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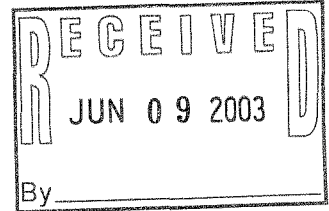


# Construction Documentation Report

## Lactate Injection System

*Tecumseh Products Company  
Grafton, Wisconsin*

**June 2003**



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# Section 1

## Introduction

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### 1.1 Project Background

In October and November 2002, three injection wells and four infiltration trenches were constructed at the Tecumseh Products Company (Tecumseh) in Grafton, Wisconsin, for the purpose of *in situ* enhanced bioremediation of the groundwater and soil. Previous investigations of the soil and groundwater, detailed in the Subsurface Investigation Report (RMT, 1997), indicated that the West Dock and the Southeast Degreaser and Recycling Dock Areas at the Tecumseh facility were potential source areas for trichloroethene (TCE) and 1,1,1-trichloroethane (TCA). Findings reported in the Subsurface Investigation Report and the Bioremediation Treatability Study Results (RMT, 1999) indicated that anaerobic biodegradation of the groundwater impacted with TCE and TCA is occurring in both areas, and could be accelerated with the addition of lactate. Therefore, enhanced bioremediation through lactate injections was selected as the remedial option for these areas at Tecumseh.

In April 2002, a workplan was submitted to the Wisconsin Department of Natural Resources (WDNR), detailing the proposed construction of four lactate infiltration trenches and two groundwater monitoring wells in the West Dock Area, and three lactate injection wells and two groundwater monitoring wells in the Southeast Degreaser and Recycling Dock Area (Recycling Dock Area). The workplan was conditionally approved by the WDNR in a letter dated June 6, 2002. RMT responded to the WDNR's comments in a letter dated June 26, 2002, and construction of the wells and trenches took place from October to November 2002.

### 1.2 Purpose and Scope

The purpose of this report is to present a summary of the key activities and dates associated with the construction of the lactate injection wells, the lactate infiltration trenches, and the groundwater monitoring wells, as well as to present a procedure for the first lactate injection. The scope of the report includes descriptions of the preconstruction and construction activities, construction details of the trenches and the wells, photographs of the construction work, a summary of the preinjection groundwater chemistry, and a summary of the first injection.

# Section 2

## Preconstruction Activities

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### 2.1 Roles and Responsibilities

RMT, Inc. (RMT), functioned as the general contractor for the project, under contract arrangements with the Tecumseh Products Company. RMT's subcontractors for the construction were Geiss, Inc. (SGS), and Boart Longyear Contracting Service (Boart Longyear). RMT's roles and responsibilities during the construction phase of the project were as follows:

- Procure the major equipment and chemicals for the construction and first injection.
- Obtain the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit for Contaminated Groundwater from Remedial Action Operation, WI-0046566-4, for the aquifer injections (Appendix A).
- Issue construction plans to SGS for final pricing.
- Administer the construction subcontracts.
- Observe and document the well installation and construction activities in the West Dock and Recycling Dock Areas.
- Characterize and properly dispose of waste generated during construction.
- Prepare the construction documentation report, which includes documentation of the construction and the procedure for the first lactate injection.

RMT's roles and responsibilities for the first lactate injection were as follows:

- Collect water samples from MW-8, MW-8D, MW-3, MW-3D, MW-3BR, and the newly constructed monitoring wells MW-23, MW-24, MW-25, and MW-26 prior to the first injection.
  - Obtain field measurements from the wells, specifically, water table elevations, dissolved oxygen, pH, oxidation-reduction potential, temperature, and specific conductivity)
  - Submit water samples to EnChem for analysis of chlorinated volatile organic compounds (VOCs) and chloride.
- Provide RMT personnel for the setup of the first lactate injections in the West Dock and Recycling Dock Areas.
- Perform the first lactate injection in each area.

The Tecumseh Product Company's roles and responsibilities during the construction phase of this project were as follows:

- Review and approve subcontractor selections.
- Review and approve the construction documentation report.

SGS's roles and responsibilities during the construction phase of this project were as follows:

- Contact Digger's Hotline and have the utilities located prior to work in West Dock Area.
- Construct the four infiltration trenches.
  - Remove asphalt pavement in the location of the infiltration trenches, and dispose of waste at an off-site location approved by RMT.
  - Excavate soil for the construction of the infiltration trenches. Stockpile VOC-impacted soil that has been excavated onto a 10-mil polyethylene liner or into a lined roll-off container.
  - Supply clean clay backfill to replace disposed soil, and backfill and compact trenches.
  - Provide and install flush-mounts for cleanouts.
- Install manifold piping from the trenches to the lactate storage tanks housed within the Tecumseh facility.
  - Provide and install all necessary above-grade pipe, valves, and connectors.
  - Penetrate aboveground piping through the Tecumseh facility concrete wall to the lactate storage tanks.
  - Provide and install the Badger Flow Meter Model 25M.
- Locate the water supply within the building, and provide and install pipes to pipe water to the location of the lactate storage tanks.
- Construct an access platform for the lactate storage tanks within the Tecumseh facility.
- Construct spill control box around lactate storage tanks.
- Reseed disturbed grassy area.
- Restore the asphalt-paved parking lot removed for the construction of the infiltration trench.
- Repair any other materials damaged by the subcontractor.

Boart Longyear's roles and responsibilities during construction were as follows:

- Procure the materials and equipment required for the installation of the injection and monitoring wells.
- Install four 2-inch monitoring wells.
- Install three 4-inch lactate injection wells.
- Decontaminate and restore site.

- Develop the wells, and properly dispose of the development water and soil cuttings.

## **2.2 Preconstruction Meeting**

A preconstruction meeting was held at the site on October 8, 2002. Representatives from RMT; the construction subcontractor, SGS; and Tecumseh were in attendance.

# Section 3

## Construction Activities

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### 3.1 Summary of Construction Activities

Construction of the system for the *in situ* enhanced bioremediation of the soil and groundwater at Tecumseh took place on select days between October 14 and November 14, 2002. The construction activities occurred in two general areas: four infiltration trenches were constructed in the West Dock Area, and three lactate injection wells were constructed in the Recycling Dock Area.

#### 3.1.1 West Dock Area

The construction at the West Dock Site was performed by SGS and included the installation of the four outdoor infiltration trenches; the connection of manifold piping from the infiltration trenches to the lactate storage tanks housed inside the Tecumseh facility; and construction of an access platform, spill containment wall, and plumbing within the Tecumseh facility for the lactate storage tanks. Construction diagrams for the trenches and structures surrounding the lactate storage tanks are included in Appendix B.

##### *Outdoor: Infiltration Trenches*

The installation of Trench 1 began on October 14, 2002, and was completed on October 15, 2002. On October 16, 2002, Trench 2 was installed, and the excavation for Trench 3 was initiated. The completion of Trench 3 and the installation of Trench 4 occurred on October 17, 2002.

A backhoe was used to excavate each of the four trenches (Photo 1 in Appendix C). All soil excavated from Trench 1 and 2 was temporarily stockpiled on-site for later characterization and disposal. Segregation of soil from Trenches 1 and 2 was based on investigation results, which indicated that Trenches 1 and 2 were constructed in contaminated soil. The stockpile was lined and covered with 10-mil polyethylene (Photo 2 in Appendix C). Once the excavation of Trenches 1 and 2 was completed, a soil sample was collected by an RMT representative and submitted to EnChem, Inc., in Green Bay, Wisconsin, for waste characterization.



The excavation of Trenches 3 and 4 occurred within the paved parking lot (Photo 3), and therefore required the removal of asphalt. The asphalt covering the area where Trenches 3 and 4 were to be installed was broken up with the backhoe, removed, and hauled off-site. Soil excavated from these trenches had previously been determined to be clean and was reused as backfill.

After each trench had been excavated to a depth of approximately 5 to 6 feet below ground surface (bgs), 4-inch-ID PVC pipe with ½-inch perforations was placed in the trench. The pipe was placed in 10-foot sections and was backfilled with approximately 2 feet of gravel (Photos 4-7 in Appendix C). A geotextile filter fabric was placed over the gravel, and each trench was backfilled to the surface with clean clay soil (Photos 8-9 in Appendix C).

### ***Outdoor: Manifold Piping and Cleanouts***

A trench was dug perpendicular to the infiltration trenches along their northern end, and 3-inch-ID manifold piping was placed in the trench and connected to the perforated infiltration piping (Photos 10-11 in Appendix C). A cleanout was placed at each end of the four trenches before they were backfilled with soil (Photos 10-12 in Appendix C). Flush-mount heavy-duty access was provided for six of the eight cleanouts installed (Photo 13 in Appendix C). The manifold piping was installed up to the wall of the Tecumseh facility and was capped at the surface until it was ready to be connected to the piping from the lactate storage tanks housed within the building (Photo 14 in Appendix C).

### ***Indoor: Spill Containment Wall and Access Platform for the Lactate Storage Tanks***

SGS returned to the Tecumseh site on October 22-23, October 31, and November 1, 2002, to complete the indoor work in the West Dock Area, which included constructing a spill containment wall and access platform for the lactate storage tanks.

Prior to construction, the four 2,500-gallon lactate storage tanks had been placed on a 20-mil plastic liner in the location indicated on the plan set (within the Tecumseh facility and in proximity to the wall that is adjacent to the outdoor infiltration trenches) by employees of Tecumseh. An RMT representative chalked out a 23-foot x 20-foot box around the storage tanks that would define the limits of the spill containment wall and that overlapped the

plastic liner. SGS constructed the 12-inch-high containment wall according to the specifications (Photos 17 and 18 in Appendix C).

A 5-foot-high access platform with a ladder and handrailing was constructed between the four tanks (Photos 19-21 in Appendix C). The structure was made out of 2-inch x 10-inch trusses and 6-foot x 1-inch deckboard across the top. The platform was 10 feet long and 3 feet wide along the openings between each tank. The platform was constructed according to the specifications to fit the tanks' curvature.

### ***Indoor: Plumbing***

Prior to construction, water and electricity were supplied to the storage tank area, according to the specifications, by Tecumseh employees. The remaining portion of the plumbing network was constructed by SGS, according to the design specifications. SGS provided the piping, the appropriate valves, and the flow meter. The plumbing was connected to the outlet of each tank (Photo 22 in Appendix C) and directed toward the western exterior wall of the Tecumseh facility. A hole was drilled in the exterior wall with a concrete drill bit, the indoor and outdoor piping was connected through the hole, and the hole was then sealed (Photo 23 in Appendix C).

## **3.1.2 Recycling Dock Area**

### ***Lactate Injection Well Construction***

The three lactate injection wells in the Recycling Dock Area were constructed by Boart Longyear on October 30 and November 1, 2002. The boring logs and well construction diagrams are included in Appendices D and E, respectively. The approximate locations of the three injection wells are shown on Plan Sheet 2 in Appendix B.

The lactate injection wells constructed near the loading dock were installed using 8¼-inch hollow-stemmed augers. The wells were constructed with 4-inch-I.D. continuous wire-wrapped stainless-steel well screens with a slot size of 0.020 inches. To facilitate injection, a ¼-¾-inch pea-gravel filter pack was installed. The soil cuttings generated during the installation of each well were stockpiled on 10-mil polyethylene in the West Dock Area, with the soil excavated from Trenches 1 and 2. Development water from the well installation was disposed in an on-site sanitary sewer.

Subsequent to installation, the well screens partially filled with the fine-grained sand of the formation in which they were screened. Attempts to develop the wells and remove the sand were unsuccessful. Therefore, in order to maximize the interval at which the lactate was injected, 2-inch-I.D. prepacked continuous wire-wrapped stainless-steel well screens, with a slot size of 0.006 inch and an outside diameter of 3.5 inches were washed into the original 4-inch wells. Approximately 100-200 gallons of water from the City of Grafton water supply were used to wash in each of the prepacked well screens. A sketch showing the final construction of the injection wells can be found in Appendix E. The final injection well construction works satisfactorily, with each well allowing injection rates of greater than 3 gallons per minute.

### ***Lactate Injection Plumbing Construction***

The permanent plumbing for the lactate injection system's water supply in the Recycling Dock Area was constructed by Tecumseh. Refer to the hand drawing in Appendix F for the design specifications. Employees at Tecumseh connected a 2-inch-I.D. PVC pipe and control valve to the Tecumseh facility's pressurized water supply, located in a boiler room on the southern side of the Recycling Dock Area (Photo 24 in Appendix C). They brought the PVC pipe from inside the boiler room to an accessible outdoor location (Photos 25-26 in Appendix C). A second control valve was placed at the end of the 2-inch PVC pipe (Photo 27 in Appendix C). These components of the lactate injection system are permanent, with respect to the operational lifetime of the system.

The remaining components of the lactate injection system, shown in Appendix F, are temporarily assembled for each injection by RMT and then disassembled following the completion of the injection. Thus, this temporary portion of the Recycling Dock construction will be described in the injection procedure section of this report (Subsection 5.2).

## **3.2 Modifications to the Design**

The following modifications to the design were determined to be necessary during construction in the West Dock and Recycling Dock Areas.

### **3.2.1 West Dock Area**

- Numerous utilities and obstacles were encountered during the excavation of infiltration Trench 1. Consequently, in Trench 1, the perforated pipe had to be bent around (to the west of) a manhole that could not be disturbed, and in another

location, the pipe had to go below an 8-inch concrete pipe, causing a slight decline in the pitch.

- Trench 2 was slightly shorter than indicated on the specifications, because the proximity of the building did not allow for further excavation with the backhoe.
- The specifications called for flush-mounts at three cleanout locations; however, six were installed, because more concrete and asphalt were encountered than anticipated.

### 3.2.2 Recycling Dock Area

- The 0.020-inch well screen slot size and gravel filter pack, specified for the three injection wells, were too large to retain the formation. This allowed the formation material to infiltrate through the filter pack and screen and fill the well screens. To correct this problem, 2-inch-I.D. prepacked well screens with 0.006-inch slots were installed within each specified 4-inch-I.D. well, as described above.
- A 1-inch-I.D. PVC pipe was used in place of the specified 1½-inch-diameter pipe to provide for better flow control in the temporary lactate injection system.
- A 2-inch-I.D. PVC pipe was used to connect the lactate injection system to Tecumseh's water supply instead of the specified 1½-inch-I.D. PVC pipe.

## 3.3 Miscellaneous

### 3.3.1 Damage Repair and Site Restoration

Unexpected utilities (not shown on the facility utility maps) were encountered during the excavation for Trench 1. SGS worked slowly and cautiously to avoid damaging the pipes; however, a 6-inch PVC sanitary sewer was cracked along one location on October 14, 2002. SGS temporarily taped up the pipe and continued to work until the end of the day. They returned to the site on October 15, 2002, and repaired the sanitary line by saw-cutting the 1-foot length of damaged pipe and replacing it with a new pipe length. Fernco-couplings were placed on each end of the new pipe length, and the repaired pipe was covered with insulation before the trench was backfilled (Photos 15-16 in Appendix C). The damage and repair were reported to Glen Elmer, a representative of Tecumseh.

SGS graded the site to original conditions upon completion of the trench installation. Topsoil, seed, and fertilizer were applied to grassy areas that had been disturbed by the construction. Areas that had been covered with asphalt prior to construction were regraded with sand and gravel. The asphalt will be restored in early spring of 2003, and the grassy areas will be reseeded at that time, if necessary.

### 3.3.2 Waste Material

RMT subcontracted ONYX to transport and dispose of the stockpiled soil excavated from Trenches 1 and 2 in the West Dock Area and generated from the soil cuttings during installation of the wells. The waste disposal forms can be found in Appendix G. Analytical results of the soil sample collected from the stockpile demonstrated that the soil could be disposed at the biopile at the Superior Hickory Meadow Landfill in Hilbert, Wisconsin. On November 29, 2002, the soil was transported from Grafton to the landfill for disposal and treatment at the biopile. Five loads amounting to 143.66 tons were transported and disposed.

