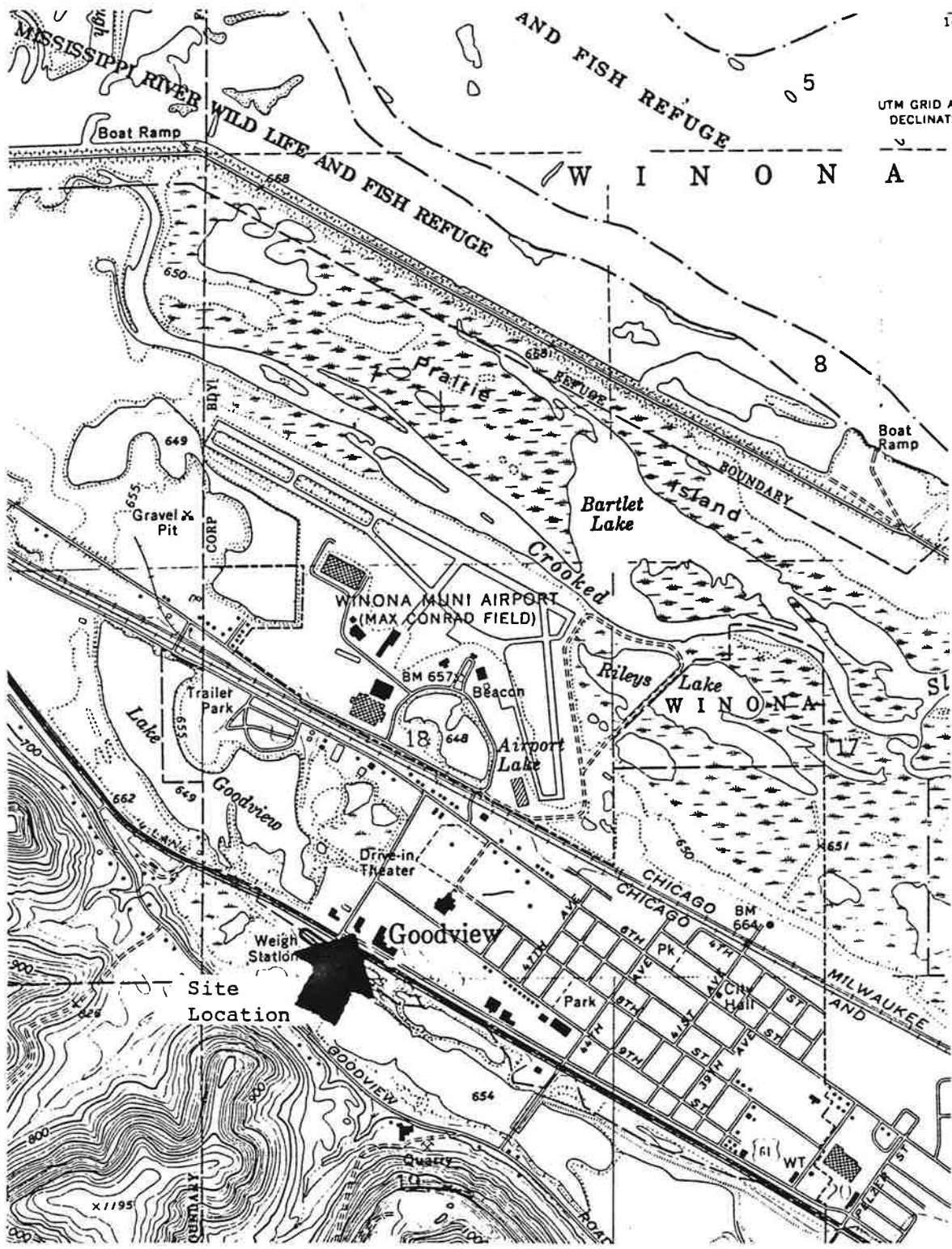
<u>Location</u>	<u>Date</u>	<u>Reference Elevation*</u>	<u>Depth to Groundwater</u>	<u>Water Table Elevation</u>
MW-1	07-18-91	667.97	16.81	651.16
	02-05-92	667.97	18.29	649.68
MW-2	07-18-91	666.08	15.83	650.25
	02-05-92	666.08	16.36	649.72
MW-3	07-18-91	667.87	16.61	651.26
	02-05-92	667.87	18.15	649.72