# Section 4

## Groundwater Monitoring

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### 4.1 Monitoring Well Installation

Four 2-inch groundwater monitoring wells (MW-23, MW-24, MW-25, and MW-26) were installed by Boart Longyear on October 30 and October 31, 2002, for purposes of monitoring the progress of the enhanced bioremediation. The boring logs and construction diagrams for the wells are included in Appendices D and E, respectively. The locations of the monitoring wells are shown in the design specifications on Plan Sheet 2 (Appendix B). Monitoring wells MW-23 and MW-24 are located in the Recycling Dock Area, and MW-25 and MW-26 are located in the West Dock Area.

### 4.2 Baseline Groundwater Chemistry

Groundwater samples were collected prior to the first injection from the newly installed wells (MW-23, MW-24, MW-25, and MW-26) on November 20, 2002, and from MW-8 on November 21, 2002, to determine the baseline groundwater chemistry, such that the progress of the enhanced bioremediation can be monitored and quantified. The groundwater samples were sent to EnChem, Inc., for laboratory analysis of VOCs and chloride. A variety of field parameters were also measured at the time of the sample collection. Specifically, these parameters were, pH, specific conductivity, temperature, oxidation reduction potential (ORP), and dissolved oxygen (DO). The results of the laboratory analysis and field parameter screening are summarized in Tables 1 and Table 2, respectively; and the complete set of results from the laboratory analysis can be found in Appendix H.

Table 1 also includes the analytical results for groundwater samples collected from two wells (MW-3D and MW-3BR) by Moraine Environmental, Inc (Moraine), in 2002, and from three wells (MW-3, MW-3D, and MW-8D) by RMT in 1996. These wells were included in the proposed baseline sampling schedule, which is outlined in the Remedial Action Program approved by Tecumseh (RMT, 2002). However, RMT was unable to obtain samples from wells MW-3, MW-3D, and MW-3BR; and MW-8D could not be located during the baseline sampling event. Thus, the laboratory results from the samples previously collected by Moraine and RMT were used. Monitoring well MW-8D has subsequently been located for future sampling. Because the concentrations from previous monitoring events were available from Moraine and RMT for these inaccessible wells, the data defining the background groundwater concentrations are complete. As for monitoring the future progress of the bioremediation, the approved monitoring program calls for samples to be collected from MW-8, MW-8D, MW-23, MW-24,

MW-25, and MW-26. The location of each of these wells is known, and the wells are accessible; therefore, RMT can monitor the progress of the bioremediation.

The baseline chemistry summarized in Table 1 provides the background concentrations of TCE, TCA, and their respective daughter products. These concentrations will be used to evaluate the progress of the enhanced bioremediation system. The goal of the bioremediation is to reduce the TCE concentrations in the source area groundwater to 50 percent of the initial concentrations, or 5 years, whichever comes first.

Samples of groundwater were collected from the West Dock Area in 1996 using direct-push sampling techniques (RMT, 1997). TCE and 1,2-dichloroethene concentrations in 1996 were as high as 1,600 and 2,000 µg/L, respectively. The 1996 concentrations are comparable to the 2002 results, suggesting that natural conditions have not significantly reduced groundwater VOC concentrations. The high ORP values recorded in the West Dock Area suggest that reductive dechlorination is not likely to be a significant alternative process. The addition of lactate is intended to create conditions supportive of reductive dechlorination, resulting in greater degradation rates, as described below for the Recycling Dock Area.

Monitoring wells MW-3, MW-3D, and MW-8, in the Recycling Dock Area were sampled in 1996, and several direct-push groundwater samples were collected (RMT, 1997). The direct-push results were comparable to the results shown for MW-8 in Table 1. VOC concentrations at MW-8 declined by factors of about 10 to 200. With the exception of 1,1-DCA, the concentration trends at MW-3D are similar to the trends at MW-8. This confirms the 1997 observations that the chlorinated organic compounds are undergoing natural attenuation by reductive dechlorination, under the reducing conditions found in this area. Lactate addition in the Recycling Dock Area should speed these processes.

# Section 5

## Procedure for First Lactate Injection

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### 5.1 West Dock Area

The first injection in the West Dock Area began on November 22, 2002, and was completed on February 7, 2003. A lactate solution was placed in the four 2,500-gallon storage tanks located in the Tecumseh facility, and the tanks supplied the four trenches, described above, with the solution by means of gravity infiltration. The procedure for the injection is as follows:

- Close valve (Photo 23 (2) in Appendix C).
- Fill the tanks with water. Representatives from RMT filled the tanks initially, but a representative from Tecumseh filled the tanks each time thereafter, prior to RMT's arrival on-site for the addition of chemicals.
- Add specified mass of chemicals to each tank (lactate, yeast, sodium sulfide, and sodium bicarbonate).
- Mix solution in each tank with submersible pump.
- Record flow volume, and open valve (Photo 23 [1] [2] in Appendix C).

The procedure was repeated once a week until February 7, 2003, when the first injection was considered complete (approximately 63,500 gallons of solution had been injected). It was originally estimated that the flow rate of the gravity infiltration would be 0.5 gpm; however, a flow rate of 11 gpm was recorded once the system was in operation.

The tanks were filled with water on November 20, 2002, to prepare for the initial addition of chemicals. After filling the tanks with water, it was discovered that the outlet in Tank 1 leaked; therefore, Tank 1 was emptied. A replacement part was required in order to repair the outlet in Tank 1; therefore, the infiltration system operated using the remaining three functional tanks until the part could be obtained. The leaking outlet was repaired by a representative from RMT on January 3, 2003, and all four tanks operated from that date until the end of the first injection.

### 5.2 Recycling Dock Area

The first injection in the Recycling Dock Area began at 10:15 a.m., on November 22, 2002, and was finished approximately 28 hours later on November 23, 2002, at 2:25 p.m. (times do not include assembly and disassembly). The complete injection procedure for the Recycling Dock Area begins with the assembly of the temporary plumbing network (see Appendix F for specifications), includes the injection of the lactate solution into the ground, and ends when the



temporary plumbing has been taken down and stored. The setup can be seen in Photos 27-33 in Appendix C, which progress in the direction of flow from the permanent water supply to the three injection wells. The complete injection procedure is as follows:

#### *Temporary Plumbing Assembly*

- Connect 1-inch PVC pipe to permanent 2-inch water supply pipe at location of outdoor control valve (Photo 27 in Appendix C).
- Connect total flow meter to 1-inch pipe (Photo 28 in Appendix C).
- Mix nutrient solution in 65-gallon drum, and connect a chemical metering pump.
- Connect another chemical metering pump to the 55-gallon drum containing lactate.
- Connect chemical metering pumps to 1-inch pipe with small-diameter tubing (Photo 29 in Appendix C).
- Split 1-inch pipe at tee junction to feed three flow meters (Photo 30 in Appendix C).
- Connect 1-inch flexible hose to each flow meter (Photo 31 in Appendix C).
- Extend each hose to its respective injection well (Photo 32 in Appendix C).
- Place pressure gauge at the junction between the flexible hose and the well (Photo 33 in Appendix C).
- Connect tubing to injection well.

#### *Chemical Injection*

- Record flow on the meter measuring total flow and on the three meters measuring the flow for each injection well.
- Turn on the water supply valves, one inside the boiler room and one in the outdoor Recycling Dock Area (crack open only slightly).
- Turn on the chemical metering pumps.
- Open the total flow meter valve.
- Open the valves for the flow meters feeding each injection well. Note that these valves will need to be adjusted individually to account for variation in the rate of flow through each meter.
- Operate system until the two drums are empty.
- Turn off all valves, and record reading at each flow meter.

#### *Disassembly*

- Take apart all components leading up to the permanent water supply plumbing.
- Cap the injection wells.
- Place equipment and chemicals in a secured storage area (Photo 34 in Appendix C).

During the first injection, the total average flow rate was approximately 11.8 gpm, and the average flow rate feeding each injection well varied between 3.7 and 4.2 gpm. A total of approximately 20,800 gallons were injected into the ground during the first injection, 6,878 gallons in LI-1, 6,999 gallons in LI-2, and 6,934 gallons in LI-3. No back pressure was recorded for any of the wells during the injection.

## Section 6

# References

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- RMT, Inc. 1999. Bioremediation treatability study results. Tecumseh Products Company, Grafton, Wisconsin. September 1999.
- RMT, Inc. 2002. Remedial action workplan. Tecumseh Products Company, Grafton, Wisconsin. March 2002.



**Table 1**  
**Groundwater Analytical Results**  
**Tecumseh Products Company**  
**Grafton, Wisconsin**

Analyte	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloroethane	Methylene Chloride	Chloride
NR 140 ES		5	5	70	100	7	0.2	200	5	850	5	400	5	250
NR 140 PAL		0.5	0.5	7	20	0.7	0.02	40	0.5	85	0.5	80	0.5	125
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
<b>Recycling Dock Wells</b>														
MW-3 <sup>(2)</sup>	6/4/96	< <u>2</u>	<b>10</b>	< 1	< 1	< <u>1</u>	< <u>1</u>	< 1	< <u>1</u>	< 1	< <u>1</u>	< 1	< <u>1</u>	NA
MW-3D <sup>(2)</sup>	6/5/96	< <u>20</u>	<b>15</b>	<b>20</b>	< 10	< <u>10</u>	<b>17</b>	26	< <u>10</u>	<b>130</b>	< <u>10</u>	< 10	< <u>10</u>	95
MW-3D <sup>(1)</sup>	6/12/02	< <u>2.8</u>	< <u>4.5</u>	< 3.6	< 4	< <u>4.2</u>	<b>2.4</b>	< 3.4	< 3.6	<b>570</b>	< <u>2.3</u>	< 2.8	< <u>4.2</u>	NA
	12/10/02	< <u>0.63</u>	< 0.39	< 0.81	< 0.8	< 0.56	< 0.11	< 0.65	< 0.5	31	< <u>0.55</u>	2.6 Q	< 0.47	NA
MW-3BR <sup>(1)</sup>	6/12/02	< <u>0.57</u>	<b>200</b>	<b>48</b>	< 0.79	<b>73</b>	<b>5</b>	<b>38</b>	< <u>0.72</u>	73	< 0.47	< 0.57	< <u>0.85</u>	NA
	12/10/02	< <u>0.63</u>	<b>120</b>	<b>31</b>	< 0.8	<b>6.2</b>	<b>1.9</b>	15	< 0.5	38	< <u>0.55</u>	< 0.84	<b>0.59</b> Q	NA
MW-8 <sup>(2)</sup>	6/5/96	< <u>2</u>	<b>20</b>	<b>660</b>	<b>91</b>	<b>27</b>	<b>360</b>	<b>1,900</b>	<b>11</b>	<b>1,400</b>	<b>22</b>	64	<b>30</b>	<b>1,200</b>
MW-8	11/21/02	<b>0.66</b> Q	<b>0.56</b> Q	<b>3</b>	<b>2.1</b> Q	<b>1.9</b>	<b>1.5</b>	<b>110</b>	<b>0.64</b> Q	<b>160</b>	< <u>0.55</u>	<b>2.3</b> Q	<b>0.54</b> Q	<b>27</b>
MW-8D <sup>(2)</sup>	6/5/96	< <u>2</u>	<b>1.6</b>	< 1	< 1	< <u>1</u>	< <u>1</u>	< 1	< <u>1</u>	< 1	< <u>1</u>	< 1	< <u>1</u>	NA
MW-23	11/21/02	< <u>320</u>	< <u>200</u>	< <u>410</u>	< <u>400</u>	< <u>280</u>	<b>530</b>	< <u>330</u>	< <u>250</u>	<b>47,000</b>	< <u>280</u>	< <u>420</u>	< <u>230</u>	<b>220</b>
MW-24	11/21/02	< <u>0.63</u>	<b>29</b>	<b>14</b>	2.9	< 0.56	<b>2</b>	< 0.65	< 0.5	<b>140</b>	<b>2.1</b>	31	<b>1.5</b>	<b>110</b>
<b>West Dock Wells</b>														
MW-25	11/21/02	< <u>1.6</u>	<b>260</b>	<b>110</b>	<b>2.2</b> Q	<b>1.6</b> Q	<b>24</b>	< 1.6	< <u>1.2</u>	< 2.2	< <u>1.4</u>	< 2.1	< <u>1.2</u>	32
MW-26	11/21/02	< <u>16</u>	<b>950</b>	<b>2,400</b>	<b>31</b>	< <u>14</u>	<b>290</b>	21 Q	< <u>12</u>	<b>69</b>	< <u>14</u>	< 21	< <u>12</u>	<b>170</b>

Notes:

Table includes only those CVOCs (and chloride) listed in NR 140 that were detected in at least one sample.

ES = Enforcement Standard.

PAL = Preventive Action Limit.

NA = not analyzed.

Q = concentration between the Limit of Detection and Limit of Quantitation.

**BOLD** = concentration exceeds NR 140 PAL.

Underline = concentration is below the Limit of Detection but reported at a level that exceeds the NR 140 PAL.

DCA = dichloroethane.

DCE = dichloroethene.

DCP = dichloropropane.

TCA = trichloroethane.

TCE = trichloroethene.

PCE = tetrachloroethane.

Footnotes:

<sup>(1)</sup> Samples were collected by Moraine Environmental, Inc. The samples collected on December 10, 2002, occurred after the first lactate injection.

<sup>(2)</sup> Results from RMT (RMT, 1997) Table 12.

Prepared By: AAS 1/3/03

Checked By: MG 1/3/03

**Table 2**  
**Groundwater Field Parameters**  
**Tecumseh Products Company**  
**Grafton, Wisconsin**

Analyte	Sample Date	Water Level	pH	Specific Conductivity	Temperature	ORP	Dissolved Oxygen
Units		ft (M.S.L.)		µmhos/cm	°C	mV	mg/L
<b>Recycling Dock Wells</b>							
MW-3D <sup>(1)</sup>		NA	NA	NA	NA	NA	NA
MW-3BR <sup>(1)</sup>		NA	NA	NA	NA	NA	NA
MW-8	11/21/02	746.46	7.32	1,080	15.2	-100	0.33
MW-23	11/20/02	746.21	6.88	2,780	15.2	-38	0.11
MW-24	11/20/02	746.12	7.23	1,529	14.5	16	0.12
<b>West Dock Wells</b>							
MW-25	11/20/02	751.93	7.19	1,010	14.4	190	0.04
MW-26	11/20/02	747.25	7.05	1,752	18.7	224	0.03

Notes:

<sup>(1)</sup> Wells that were sampled by Moraine Environmental, Inc.

NA = not analyzed.

Prepared By: AAS 2/3/03

Checked By: MG 2/5/03

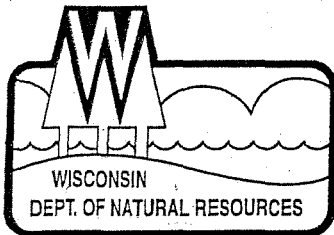


# Appendix A

## Chemical Injection Permit

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## State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor  
Scott Hassett, Secretary  
Gloria L. McCutcheon, Regional Director

Waukesha Service Center  
141 NW Barstow Street  
Room 180  
Waukesha, Wisconsin 53188  
Telephone 262-574-2100  
FAX 262-574-2117

May 29, 2003

Mr. Bharat Shah  
Tecumseh Products Company  
1604 Michigan Avenue  
New Holstein, WI 53061

Subject: Request for Coverage Under the Wisconsin Pollutant Discharge Elimination System (WPDES) Wastewater Discharge Permit for Contaminated Groundwater from Remedial Action Operations.  
**FID# 26009170, BRRTs# 02-46000751**

Dear Mr. Shah;

The Department has reviewed your WPDES permit application, dated July 12, 2002. The permit allows discharge of a sodium lactate solution mixed with city tap water. The sodium lactate used as an electron donor will be injected at a concentration of 2,000 mg/L. Along with the sodium lactate, yeast extract will be added as trace nutrients at an injected concentration of 20 mg/L. Also in the solution, sodium sulfite or sulfide will be added as a deoxygenator at an injected concentration of approximately 10 mg/L per mg/L of dissolved oxygen. Sodium bicarbonate (baking soda) is used to buffer the solution to a neutral pH. The amended water will be discharged to the groundwater of the Milwaukee River Drainage Basin. Two areas at the Tecumseh facility in Grafton Wisconsin will be treated with the lactate solution. The West Dock Area has four 2,500-gallon storage tanks in the Tecumseh facility, which supplies four gravity infiltration trenches. The trenches are loaded on a weekly basis until approximately 70,000-gallons of sodium lactate solution is injected. The Recycling Dock Area has three wells in which sodium lactate solution is injected. Each injection event consists of injecting approximately 7,000-gallons per well, per event for a total of approximately 21,000-gallons of sodium lactate injected per event at the Recycling Dock Area. No pollutants shall be injected into the groundwater. No more than 2 groundwater injection events may occur within a one-year period over a five-year remediation term. All requirements of the June 6, 2002 John Feeney letter, Conditional Remedial Action Plan Approval and Chapter NR 140 Exemption Modification, along with the issued general permit will apply.

The permit is valid for the above-stated activities ONLY.

### APPLICABLE STANDARDS AND MONITORING REQUIREMENTS

The proposed discharge has been evaluated for the applicable groundwater quality standards and it has been determined that the general permit sufficiently covers a discharge of this type.

The conditions and requirements of the general permit will apply to the above stated discharge. The specific monitoring requirements are contained in Part F, Additional Requirements for Discharges to

Enhance the Remediation of In-Situ Contaminates. In accordance with the terms of this permit and the information provided by the permit application, monitoring is required for flow only on a monthly basis.

Please carefully note Section H. under the standard permit conditions. This condition requires that you notify this office within 24 hours of becoming aware of noncompliance with the limitations listed in this permit. Also, please be advised that 283.91 Wisconsin Statutes states that "Any person who violates this chapter, or any rule promulgated thereunder, or any term or condition of a permit issued under this chapter, shall be subject to a forfeiture of not more than \$10,000 for each day of violation." Flow quantities shall be recorded and submitted following the month of injection to:

Wisconsin-Department of Natural Resources  
Corey Heckel  
Wastewater Hydrogeologist  
Waukesha Service Center  
141 NW Barstow St. Room 180  
Waukesha, WI 53188

Authority to issue general permits was granted to the Department by the legislature on April 29, 1980. A general permit is issued instead of the usual individual permits to a group of permittees within the state which have similar wastewater discharges. As long as your discharge meets the applicability criteria contained in the general permit, it is automatically permitted under state and federal law. Facilities subject to the general permit need to have a permit application on file.

The WPDES permit program has been approved by the Administrator of the U.S. Environmental Protection Agency pursuant to Section 402(b) of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. Section 1342(b)). The terms and conditions of this permit are subject to enforcement under Sections 283.89 and 283.91, Wisconsin Statutes and Section 309 of the Federal Act (33 U.S.C. Section 1319).

If you believe you have a right to challenge this decision, Section 283.63, Wisconsin Statutes, and Chapter NR-203, Wisconsin Administrative Code require that you file a verified petition for review with the Secretary of the Department of Natural Resources within 60 days of the date of this decision. This notice is provided pursuant to Section 227.48, Wisconsin Statutes.

Sincerely,



Corey Heckel  
Hydrogeologist

Cc: Alyssa Sellwood, RMT, Inc.  
John Feeney, R&R Sheboygan Service Center  
Permit file



# Appendix B

## Construction Drawing Record

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# TECUMSEH PRODUCTS COMPANY

## LACTATE INJECTION SYSTEMS

### GRAFTON, WISCONSIN

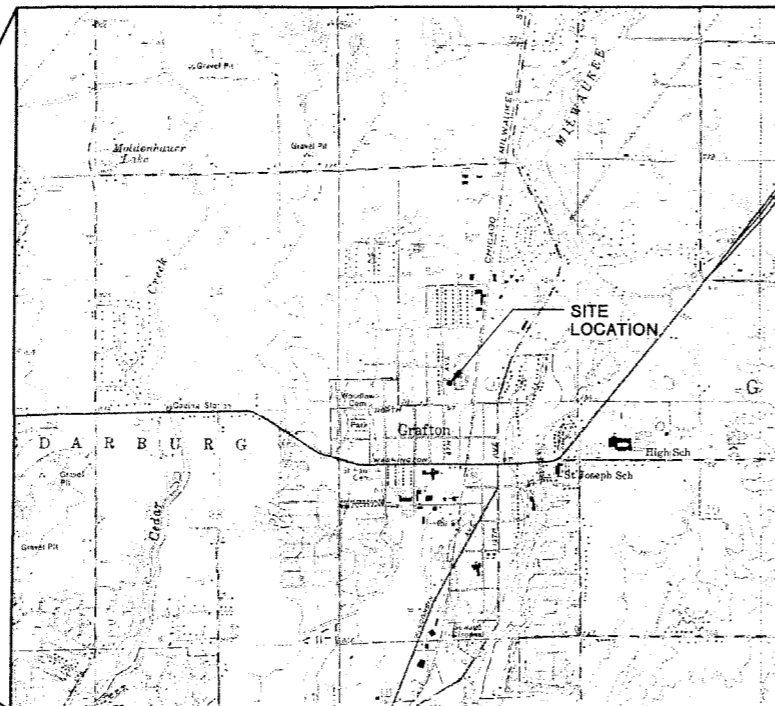
**PREPARED FOR: TECUMSEH PRODUCTS COMPANY**

**PREPARED BY: RMT, INC.  
MADISON, WISCONSIN**

**DATE: FEBRUARY 2003**



WISCONSIN STATE MAP

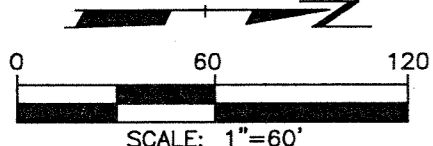
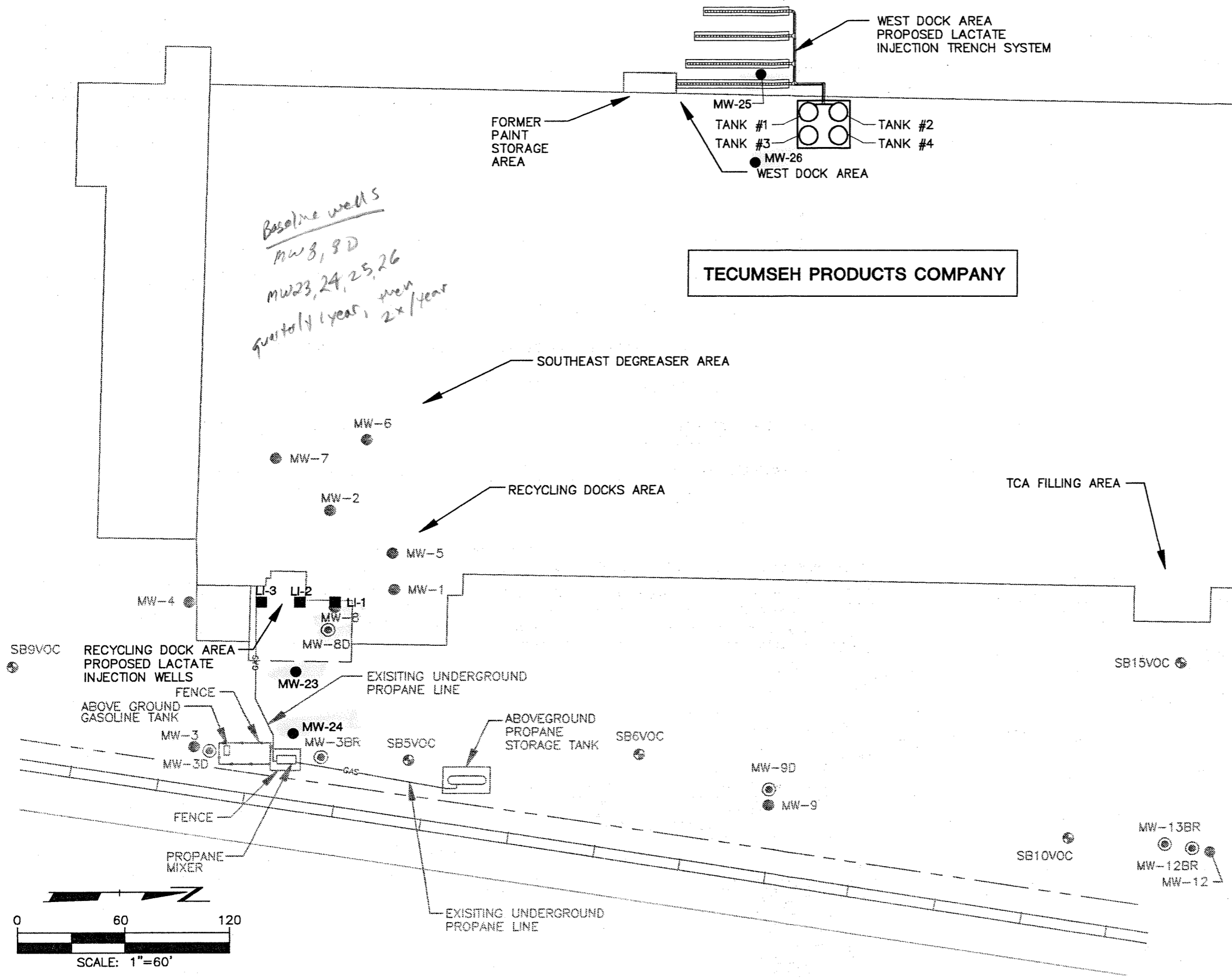


SITE LOCATOR MAP

## INDEX

SHEET NUMBER	SHEET TITLE	REVISION DATE
1	TITLE SHEET / INDEX OF DRAWINGS	02/03
2	SITE PLAN	02/03
3	LACTATE INFILTRATION TRENCH LAYOUT AND CROSS SECTION LOCATOR - WEST DOCK AREA	02/03
4	WEST DOCK AREA - ILLUSTRATIVE AND ELEVATION VIEWS	02/03
5	CROSS SECTION A-A' LACTATE INFILTRATION TRENCH DETAILS WEST DOCK AREA	02/03
6	INJECTION WELL LAYOUT AND CROSS SECTION LOCATOR RECYCLING DOCKS AREA	02/03
7	CROSS SECTION B-B' WITH INJECTION WELL DETAILS RECYCLING DOCKS AREA	02/03

Plot Date: July 9, 2002  
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 Dwg Size: 85552 Bytes



MW-16 SB26VOC

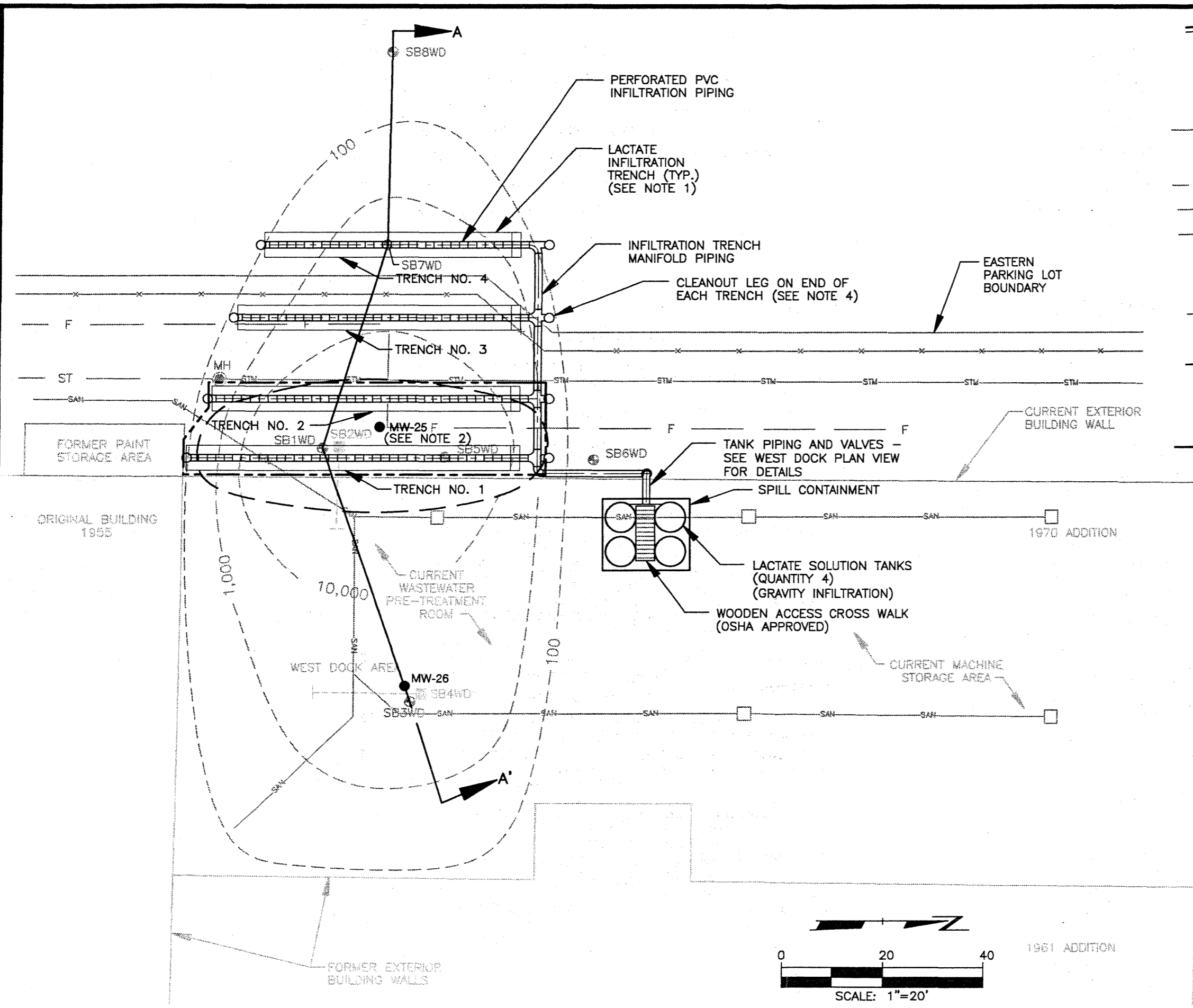
**LEGEND**

- MW-10 WATER TABLE WELL
- ◎ MW-3BR PIEZOMETER
- SB6VOC SOIL BORING
- RAILROAD
- PROPERTY LINE
- LI-1 PROPOSED LACTATE INJECTION WELL LOCATION
- MW-23 APPROXIMATE LOCATION OF PROPOSED LACTATE SYSTEM MONITORING WELL

**NOTES**

1. FACILITY LAYOUT ADAPTED FROM DRAWINGS PROVIDED BY TECUMSEH PRODUCTS COMPANY.
2. MONITORING WELL LOCATIONS AND ELEVATIONS WERE SURVEYED BY RMT INC. ON 12/5/94.