* Top of riser pipe
NR = No reading taken

FIGURE 1
Site Location Map



UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

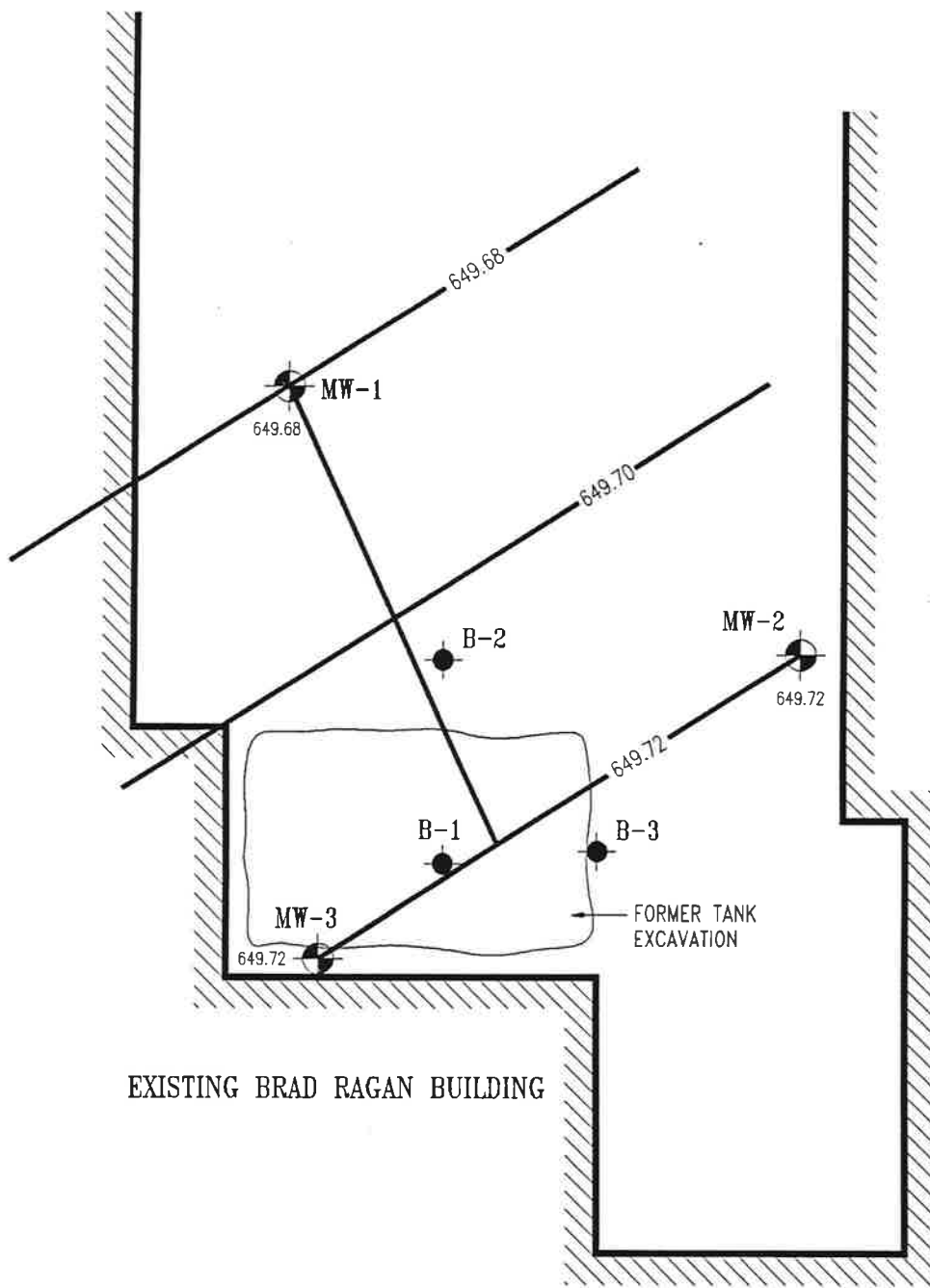


WINONA WEST, MINN.—WIS.