PROJECT: <b>TECUMSEH PRODUCTS COMPANY LACTATE INJECTION SYSTEMS GRAFTON, WISCONSIN</b>		
SHEET TITLE: <b>SITE PLAN</b>		
DRAWN BY: SIEWERTD	SCALE: 1"=60'	PROJ. NO. 03084.27
CHECKED BY: RLW		FILE NO. 30842702.DWG
APPROVED BY: SAK	DATE PRINTED:	<b>SHEET 2 OF 7</b>
DATE: FEBRUARY 2003		
744 Heartland Trail Madison, WI 53717-1934 P.O. Box 8923 53708-8923 Phone: 608-831-4444 Fax: 608-831-3334		

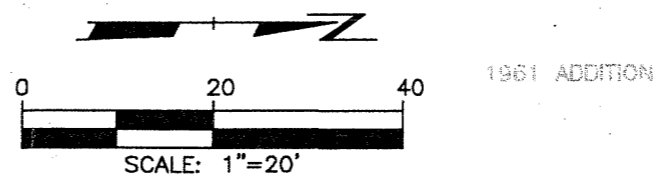


### LEGEND

- SB8WD EXISTING VERTICAL SOIL BORING
- SB4WD EXISTING ANGLE SOIL BORING
- MW-25 PROPOSED MONITORING WELL LOCATION
- X — EXISTING FENCE
- - - - - TRAJECTORY OF ANGLE SOIL BORING
- F - FIRE LOOP
- STM - UNDERGROUND STORM SEWER
- SAN - UNDERGROUND SANITARY SEWER
- MANHOLE
- FLOOR DRAIN
- +,000 - ESTIMATED EXTENT OF TCE, ISOCONCENTRATION IN SOIL (ug/kg) (DASHED WHERE INFERRED)
- - - - - ESTIMATED EXTENT OF PAH AND PETROLEUM-RELATED COMPOUNDS IN SOIL
- ↑↑ GEOLOGIC CROSS SECTION LOCATION
- - - - - LIMITS OF SOIL TO BE EXCAVATED FOR DISPOSAL

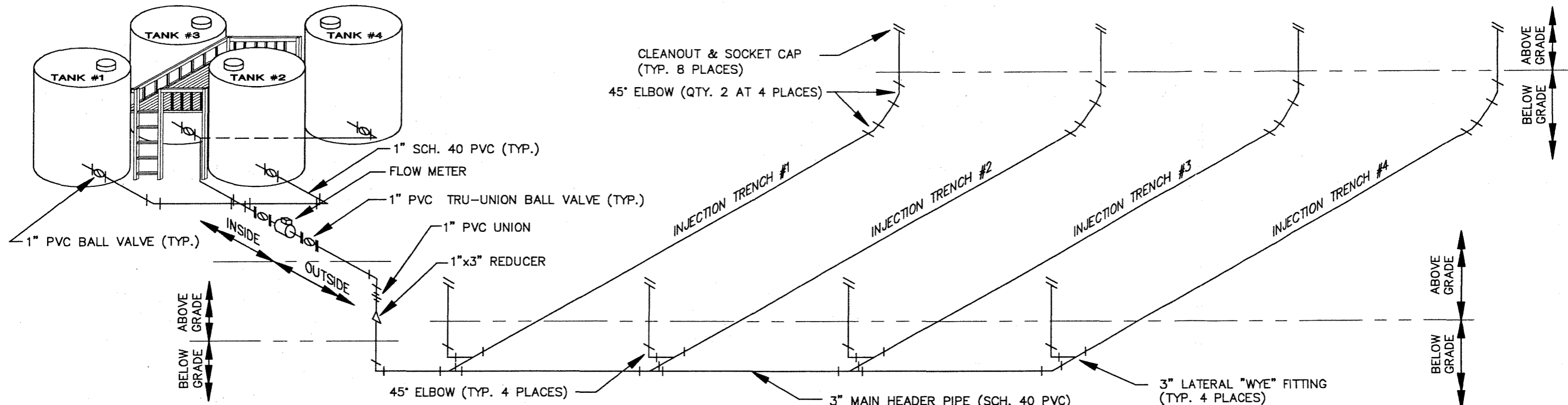
- ### NOTES
1. LACTATE INFILTRATION TRENCHES TO BE 5 FEET WIDE AND 5 FEET DEEP. PROVIDE 12" OF GRAVEL BEDDING AND 12" OF GRAVEL COVER FOR PERFORATED 3" PVC LACTATE INFILTRATION PIPING. COVER WITH 3 FEET OF CLAY FILL. EXISTING EXCAVATED MATERIAL FROM TRENCH 3 & 4 CAN BE REUSED, AS WELL AS CONTRACTOR-SUPPLIED CLEAN CLAY FILL. SOIL EXCAVATED FROM TRENCHES 1 & 2 CANNOT BE RE-USED.
  2. STORM SEWER, FIRE LOOP, AND SANITARY SEWER LINE LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS ARE TO BE FIELD LOCATED BY CONTRACTOR, PRIOR TO EXCAVATION ACTIVITIES.
  3. UTILITIES SUCH AS THE FIRE LOOP, ETC. MAY NEED TO BE RELOCATED FOR PROPOSED TRENCHING PURPOSES.
  4. CONTRACTOR TO PROVIDE FLUSH MOUNT HEAVY-DUTY ACCESS FOR CLEANOUTS LOCATED WITHIN THE PARKING LOT (3 OUT OF 8 LOCATIONS).

<b>PROJECT: TECUMSEH PRODUCTS COMPANY LACTATE INJECTION SYSTEMS GRAFTON, WISCONSIN</b>		
<b>TITLE: LACTATE INFILTRATION TRENCH LAYOUT AND CROSS SECTION LOCATOR WEST DOCK AREA</b>		
DRAWN BY: SIEWERTD	SCALE: 1"=20'	PROJ. NO. 03084.27
CHECKED BY: RLW	1"=20'	FILE NO. 30842703.DWG
APPROVED BY: SAK	DATE PRINTED:	<b>SHEET 3 OF 7</b>
DATE: FEBRUARY 2003		

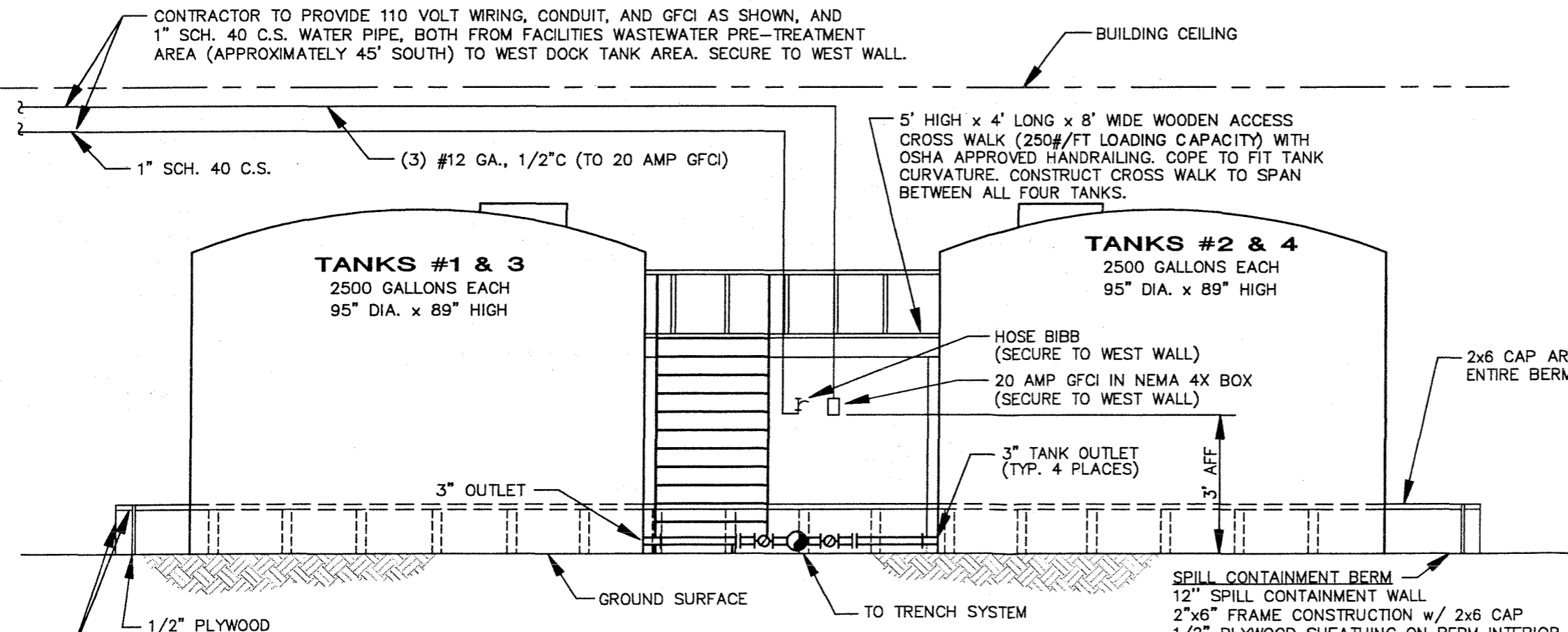


**RMT** INC.  
 744 Heartland Trail  
 Madison, WI 53717-1934  
 P.O. Box 8923 53708-8923  
 Phone: 608-831-4444  
 Fax: 608-831-3334

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 Scale: 1"=20'  
 Dwg Size: 133462 Bytes



**WEST DOCK AREA - ILLUSTRATIVE VIEW**  
NOT TO SCALE



**WEST DOCK AREA - ELEVATION VIEW**  
NOT TO SCALE

**NOTES**

1. CONTRACTOR SHALL PROVIDE HEAVY-DUTY FLUSH MOUNT ACCESS HATCH AND BOLT-DOWN COVER FOR CLEAN-OUTS LOCATED WITHIN THE LIMITS OF THE PARKING LOT. (3 OUT OF 8 LOCATIONS). SEE SHEET 3 OF 7.
2. FLOW METER AND TRU-UNION BALL VALVES SHALL BE INSTALLED WITHIN THE LIMITS OF THE SPILL CONTAINMENT BERM.

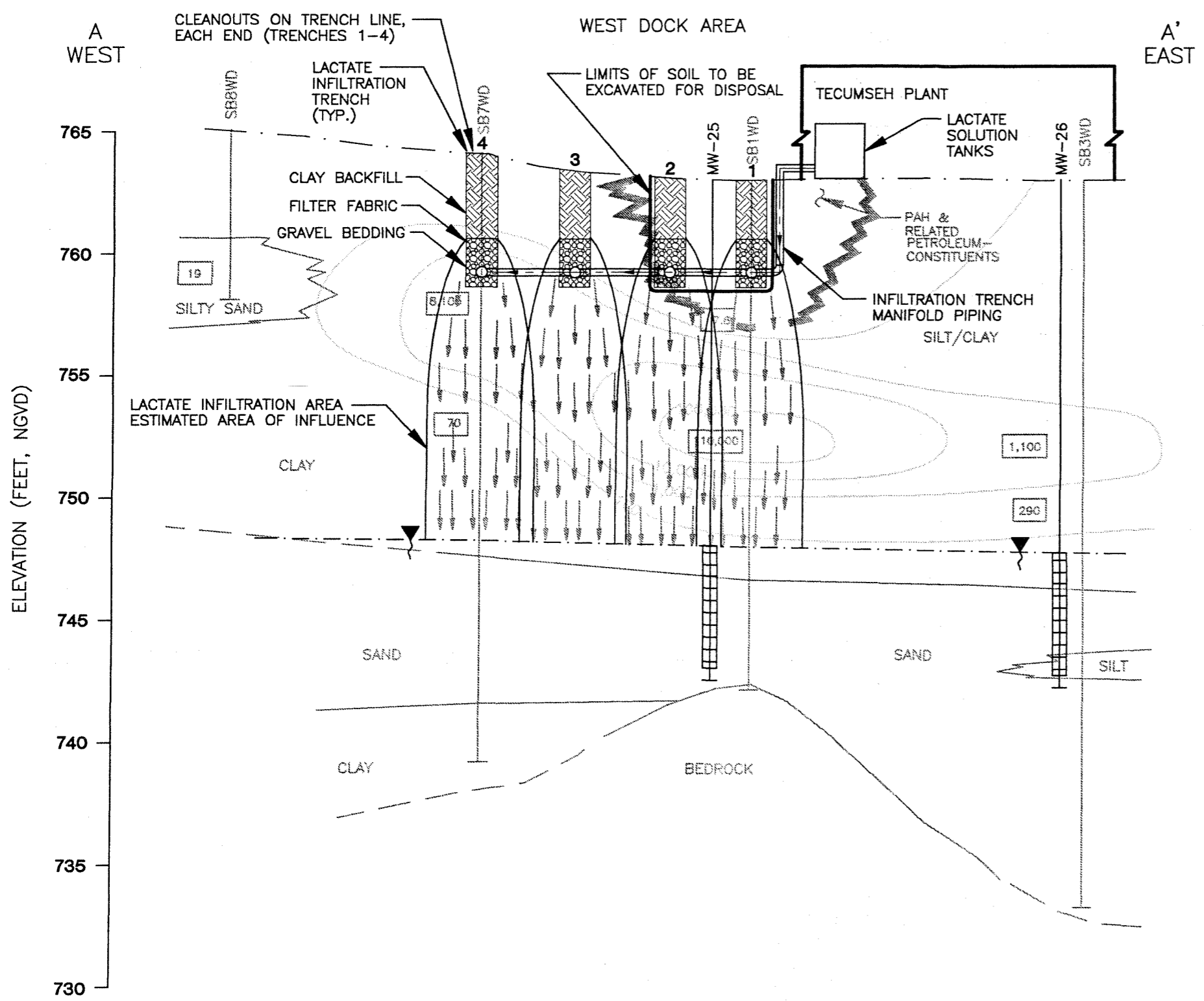
PROJECT: <b>TECUMSEH PRODUCTS COMPANY LACTATE INJECTION SYSTEMS GRAFTON, WISCONSIN</b>		
SHEET TITLE: <b>WEST DOCK AREA ILLUSTRATIVE &amp; ELEVATION VIEWS</b>		
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CHECKED BY: RLW	DATE PRINTED:	FILE NO. 30842704.DWG
APPROVED BY: SAK		
DATE: FEBRUARY 2003		<b>SHEET 4 OF 7</b>

**RMT INC.**  
744 Heartland Trail  
Madison, WI 53717-1934  
P.O. Box 8923 53708-8923  
Phone: 608-831-4444  
Fax: 608-831-3334

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 Attached Images: No Images attached.  
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 2x6 BOARD  
 1/2" PLYWOOD  
 TO TRENCH SYSTEM  
 GROUND SURFACE  
 3" TANK OUTLET (TYP. 4 PLACES)  
 3" AFF  
 HOSE BIBB (SECURE TO WEST WALL)  
 20 AMP GFCI IN NEMA 4X BOX (SECURE TO WEST WALL)  
 5' HIGH x 4' LONG x 8' WIDE WOODEN ACCESS CROSS WALK (250#/FT LOADING CAPACITY) WITH OSHA APPROVED HANDRAILING. COPE TO FIT TANK CURVATURE. CONSTRUCT CROSS WALK TO SPAN BETWEEN ALL FOUR TANKS.  
 BUILDING CEILING  
 CONTRACTOR TO PROVIDE 110 VOLT WIRING, CONDUIT, AND GFCI AS SHOWN, AND 1" SCH. 40 C.S. WATER PIPE, BOTH FROM FACILITIES WASTEWATER PRE-TREATMENT AREA (APPROXIMATELY 45' SOUTH) TO WEST DOCK TANK AREA. SECURE TO WEST WALL.  
 1" SCH. 40 C.S.  
 (3) #12 GA., 1/2"C (TO 20 AMP GFCI)  
 TANKS #1 & 3  
 2500 GALLONS EACH  
 95" DIA. x 89" HIGH  
 TANKS #2 & 4  
 2500 GALLONS EACH  
 95" DIA. x 89" HIGH  
 2x6 CAP AROUND ENTIRE BERM  
 3" LATERAL "WYE" FITTING (TYP. 4 PLACES)  
 3" MAIN HEADER PIPE (SCH. 40 PVC)  
 45° ELBOW (TYP. 4 PLACES)  
 1" x 3" REDUCER  
 1" PVC UNION  
 1" PVC TRU-UNION BALL VALVE (TYP.)  
 FLOW METER  
 1" SCH. 40 PVC (TYP.)  
 TANK #1  
 TANK #2  
 TANK #3  
 TANK #4  
 CLEANOUT & SOCKET CAP (TYP. 8 PLACES)  
 45° ELBOW (QTY. 2 AT 4 PLACES)  
 INSIDE  
 OUTSIDE  
 ABOVE GRADE  
 BELOW GRADE  
 ABOVE GRADE  
 BELOW GRADE  
 ABOVE GRADE  
 BELOW GRADE



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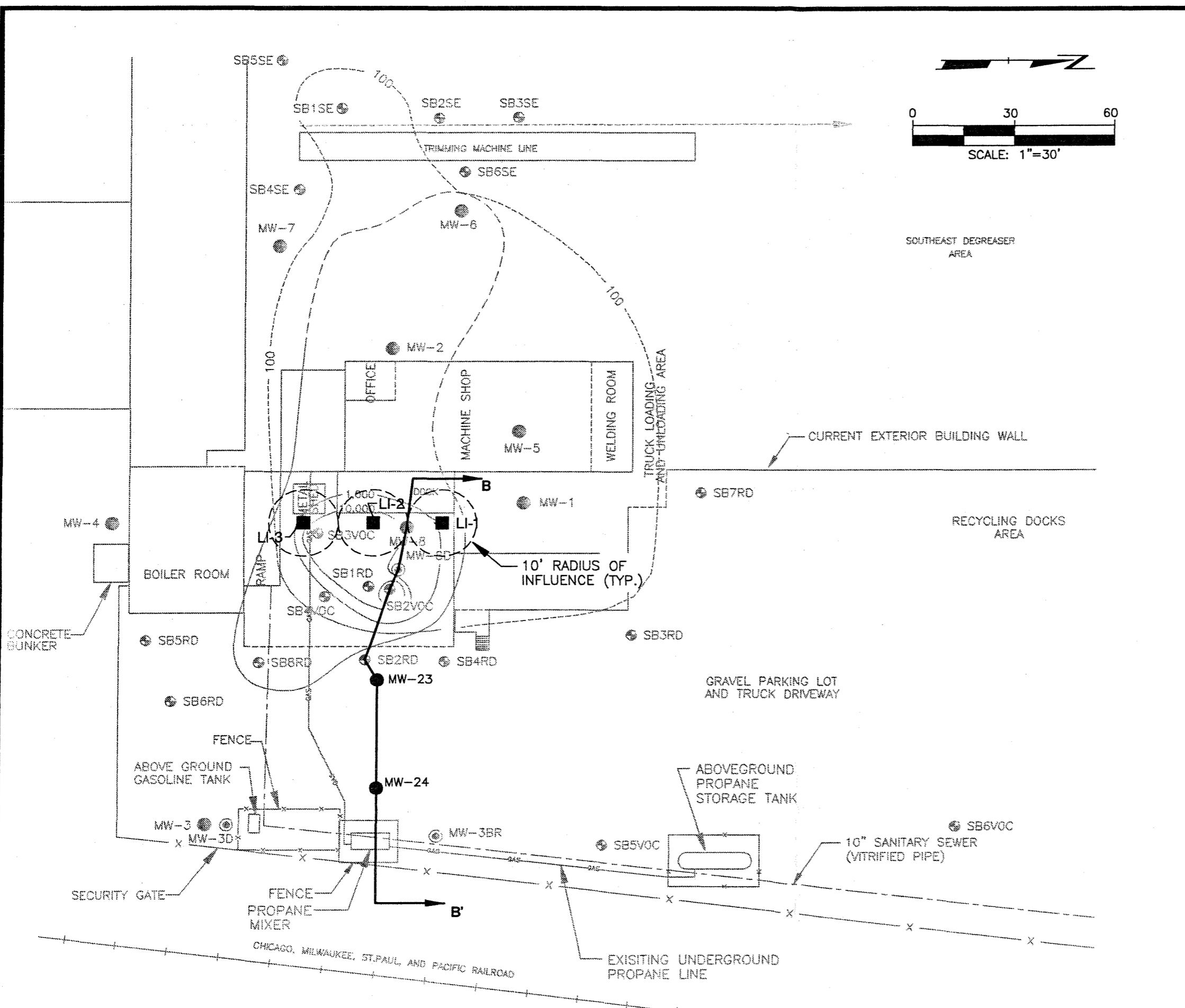


LEGEND	
NA	NOT ANALYZED
ND	NOT DETECTED
19	LABORATORY RESULTS FOR TCE IN SOIL (ug/kg)
(Hatched area)	ESTIMATED EXTENT OF PAH AND PETROLEUM-RELATED COMPOUNDS IN SOIL
(Dotted area)	ESTIMATED EXTENT OF TCE, ISOCONCENTRATION IN SOIL(ug/kg)
(Dashed line with triangle)	APPROXIMATE WATER TABLE SURFACE
3	PROPOSED TRENCH NUMBER
(Vertical line with casing)	PROPOSED WELL CASING
(Vertical line with screen)	PROPOSED WELL SCREEN INTERVAL
(Vertical line with bottom)	PROPOSED BOTTOM OF WELL

SCALE  
 HORIZ.: 1"=20'  
 VERT.: 1"=5'  
 (EXAGGERATION=4X)

PROJECT: TECUMSEH PRODUCTS COMPANY LACTATE INJECTION SYSTEM GRAFTON, WISCONSIN		
SHEET TITLE: CROSS SECTION A-A' LACTATE INFILTRATION TRENCH DETAILS WEST DOCK AREA		
DRAWN BY: SIEWERTD	SCALE: AS SHOWN	PROJ. NO. 03084.27
CHECKED BY: RLW	DATE PRINTED:	FILE NO. 30842705.DWG
APPROVED BY: SAK		SHEET 5 OF 7
DATE: FEBRUARY 2003		
		744 Heartland Trail Madison, WI 53717-1934 P.O. Box 8923 53708-8923 Phone: 608-831-4444 Fax: 608-831-3334

Plot Date: Monday, July 8, 2002  
 Plot Time: 11:11 AM  
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 Scale: 1"=30'  
 Dwg Size: 91513 Bytes  
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 Attached Images: No images attached.



**LEGEND**

- MW-3 WATER TABLE WELL
- ⊙ MW-3D PIEZOMETER
- ⊙ SB3VOC SOIL BORING (PREVIOUS INVESTIGATIONS)
- ⊙ SB2RD SOIL BORING (RECYCLING DOCKS AREA)
- ⊙ SB2SE SOIL BORING (SOUTHEAST DEGREASER AREA)
- - - DOORWAY
- - - FLOOR DRAIN
- - - 100 - - - ESTIMATED EXTENT OF TCA, ISOCONCENTRATION IN SOIL (ug/kg) (DASHED WHERE INFERRED) ALSO SEE NOTE 2
- - - ESTIMATED EXTENT OF PAH'S, HEAVY FUEL, AND PETROLEUM-RELATED COMPOUNDS IN SOIL
- - - GAS - - - EXISTING UNDERGROUND PROPANE LINE
- ↑ GEOLOGIC CROSS SECTION LOCATION
- LI-1 PROPOSED LACTATE INJECTION WELL

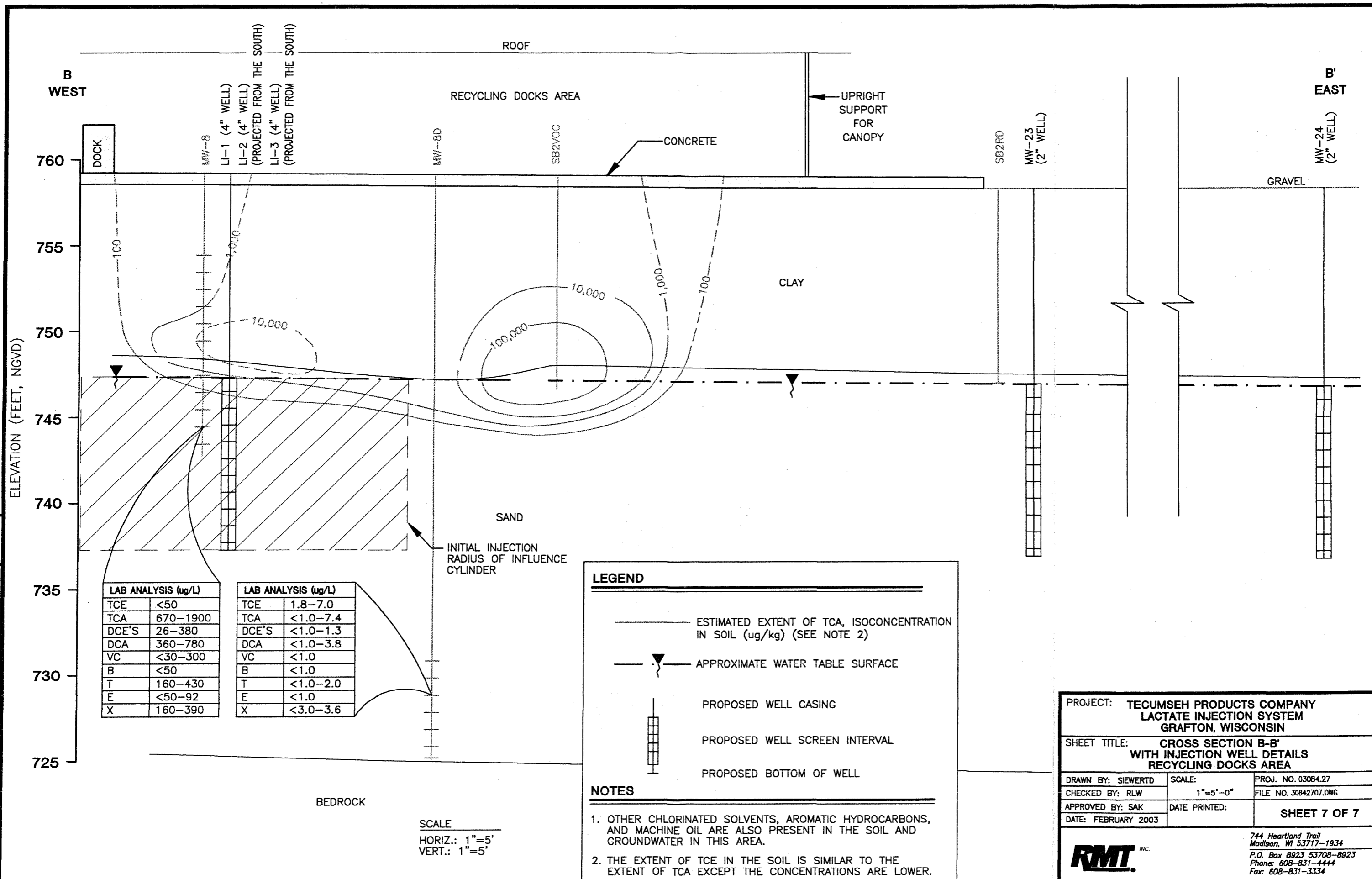
**NOTES**

1. THE EXTENT OF TCE IN THE SOIL IS SIMILAR TO THE EXTENT OF TCA EXCEPT THE CONCENTRATIONS ARE GENERALLY LOWER.

PROJECT: <b>TECUMSEH PRODUCTS COMPANY LACTATE INJECTION SYSTEMS GRAFTON, WISCONSIN</b>		
SHEET TITLE: <b>INJECTION WELL LAYOUT AND CROSS SECTION LOCATOR RECYCLING DOCKS AREA</b>		
DRAWN BY: SIEWERTD	SCALE: 1"=30'	PROJ. NO. 03084.27
CHECKED BY: RLW	DATE PRINTED:	FILE NO. 30842706.DWG
APPROVED BY: SAK		<b>SHEET 6 OF 7</b>
DATE: FEBRUARY 2003		

**RMT** INC.  
 744 Heartland Trail  
 Madison, WI 53717-1934  
 P.O. Box 8923 53708-8923  
 Phone: 608-831-4444  
 Fax: 608-831-3334

Date: July 2002  
 Drawn by: Siewert  
 Checked by: RLW  
 Approved by: SAK  
 Date: February 2003  
 Scale: 1"=5'  
 Dwg. Size: 12x18 Bytes



LAB ANALYSIS (ug/L)		LAB ANALYSIS (ug/L)	
TCE	<50	TCE	1.8-7.0
TCA	670-1900	TCA	<1.0-7.4
DCE'S	26-380	DCE'S	<1.0-1.3
DCA	360-780	DCA	<1.0-3.8
VC	<30-300	VC	<1.0
B	<50	B	<1.0
T	160-430	T	<1.0-2.0
E	<50-92	E	<1.0
X	160-390	X	<3.0-3.6

**LEGEND**

- ESTIMATED EXTENT OF TCE, ISOCONCENTRATION IN SOIL (ug/kg) (SEE NOTE 2)
- APPROXIMATE WATER TABLE SURFACE
- PROPOSED WELL CASING
- PROPOSED WELL SCREEN INTERVAL
- PROPOSED BOTTOM OF WELL

**NOTES**

1. OTHER CHLORINATED SOLVENTS, AROMATIC HYDROCARBONS, AND MACHINE OIL ARE ALSO PRESENT IN THE SOIL AND GROUNDWATER IN THIS AREA.
2. THE EXTENT OF TCE IN THE SOIL IS SIMILAR TO THE EXTENT OF TCA EXCEPT THE CONCENTRATIONS ARE LOWER.

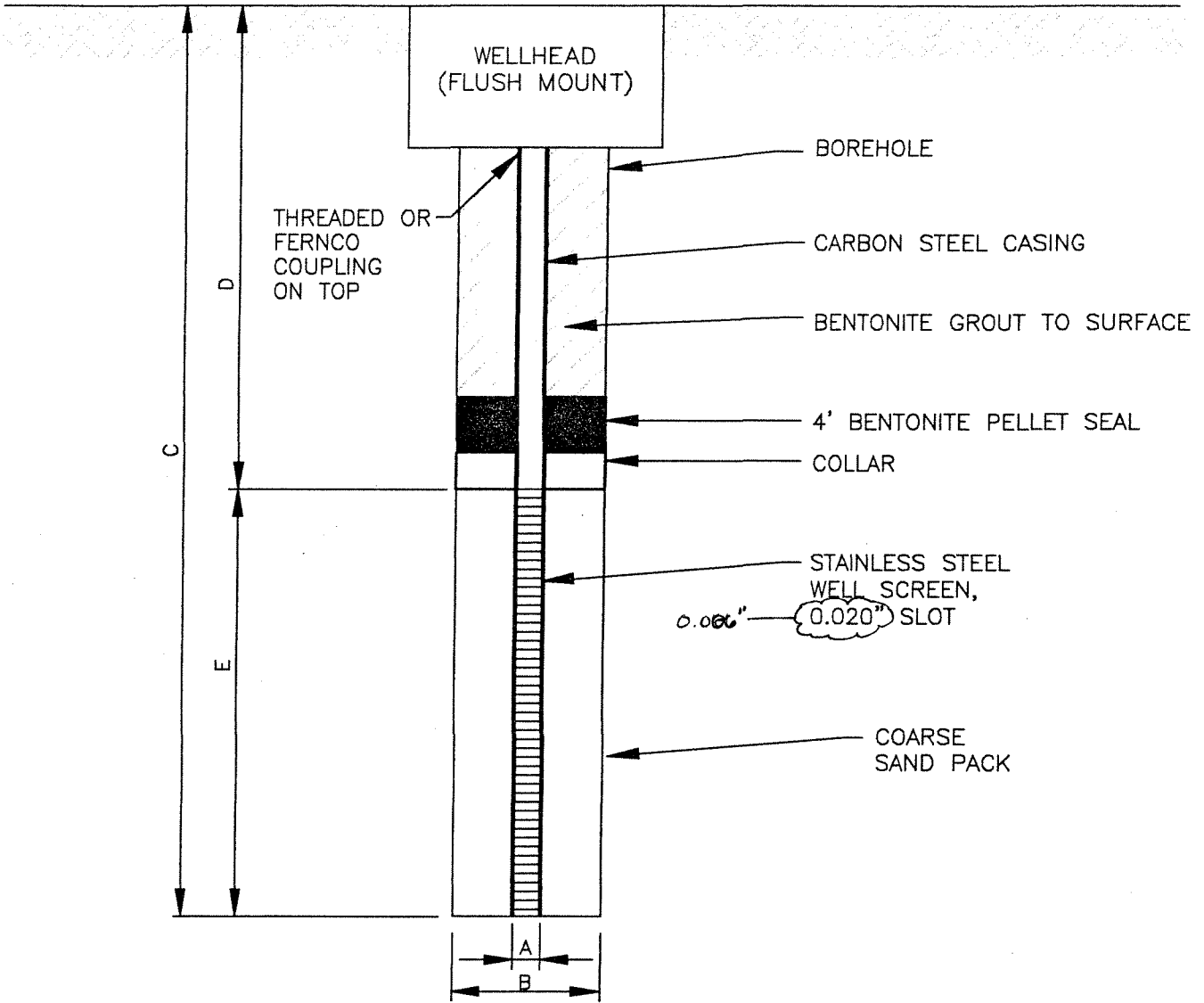
PROJECT: TECUMSEH PRODUCTS COMPANY LACTATE INJECTION SYSTEM GRAFTON, WISCONSIN		
SHEET TITLE: CROSS SECTION B-B' WITH INJECTION WELL DETAILS RECYCLING DOCKS AREA		
DRAWN BY: SIEWERTD	SCALE: 1"=5'-0"	PROJ. NO. 03084.27
CHECKED BY: RLW	DATE PRINTED:	FILE NO. 30842707.DWG
APPROVED BY: SAK	<b>SHEET 7 OF 7</b>	
DATE: FEBRUARY 2003		