44091-A6-TF-024

1972

DMA 7672 II SW—SERIES V872



LEGEND:

-  MONITORING WELL LOCATION
-  SOIL BORING LOCATION
-  GROUNDWATER CONTOUR
- 649.70 GROUNDWATER ELEVATION

NORTH



FIGURE NUMBER: 2

PROJECT:

**EQUIPOTENTIAL MAP
BRAD RAGAN TIRE
WINONA, MINNESOTA**

DATE: 4-30-92

PROJECT NO. 4800 92-287

DRAWN BY: JULIA STEFFENS

REVIEWED BY: LIN NELSON

SCALE: 1"=30' (APPROXIMATELY)

AUTOCAD DWG: 4231\92-287A

4.0 GROUNDWATER SAMPLING

On July 18, 1991 and February 5, 1992 a representative from TCT collected groundwater samples from monitoring wells MW-1, MW-2, and MW-3. The samples were analyzed for volatile hydrocarbons, BETX, using EPA Method 8020; volatile organic compounds using MNDH 465D; and total hydrocarbons as fuel oil USGS Method 82-1004. All wells were stabilized prior to sample collection in accordance with the methods in Appendix A. "Sampling Information Forms," providing stabilization data and details recorded at the time of sampling are presented in Appendix B.

Tables 2, 3, and 4 contain a tabulation of volatile organic compound results. Complete chemistry reports are presented in Appendix C.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS ABOVE DETECTION LIMITS ($\mu\text{g/L}$)
07-18-92-9(

Compound:	Method Blank	MW-1	MW-2	MW-3	MDL	RAL
Acetone	ND	ND	ND	ND	10	700
Ethyl ether	ND	ND	ND	ND	5	1000
Benzene	ND	ND	ND	ND	1	10
Toluene	ND	ND	ND	ND	1	1000
Cumene	ND	ND	ND	ND	1	
o-xylene	ND	ND	ND	ND	1	
p-m-xylene	ND	ND	ND	ND	1	
Tetrahydrofuran	ND	ND	ND	ND	1	10,000
Methyl ethyl ketone	ND	ND	ND	ND	5	100
Ethyl Benzene	ND	ND	ND	ND	5	300
Methyl isobutyl ketone	ND	ND	ND	ND	1	700
Chloromethane	NP	NP	NP	NP	1	300
Vinyl Chloride	NP	NP	NP	NP	P/NP	
Chloroethane	NP	NP	NP	NP	P/NP	0.10
Methylene chloride	1	1	1	1	1	50
Allylchloride	NP	NP	NP	NP	P/NP	1
1,1-Dichloroethane	ND	ND	ND	ND	1	70
Cis-1,2-dichloroethylene	ND	ND	ND	ND	1	
1,2-Dichloroethane	ND	ND	ND	ND	1	4
1,1,1-Trichloroethane	ND	ND	ND	ND	1	600
Bromodichloromethane	ND	ND	ND	ND	1	3
2,3-Dichloro-1-propene	ND	ND	ND	ND	1	
1,1-Dichloro-1-propene	ND	ND	ND	ND	1	
Trichloroethylene	ND	ND	ND	ND	1	
Dibromochloromethane	ND	ND	ND	ND	1	10
Cis-1,3-dichloro-1-propene	ND	ND	ND	ND	1	2
2-Chloroethyl vinyl ether	ND	ND	ND	ND	2	
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	1	20
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	1	2
Pentachloroethane	ND	ND	ND	ND	2	
1,1,2-Trichlorotrifluoroethane	ND	ND	ND	ND	1	
Dichlorodifluoromethane	ND	ND	ND	ND	5	1000
Bromoethane	NP	NP	NP	NP	P/NP	0.10
Total hydrocarbons as fuel oil	ND	ND	ND	ND	0.20	

All values are in $\mu\text{g/L}$. $\mu\text{g/L}$ is equal to parts-per-billion(ppb).
 For conversion to parts-per-million(ppm), multiply results by 0.001.
 ND = Not Detected
 MDL = Method Detection Limit
 RAL = Recommended Allowable Limits for Drinking Water Contaminants

TABLE 3
GROUNDWATER ANALYTICAL RESULTS ABOVE DETECTION LIMITS (ug/L)
02-05-92

<u>Parameter:</u>	Method Blank	MW-1	MW-2	MW-3	PQL	RAL
Benzene	ND	ND	ND	ND	5	10
Toluene	ND	ND	ND	ND	5	1000
Ethyl Benzene	ND	ND	ND	ND	5	700
Total Xylenes	ND	ND	ND	ND	5	10,000
Total Hydrocarbons as Fuel oil	ND	ND	ND	ND	30	

All values are in ug/L. ug/L is equal to parts-per-billion (ppb).
 For conversion to parts-per-million (ppm), multiply results by 0.001.

PQL = Practical Quantitation Limit

RAL = Recommended Allowable Limits for Drinking Water Contaminants

ND = Not Detected

TABLE 4

GROUNDWATER ANALYTICAL RESULTS ABOVE DETECTION LIMITS (ug/L)

02-05-92

<u>Compound:</u>	Method Blank	MW-1	MW-2	MW-3	MDL	RALs
Dichlorodifluoromethane	ND	2	2	ND	2	1000
Chloromethane	ND	ND	ND	ND	2	
Vinyl Chloride	ND	ND	ND	ND	2	0.10
Bromoethane	ND	ND	ND	ND	2	0.10
Chloroethane	ND	ND	ND	ND	2	
Dichlorofluoromethane	ND	ND	ND	ND	2	
Trichlorofluoromethane	ND	ND	ND	ND	2	2,000
Trichlorofluoroethane	ND	1	1	ND	1	
Ethyl Ether	ND	ND	ND	ND	5	1000
Acetone	ND	ND	ND	ND	10	700
1,1-Dichloroethene	ND	ND	ND	ND	1	6
Allyl Chloride	ND	ND	ND	ND	10	1
Methylene Chloride	5	3	2	2	1	50
Methyl Tertiary Butyl Ether	ND	ND	ND	ND	1	
Trans-1,2-Dichloroethane	ND	ND	ND	ND	1	
1,1-Dichloroethane	ND	ND	ND	ND	1	70
Methyl Ethyl Ketone	ND	ND	ND	ND	5	300
2,2-Dichloropropane	ND	ND	ND	ND	1	
cis-1,2-Dichloroethene	ND	ND	ND	ND	1	70
Chloroform	ND	ND	ND	ND	1	60
Bromochloromethane	ND	ND	ND	ND	1	
Tetrahydrofuran	ND	ND	ND	ND	10	100
1,1,1-Trichloroethane	ND	ND	1	ND	1	600
1,2-Dichloropropane	ND	ND	ND	ND	1	
Carbon Tetrachloride	ND	ND	ND	ND	1	3
1,2-Dichloroethane	ND	ND	ND	ND	1	4
Trichloroethene	ND	ND	ND	ND	1	
1,2-Dichloropropane	ND	ND	ND	ND	1	5
Bromodichloromethane	ND	ND	ND	ND	1	3
Dibromomethane	ND	ND	ND	ND	1	
Methyl Isobutyl Ketone	ND	ND	ND	ND	5	300
cis-1,3-Dichloropropene	ND	ND	ND	ND	1	2
trans-1,3-Dichloropropene	ND	ND	ND	ND	1	2

(continued)

MDL = Method Detection Limit
 RAL = Recommended Allowable Limits for Drinking Water Contaminants
 ND = Not Detected

TABLE 4 (continued)