**RMT** INC.  
 744 Heartland Trail  
 Madison, WI 53717-1934  
 P.O. Box 8923 53708-8923  
 Phone: 608-831-4444  
 Fax: 608-831-3334

Plot Time: 12:56.28 PM  
 Attached Xref's: No xref's attached.  
 Attached Image's: No images attached

Scale: 1"=1'  
 Dwg Size: 102445 Bytes  
 Plot Date: Friday, February 7, 2003

PLOT DATA  
 Drawing Name: J:\03084\27\30842710.dwg  
 Operator Name: siewertd



WELL NUMBER	(A) CASING DIA., IN.	(B) BOREHOLE DIA., IN.	(C) BORING DEPTH, FT.	(D) DEPTH TO SCREEN, FT.	(E) SCREEN LENGTH, FT.	DEPTH TO BEDROCK (FT.)
LI-1	④ 2	6	21.5	11	10	45
LI-2	④ 2	6	21.5	11	10	45
LI-3	④ 2	6	21.5	11	10	45

NOTES:

1. WELL DESIGN MAY BE MODIFIED BASED ON FIELD OBSERVATIONS.

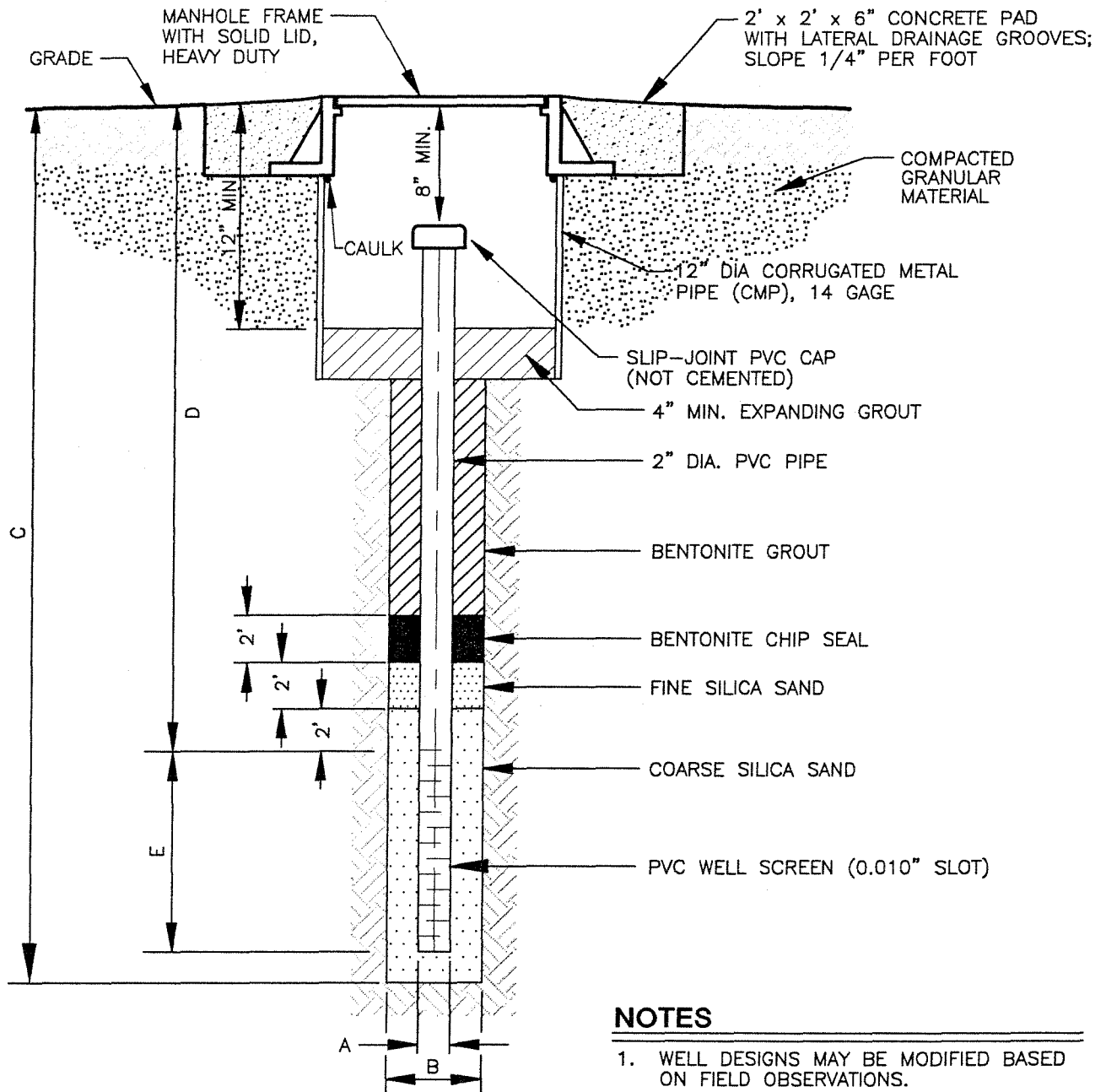


TECUMSEH PRODUCTS COMPANY  
 LACTATE INJECTION SYSTEMS  
 GRAFTON, WISCONSIN

PROPOSED DESIGN FOR  
 INJECTION WELLS LI-1, LI-2, AND LI-3  
 RECYCLING DOCKS AREA

DRAWN BY:	SIEWERTD
APPROVED BY:	BWR
PROJECT NO.	03084.27
FILE NO.	30842710.DWG
DATE:	FEBRUARY 2003

FIGURE 8



### NOTES

1. WELL DESIGNS MAY BE MODIFIED BASED ON FIELD OBSERVATIONS.

WELL NUMBER	(A) CASING DIA., IN.	(B) BOREHOLE DIA., IN.	(C) BORING DEPTH, FT.	(D) DEPTH TO SCREEN, FT.	(E) SCREEN LENGTH, FT.	DEPTH TO BEDROCK (FT.)
MW-23	2	6	20.5	10	10	45
MW-24	2	6	20.5	10	10	45
MW-25	2	6	20.5	15	5	21
MW-26	2	6	20.5	15	5	30

Scale: 1"=1'  
 Dwg Size: 168131 Bytes  
 Plot Date: Friday, February 7, 2003

Plot Time: 12:57:41 PM  
 Attached Xrefs: No xrefs attached.  
 Attached Images: No Images attached.

J:\03084\27\30842711.dwg  
 Drawing Name: siewertd

Operator Name: siewertd



TECUMSEH PRODUCTS COMPANY  
 LACTATE INJECTION SYSTEMS  
 GRAFTON, WISCONSIN

PROPOSED DESIGN FOR MONITORING WELLS  
 MW-23, MW-24, MW-25, AND MW-26  
 WEST DOCK & RECYCLING DOCK AREAS

DRAWN BY: SIEWERTD  
 APPROVED BY: BWR  
 PROJECT NO. 03084.27  
 FILE NO. 30842711.DWG  
 DATE: FEBRUARY 2003

FIGURE 9



# Appendix C Photographs

---

## West Dock Area - Outdoor Work



Photo No. 1 - Looking north, picture of the excavation of Trench 1 with a backhoe.



Photo No. 2 - Picture of soil excavated from Trench 1 and 2, stockpiled on 10-mil polyethylene.



## West Dock Area - Outdoor Work



Photo No. 3 - Looking south, picture of the broken-up asphalt, removed for the installation of Trenches 3 and 4. The soil stockpile can be seen in the background.



Photo No. 4 - Looking south, picture of Trench 1. A 10-foot segment of 4-inch-ID perforated PVC pipe has been placed, and the trench has been partially backfilled with gravel.

## West Dock Area - Outdoor Work



Photo No. 5 - Looking south, picture of the excavation of Trench 2. A 10-foot segment of perforated pipe has been placed, and the trench has been backfilled with pea gravel.



Photo No. 6 - Looking north, picture of Trench 3. A 10-foot segment of perforated pipe has been placed, and the trench has been backfilled with pea gravel.

## West Dock Area - Outdoor Work

Photo No. 7 - Looking south, picture of the excavation of Trench 4. The perforated pipe has been placed, and the trench has been partially backfilled with gravel.



Photo No. 8 - Looking north, picture of the installation of the geotextile filter on top of the gravel backfill in Trench 2.

## West Dock Area - Outdoor Work



Photo No. 9 - Looking south, picture of Trench 2 after the geotextile filter had been placed on the gravel fill.



Photo No. 10 - Looking west, picture of the 3-inch manifold piping between Trenches 3 and 4 , and the installation of the north cleanout pipe in Trench 4 (Trench 3 cleanout is visible in the foreground).

## West Dock Area - Outdoor Work



Photo No. 11 - Looking west, picture of the 3-inch manifold piping between Trenches 2 and 3. Manifold pipe was placed under a storm sewer.



Photo No. 12 - Looking west, picture of the four northern end cleanouts after the manifold piping had been placed and the trenches had been backfilled with clay soil.

## West Dock Area - Outdoor Work



Photo No. 13 - Looking east, picture of heavy-duty flush mount on the southern end cleanout for Trench 1. The trench has been filled to grade.

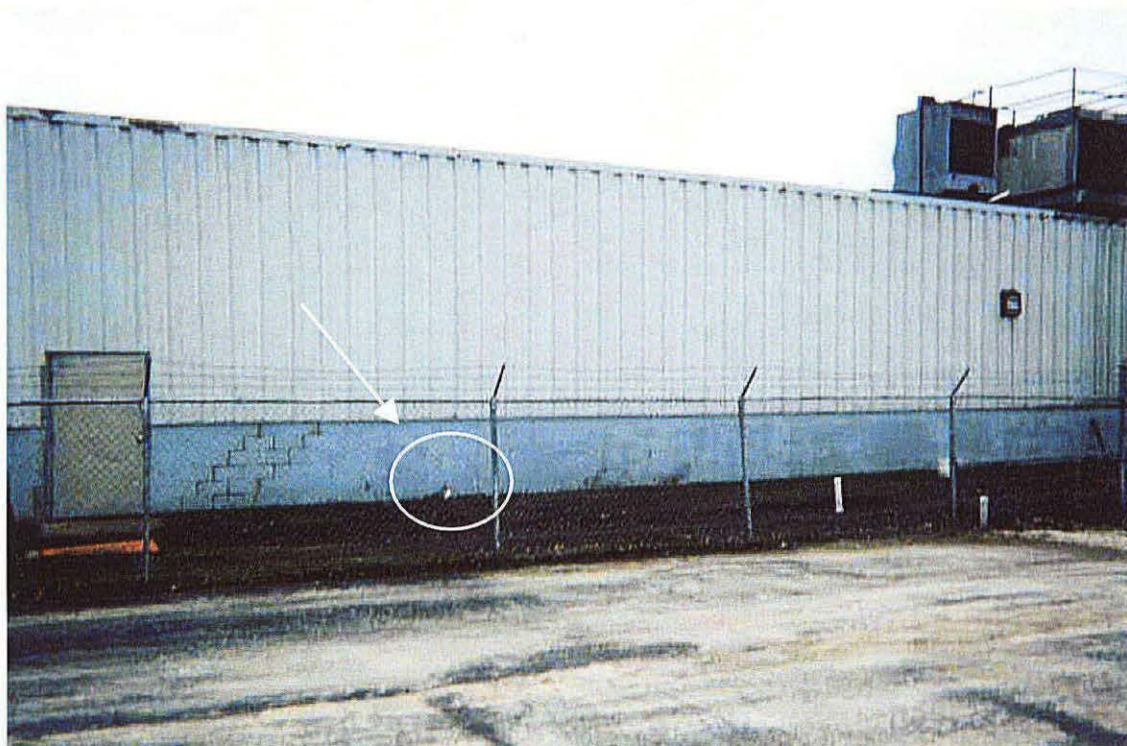


Photo No. 14 - Looking southeast, picture of site following restoration, and the manifold pipe constructed to the surface and capped. Manifold pipe is in the location where it will be connected with the indoor plumbing from the storage tanks.

## West Dock Area - Outdoor Work



Photo No. 15 - Looking north, picture of the repaired sanitary sewer PVC pipe that had been damaged during the excavation of Trench 1.



Photo No. 16 - Looking north, picture of insulation that was placed over the repaired sanitary sewer before backfilling Trench 1 with clay.

## West Dock Area – Indoor Work

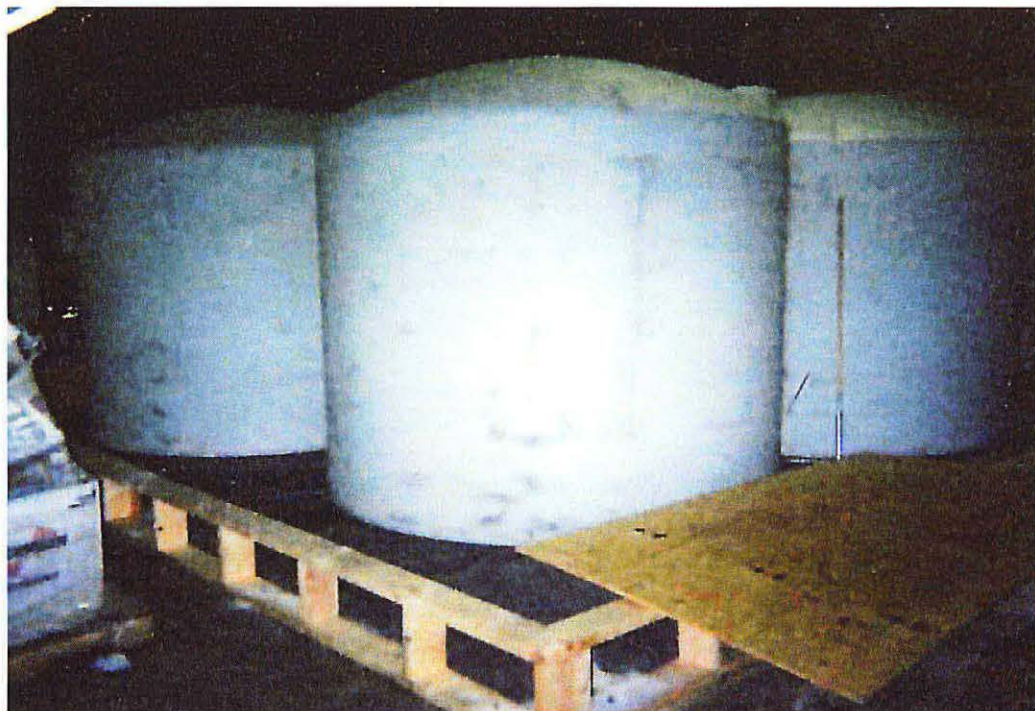


Photo No. 17 - Looking southwest, picture of spill containment wall construction surrounding the four 2,500-gallon storage tanks. The 20-mil polyethylene liner is visible on the floor.



Photo No. 18 - Looking west, picture of the completed spill containment wall and 20-mil liner as viewed from between the tanks.



## West Dock Area – Indoor Work



Photo No. 19 - Looking southwest, picture of the four storage tanks after the access platform and ladder construction was completed.

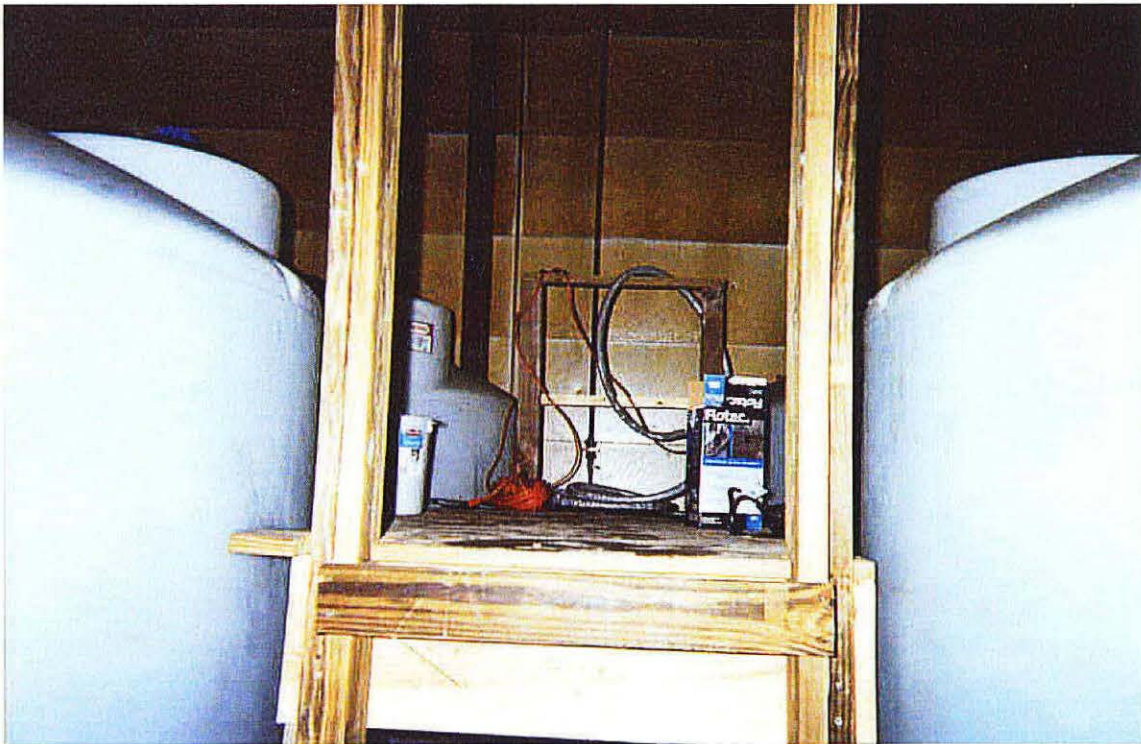


Photo No. 20 - Looking west, picture of the access platform and ladder taken from ground level.

## West Dock Area – Indoor Work

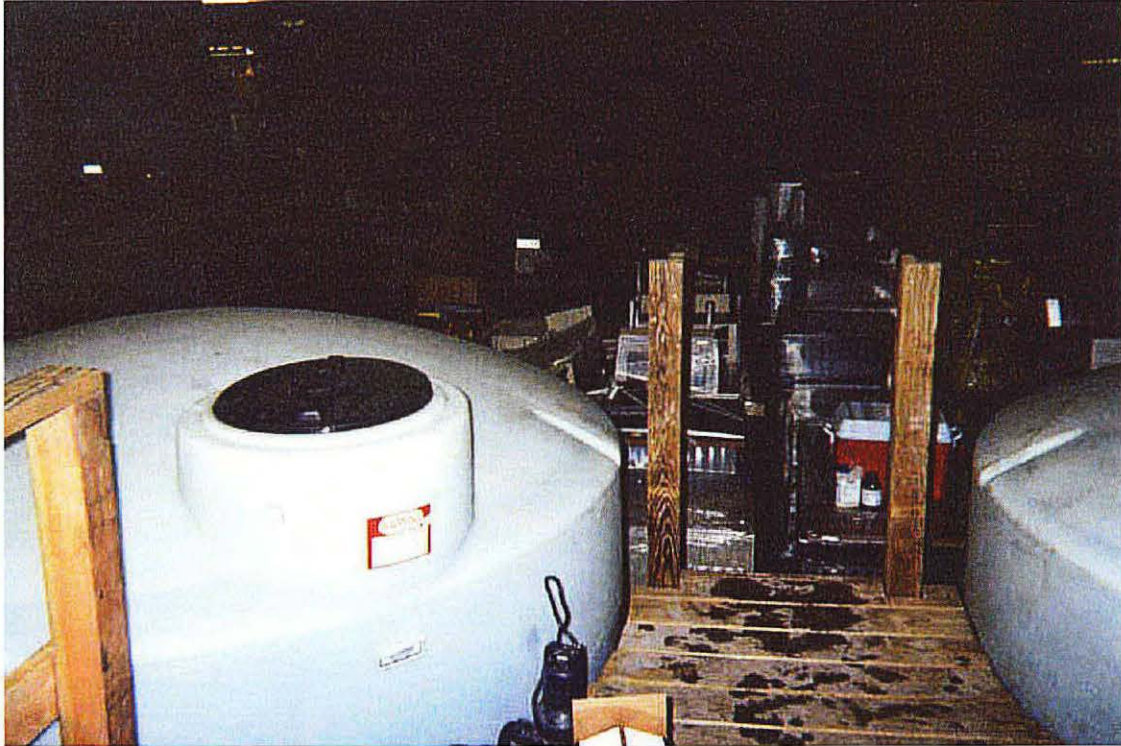


Photo No. 21 - Looking east, picture of the access platform and ladder taken from on top of the platform. The construction of the platform to fit the curvature of the tanks can be seen in the foreground.



Photo No. 22 - Looking northwest, picture of the plumbing connecting Tank 1 to the manifold piping feeding the infiltration trenches, taken from between the tanks.

## West Dock Area – Indoor Work

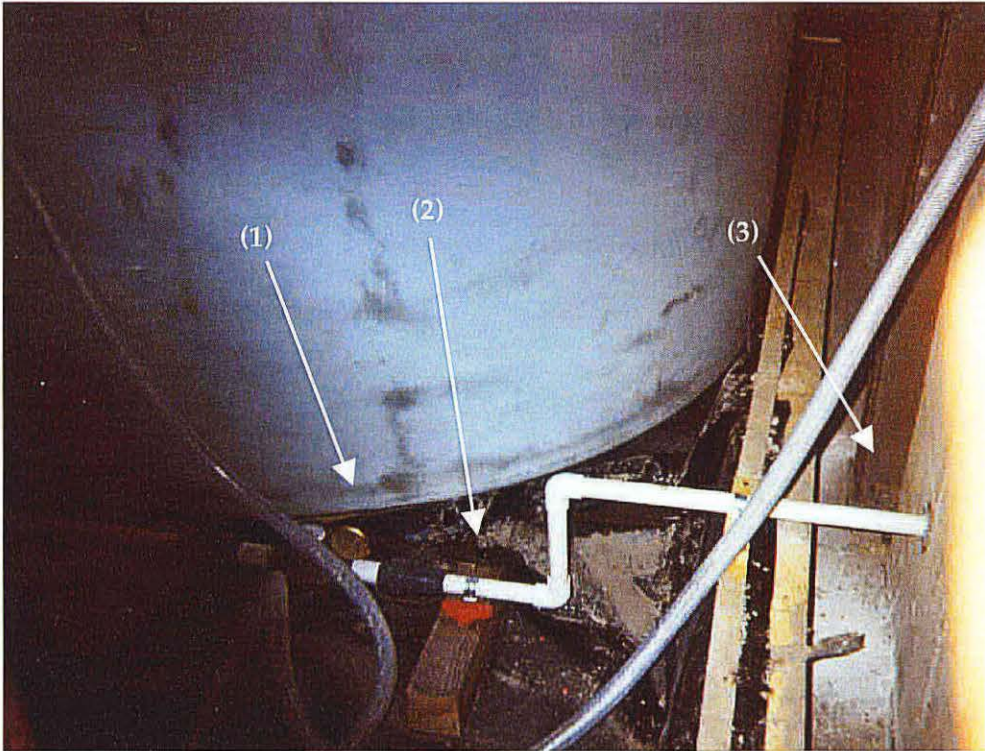


Photo No. 23 - Looking south, picture of the flow meter (1) control valve, (2) and wall junction (3) connecting the indoor and outdoor piping.

## Recycling Dock Area - Construction

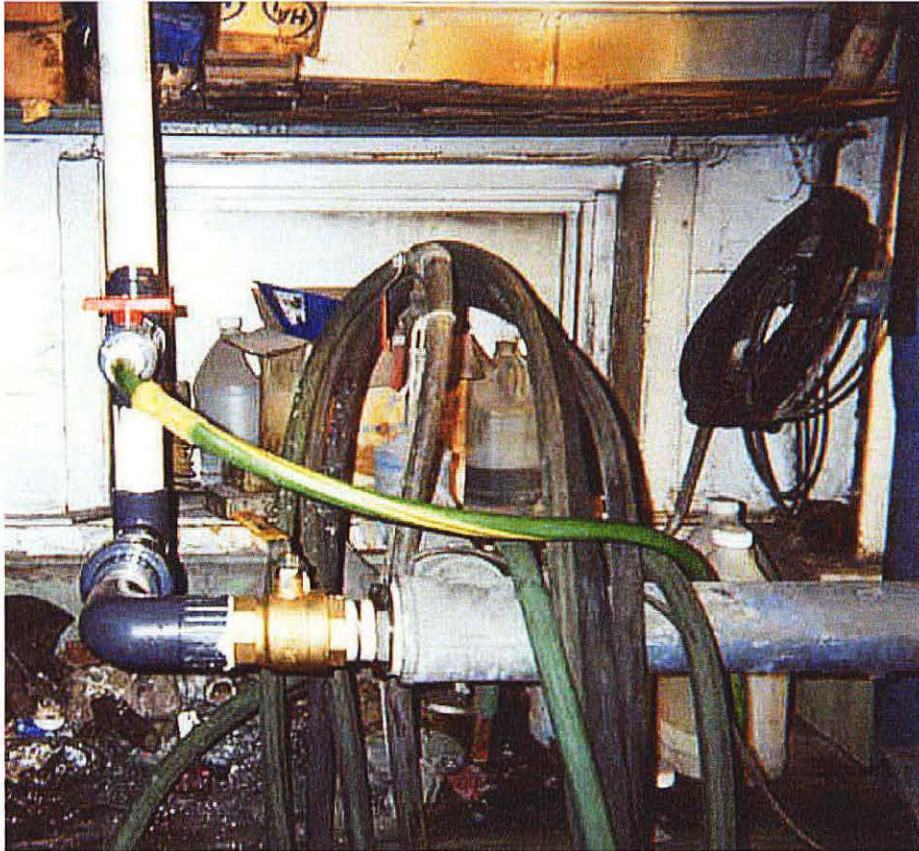


Photo No. 24 - Looking east, picture taken inside the Tecumseh facility's boiler room, which shows the connection of the lactate injection system to Tecumseh's pressurized water line (connection and indoor piping constructed by Tecumseh).



Photo No. 25 - Looking northeast, picture taken inside the Tecumseh facility's boiler room, which shows the plumbing between the pressurized water supply to the location where the 2-inch-I.D. piping exits the building along the southern end of the Recycling Dock Area.

## Recycling Dock Area - Construction



Photo No. 26 - Looking west, picture of the location where the water supply plumbing exits the Tecumseh facility and is brought to an accessible location in the Recycling Dock Area.



Photo No. 27 - Looking west, picture showing a close-up of the control valve constructed at the junction between the water supply plumbing and the lactate injection system.

## Recycling Dock Area – Temporary Lactate Injection Set-Up



Photo No. 28 - Looking north, picture of the 1-inch-I.D. piping and the water supply flow meter.



Photo No. 29 - Looking south, picture of the chemical supply system. The drum containing lactate (blue) and the drum containing the remaining reducing agents (white) are shown with the chemical metering pumps (located on top of the blue drum).

## Recycling Dock Area – Temporary Lactate Injection Set-Up



Photo No. 30 - Looking south, picture of the three flow meters that control the lactate injection flow rate to the three injection wells. Notice the variation in the valve opening. This variation was required in order to maintain similar flow rates to the three wells.



Photo No. 31 - Looking south, picture of the three flow meters. The flow meters form the junction between the 1-inch-I.D. PVC pipe and the 1-inch flexible hoses that feed each injection well.

## Recycling Dock Area – Temporary Lactate Injection Set-Up



Photo No. 32 - Looking south, picture of the flexible hose that forms the connection between the chemical flow meters and the lactate injection wells. Orange cones are provided for safety.



Photo No. 33 - Looking west, picture of the injection well, flexible hose, and pressure gauge (provided to record back pressure in the well).



## Recycling Dock Area – Temporary Lactate Injection Set-Up

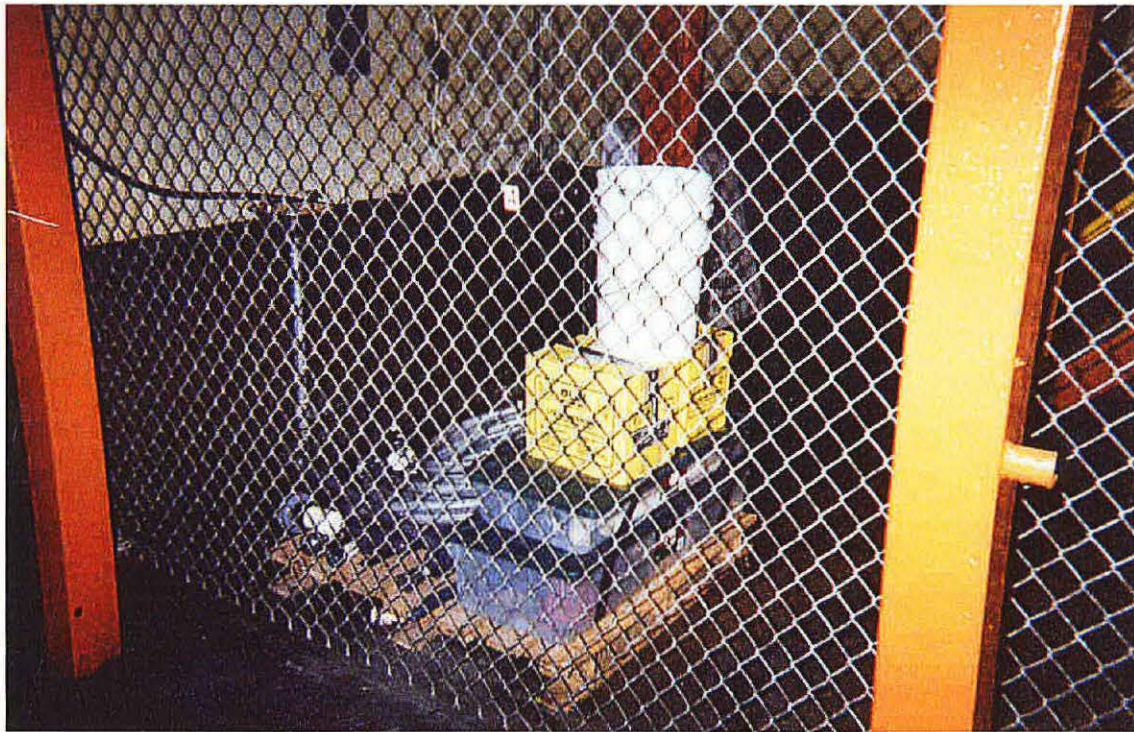


Photo No. 34 - Inside the Tecumseh facility, picture of the temporary plumbing components and chemicals securely stored between injection events.