**GROUNDWATER ANALYTICAL RESULTS ABOVE DETECTION LIMITS (ug/L)
 02-05-92**

	Method Blank	MW-1	MW-2	MW-3	MDL	RALs
Compound:						
1,1,2-Trichloroethane	ND	ND	ND	ND	1	
1,3-Dichloropropane	ND	ND	ND	ND	1	
Tetrachloroethene	ND	ND	ND	ND	1	
Dibromochloromethane	ND	ND	ND	ND	1	10
1,2-Dibromoethane	ND	ND	ND	ND	2	.004
Chlorobenzene	ND	ND	ND	ND	1	100
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	1	20
Isopropyl benzene	ND	ND	ND	ND	1	300
Bromoform	ND	ND	ND	ND	5	40
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	1	2
1,2,3-Trichloropropane	ND	ND	ND	ND	1	40
n-Propyl benzene	ND	ND	ND	ND	1	
Bromobenzene	ND	ND	ND	ND	1	
1,3,5-Trimethyl benzene	ND	ND	ND	ND	1	
2-Chlorotoluene	ND	ND	ND	ND	1	
4-Chlorotoluene	ND	ND	ND	ND	1	
tert-Butyl benzene	ND	ND	ND	ND	1	
1,2,4-Trimethylbenzene	ND	ND	ND	ND	1	
sec-Butylbenzene	ND	ND	ND	ND	1	
p-Isopropyltoluene	ND	ND	ND	ND	1	
1,3-Dichlorobenzene	ND	ND	ND	ND	1	300
1,4-Dichlorobenzene	ND	ND	ND	ND	1	10
n-Butylbenzene	ND	ND	ND	ND	1	
1,2-Dichlorobenzene	ND	ND	ND	ND	1	600
1,2Dibromo-3Chloropropane	ND	ND	ND	ND	5	.3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	1	
Hexachlorobutadiene	ND	ND	ND	ND	1	1
Naphthalene	ND	ND	ND	ND	1	30
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1	

All values are in ug/L. ug/L is equal to parts-per-billion(ppb).
 For conversion to parts-per-million(ppm), multiply results by 0.001.
 ND = Not Detected
 MDL = Method Detection Limit
 RAL = Recommended Allowable Limits for Drinking Water Contaminants

4.1 Groundwater Quality Assessment

A review of the chemical analysis on July 18, 1991 and February 5, 1992 indicate that neither concentrations of benzene, toluene, ethyl benzene, and total xylenes(BETX), nor total hydrocarbons as fuel oil(THFO) were detected in monitoring wells MW-1, MW-2, or MW-3. Low levels of Methylene Chloride were detected in MW-1, MW-2, and MW-3, but as the compound was also detected in the laboratory blank, the presence is likely due to laboratory contamination.

During the sampling, no measurable free hydrocarbons or hydrocarbon odors were detected in the wells. Low levels of dichlorodifluoromethane and trichlorofluoroethane were detected in monitoring wells MW-1 and MW-2, and 1,1,1-trichloroethane in MW-2; however, they were all well below the Recommended Allowable Limits (RALs) for drinking water contaminants.

The depth to groundwater measurements taken on February 5, 1992 were used to create a groundwater equipotential map that indicates the direction and slope of the water table (Figure 2). A review of the groundwater equipotential map indicates that the flow direction is to the northwest with a gradient of approximately 0.0004 ft/ft.

5.0 DISCUSSION

Analytical results for the last two sampling periods show that there is no evidence indicating that hydrocarbon contamination is impacting groundwater at the Brad Ragan Tire site, as total hydrocarbons as fuel oil were not detected in the groundwater sampled.

Groundwater was determined to be present in the unconsolidated surficial sediments at depths of approximately 13 to 15 feet below grade. Flow direction was determined to be to the northwest with a gradient of 0.0004 ft/ft.

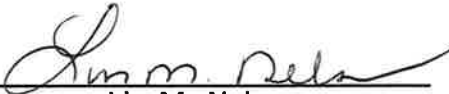
6.0 RECOMMENDATIONS

Due to the lack of any detectable hydrocarbon impacts to the groundwater, as assessed in this report, TCT recommends site closure with no further action, precluding abandonment of the monitoring wells.

7.0 STANDARD OF CARE

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by:



Lin M. Nelson
Project Manager



Barry Hentz
Project Manager

This report was reviewed by:



Kevin Pierson
Senior Project Manager/ Hydrogeologist