# Appendix D

## Boring Logs

---

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>		License/Permit/Monitoring Number		Boring Number <b>MW-23</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Boart Longyear</b>			Date Drilling Started <b>10/30/2002</b>	Date Drilling Completed <b>10/30/2002</b>	Drilling Method <b>4 1/4" HSA</b>
WI Unique Well No.	DNR Well ID No.	Common Well Name <b>MW-23</b>	Final Static Water Level <b>Feet MSL</b>	Surface Elevation <b>759.4 Feet MSL</b>	Borehole Diameter <b>8.3 inches</b>
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location		
State Plane <b>N, E S/C/N</b>			Lat _____ " _____ "		
1/4 of _____ 1/4 of Section _____, T _____ N, R _____			Long _____ " _____ " Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W		
Facility ID		County <b>Ozaukee</b>	County Code <b>46</b>	Civil Town/City/ or Village <b>Grafton</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			1	<b>SANDY GRAVEL FILL, 65% fine to medium gravel, 30% sand, 5% fines.</b>											
1	24 8	12 10 10 11	2 3 4					0							
2	24 18	10 10 12 23	5 6	<b>LEAN CLAY (CL), 90% fines, 5% sand, 5% gravel, plastic, reddish brown, no odor, moist, mottled, fractured.</b>				4.5							
3	24 20	10 10 11 10	7 8	Same as above, more massive.	CL			4.5							
4	24 19	10 12 14 16	9 10 11	Same as above, with <3mm laminations.				4.5							
			12	<b>SILTY SAND (SM), 80% fine to</b>	SM										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *R M C* Firm **RMT, Inc.** Tel: 608.831.4444  
744 Heartland Trail Madison, WI 53717 Fax: 608.831.3334

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

WDNR\_SBL\_98 03084W.GPJ WI\_DNR98.GDT 2/6/03

112

Boring Number **MW-23**

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Page 2 of 2

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
5 SS	24	10	10	medium sand, 20% fines, nonplastic, grayish brown, no odor, moist.				9.6						
	18	14	13											Same as above.
		14	14											
		15	15											
6 SS	24	4	15	Same as above.	SM									
	16	6	16											
		10	16											
		11	17											
7 SS	24	2	18	Same as above.										
	22	3	18											
		3	19											
		4	20											
			21	End of boring at 21 feet.										

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>			License/Permit/Monitoring Number		Boring Number <b>MW-24</b>		
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Boart Longyear</b>			Date Drilling Started <b>10/31/2002</b>		Date Drilling Completed <b>10/31/2002</b>		
WI Unique Well No.			DNR Well ID No.		Common Well Name <b>MW-24</b>		
Final Static Water Level <b>Feet MSL</b>			Surface Elevation <b>759.0 Feet MSL</b>		Borehole Diameter <b>8.3 inches</b>		
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			State-Plane <b>N, E S/C/N</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section <b>T N, R</b>			Long		Feet		
Facility ID		County <b>Ozaukee</b>		County Code <b>46</b>		Civil Town/City/ or Village <b>Grafton</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			1	<b>GRAVEL FILL (Parking lot base)</b>											
1	SS 24 10	5 10 12 10	3	<b>LEAN CLAY (CL), 90% fines, 10% fine sand, trace gravel, plastic, reddish brown, no odor, moist, mottled, fractured. (Till)</b>											
2	SS 24 14	10 12 13 13	5	Same as above.											
3	SS 24 18	11 13 11 10	8	Same as above, more massive.	CL										
4	SS 24 16	13 14 17 20	10	Same as above.											
			11	<b>SILTY SAND (SM), 80% fine to medium sand, 20% fines, nonplastic, gray,</b>	SM										




I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *R. M. Ch* Firm **RMT, Inc.** Tel: 608.831.4444  
744 Heartland Trail Madison, WI 53717 Fax: 608.831.3334

WDNR\_SBL\_98 03084W/GPJ WI DNR98.GDT 2/3/03

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Boring Number **MW-24** Use only as an attachment to Form 4400-122. Page **2** of **2**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
5 SS	24	3	12	slight septic odor, wet.										
	20	5	13											
		4	14											
6 SS	24	7	15	Same as above.	SM									
	20	10	16											
		11	17											
		11	18											
7 SS	24	3	18	Same as above.										
	18	5	19											
		5	20											
		4	20.5											
<b>End of boring at 20.5 feet.</b>														

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>		License/Permit/Monitoring Number		Boring Number <b>MW-25</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Boart Longyear</b>			Date Drilling Started <b>10/31/2002</b>	Date Drilling Completed <b>10/31/2002</b>	Drilling Method <b>4 1/4" HSA</b>
WI Unique Well No.	DNR Well ID No. <b>MW-25</b>	Common Well Name	Final Static Water Level <b>Feet MSL</b>	Surface Elevation <b>763.4 Feet MSL</b>	Borehole Diameter <b>8.3 inches</b>
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location		
State Plane <b>N, E S/C/N</b>			Lat <b>° ' "</b>		
1/4 of <b>T N, R</b>			Long <b>° ' "</b>		
Facility ID		County <b>Ozaukee</b>	County Code <b>46</b>	Civil Town/City/ or Village <b>Grafton</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
<b>Blind drilled to 5 feet.</b>														
1 SS	24 12	6 10 10 8	5 6	<b>LEAN CLAY (CL), 90% fines, 10% fine to medium sand, plastic, reddish brown, no odor, moist, very stiff.</b>				4.5						
2 SS	24 12	10 13 14 17	8	Same as above, but gray.	CL			9.6						
3 SS	24 15	17 22 28 34	10 11	Same as above, but hard.				37						

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm **RMT, Inc.** 744 Heartland Trail Madison, WI 53717  
Tel: 608.831.4444 Fax: 608.831.3334

WDNR\_SBL\_98 03084W/GPJ\_WI\_DNR98.GDT 2/03/03

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Boring Number **MW-25** Use only as an attachment to Form 4400-122.

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
4 SS	24 0	16 30 33 34	13	[No recovery]											
5 SS	24 16	10 11 10 9	15 16		CL			9.6							
6 SS	24 1	6 7 10 7	18 19	Same as above.				4.5							
7 SS	24 21	3 4 6 5	20 21	Same as above, 2" clay at tip of spoon, 1" coarse sand/fine gravel above the clay.	SM			4.5							
8 SS	24 24	4 6 6 6	23 24	Same as at 17.5 feet, with 4" clay at tip of spoon.				<1							
9 SS	24 14	20 24 28 30	25 26	SILTY CLAY (CL-ML), 95% fines, 5% very fine sand, medium plasticity, gray, wet.	CL-ML			<1							
				End of boring at 27 feet.											

WDNR\_SBL\_98 03084W.GPJ WJ\_DNR98.GDT 2/3/03

6

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>		License/Permit/Monitoring Number		Boring Number <b>MW-26</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Boart Longyear</b>			Date Drilling Started <b>10/31/2002</b>	Date Drilling Completed <b>10/31/2002</b>	Drilling Method <b>4 1/4" HSA</b>
WI Unique Well No.	DNR Well ID No.	Common Well Name <b>MW-26</b>	Final Static Water Level <b>Feet MSL</b>	Surface Elevation <b>763.4 Feet MSL</b>	Borehole Diameter <b>8.3 inches</b>
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location		
State-Plane <b>N, E S./C/N</b>			Lat <b>° ' "</b>	<input type="checkbox"/> N <input type="checkbox"/> E	
1/4 of <b>T</b> 1/4 of Section <b>N, R</b>			Long <b>° ' "</b>	Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
Facility ID		County <b>Ozaukee</b>	County Code <b>46</b>	Civil Town/City/ or Village <b>Grafton</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1	<b>Blind drilled to 12.5 feet.</b>										
			2											
			3											
			4											
			5											
			6											
			7											
			8											
			9											
			10											
			11											
			12											
1 SS	24 8	7 9 16 21	13		<b>SILTY CLAY WITH SAND (CL-ML), 80% fines, 15% sand, 5% gravel, medium plasticity, gray, no odor, wet, soft to</b>	CL-ML								
			14											

WDNR\_SBL\_98 03064W/GPJ\_WI\_DNR98.GDT 2/3/03

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm **RMT, Inc.** 744 Heartland Trail Madison, WI 53717  
Tel: 608.831.4444 Fax: 608.831.3334


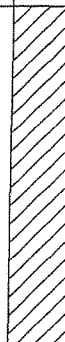


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Boring Number **MW-26** Use only as an attachment to Form 4400-122. Page **2** of **2**


Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			15	medium stiff.										
2 SS	24 20	14 12 17 23	15 16	Same as above, but less sand, slightly more silt, wet, stiff to very stiff.	CL-ML									
3 SS	24 18	3 3 3 4	18 19	Same as above, more sand (20-25%), wet. <b>SILTY SAND (SM)</b> , 70% sand, 30% fines, trace gravel, low plasticity, gray, no odor, wet, loose to medium dense.										
4 SS	24 18	4 5 5 6	20 21	Same as above, small clay chunks at bottom of sample.	SM									
5 SS	24 15	4 6 11 15	23 24	Same as above, little coarse sand and gravel, 2" clay in spoon tip.										
				<b>End of boring at 24.5 feet.</b>									Driller noted harder drilling at 22.5'.	

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>		License/Permit/Monitoring Number		Boring Number <b>LI-1</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Boart Longyear</b>			Date Drilling Started <b>10/30/2002</b>	Date Drilling Completed <b>10/30/2002</b>	Drilling Method <b>6 1/4" HSA</b>
WI Unique Well No.	DNR Well ID No.	Common Well Name <b>LI-1</b>	Final Static Water Level <b>Feet MSL</b>	Surface Elevation <b>Feet MSL</b>	Borehole Diameter <b>10.3 inches</b>
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location		
State Plane <b>N, E S/C/N</b>			Lat <b>° ' "</b>	<input type="checkbox"/> N <input type="checkbox"/> E	
1/4 of <b>T N, R</b>			Long <b>° ' "</b>	Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
Facility ID		County <b>Ozaukee</b>	County Code <b>46</b>	Civil Town/City/ or Village <b>Grafton</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
				<b>CONCRETE</b>											
				<b>LEAN CLAY (CL), 90% fines, 5% sand, 5% gravel, plastic, reddish brown, septic odor, moist, mottled, fractured. (Till)</b>											
1 SS	24 12	10 12 18 22	10 12 18 22					13.6							
2 SS	24 18	12 17 17 21	5 6	Same as above, but less fractures, more massive.	CL			27							
3 SS	24 14	12 12 12 15	8 9	Same as above, with tarry substance at shoe.				109							
4 SS	24 16	12 13 15 15	10 11	Same as above, not tar, very fractured, <3mm laminations.				118							
			12	<b>SILTY SAND (SM), 80% fine to</b>	SM										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **RMT, Inc.**  
744 Heartland Trail Madison, WI 53717  
Tel: 608.831.4444 Fax: 608.831.3334

WDNR\_SBL\_98 03084W.GPJ WI DNR98.GDT 2/3/03

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **LI-1** Use only as an attachment to Form 4400-122.

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
5 SS	24 18	10	10	medium sand, 20% fines, nonplastic, gray, septic odor, moist. Same as above, wet.	SM			27						
		15	13											
		15	14											
		15	15											
		17	17											
6 SS	24 0	7	15	[No recovery, pushed rock]	SM									
		7	16											
		6	17											
7 SS	24 6	2	18	Same as above.	SM			4.5						
		3	19											
		4	20											
		4	21											
8 SS	24		20	Same as above.	SM			4.5						
			21											
			22	End of boring at 22.5 feet.										

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name Tecumseh Products		License/Permit/Monitoring Number		Boring Number LI-2	
Boring Drilled By: Name of crew chief (first, last) and Firm Boart Longyear			Date Drilling Started 11/1/2002	Date Drilling Completed 11/1/2002	Drilling Method 6 1/4" HSA
WI Unique Well No.	DNR Well ID No.	Common Well Name LI-2	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 10.3 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location		
State Plane 1/4 of _____ 1/4 of Section _____, T _____ N, R _____			Lat _____ ° _____ ' _____ " _____ N _____ E _____ S _____ W		
Facility ID		County Ozaukee	County Code 46	Civil Town/City/ or Village Grafton	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			2 4 6 8 10 12 14 16 18 20 22	Blind drilled to 22.5 feet. See boring log LI-1 for soil description.											
				End of boring at 22.5 feet.											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *R. M. Ch...* Firm RMT, Inc.  
744 Heartland Trail Madison, WI 53717  
Tel: 608.831.4444 Fax: 608.831.3334

WDNR\_SBL\_98 03084W/GPJ WI\_DNR98.GDT 2/3/03

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.


Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>			License/Permit/Monitoring Number		Boring Number <b>LI-3</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Boart Longyear</b>			Date Drilling Started <b>11/1/2002</b>		Date Drilling Completed <b>11/1/2002</b>	
Drilling Method <b>6 1/4" HSA</b>			Final Static Water Level <b>Feet MSL</b>		Surface Elevation <b>Feet MSL</b>	
WI Unique Well No.	DNR Well ID No.	Common Well Name <b>LI-3</b>	Final Static Water Level <b>Feet MSL</b>		Surface Elevation <b>Feet MSL</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>			Local Grid Location			
State Plane <b>N, E S/C/N</b>			Lat <b>° ' "</b>		<input type="checkbox"/> N <input type="checkbox"/> E	
1/4 of <b>T</b> 1/4 of Section <b>N, R</b>			Long <b>° ' "</b>		<input type="checkbox"/> S <input type="checkbox"/> W	

Facility ID	County <b>Ozaukee</b>	County Code <b>46</b>	Civil Town/City/ or Village <b>Grafton</b>
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
			2 4 6 8 10 12 14 16 18 20 22	Blind drilled to 22.5 feet. See boring log LI-1 for soil description.											
				End of boring at 22.5 feet.											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm <b>RMT, Inc.</b> 744 Heartland Trail Madison, WI 53717	Tel: 608.831.4444 Fax: 608.831.3334
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

12/12

WDNR SRIL 98 03084W.GPJ WI\_DNR98.GDT 2/3/03





# Appendix E

## Well Construction Diagrams

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Route To: Watershed/Wastewater  Remediation/Redevelopment  Waste Management  Other

Facility/Project Name Tecumseh Products		Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.		Well Name MW-23	
Facility License, Permit or Monitoring No.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/>		Wis. Unique Well No. _____ DNR Well Number _____	
Facility ID		St. Plane _____ ft. N, _____ ft. E. S/C/N		Date Well Installed 10/30/2002	
Type of Well Well Code 11/mw		Section Location of Waste/Source _____ 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W		Well Installed By: (Person's Name and Firm) Shawn	
Distance from Waste/Source ft. _____		Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known		Gov. Lot Number _____	
Enf. Stds. Apply <input type="checkbox"/>				Boart Longyear	

A. Protective pipe, top elevation _____ ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation _____ 758.80 ft. MSL	2. Protective cover pipe: a. Inside diameter: _____ 9.0 in. b. Length: _____ 1.0 ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation _____ 759.4 ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
D. Surface seal, bottom _____ 758.4 ft. MSL or _____ 1.0 ft.	3. Surface seal: Bentonite <input type="checkbox"/> 30 Concrete <input checked="" type="checkbox"/> 01 Other <input type="checkbox"/>
<div style="border: 1px solid black; padding: 5px;"> <p>12. USCS classification of soil near screen:                  GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>                  SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>                  Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____</p> <p>17. Source of water (attach analysis, if required): _____</p> </div>	
E. Bentonite seal, top _____ 758.4 ft. MSL or _____ 1.0 ft.	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Other <input type="checkbox"/>
F. Fine sand, top _____ 751.9 ft. MSL or _____ 7.5 ft.	5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. _____ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft <sup>3</sup> volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08
G. Filter pack, top _____ 750.9 ft. MSL or _____ 8.5 ft.	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
H. Screen joint, top _____ 749.4 ft. MSL or _____ 10.0 ft.	7. Fine sand material: Manufacturer, product name & mesh size a. _____ #45 Badger b. Volume added _____ ft <sup>3</sup>
I. Well bottom _____ 739.4 ft. MSL or _____ 20.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size a. _____ #30 US Filter b. Volume added _____ ft <sup>3</sup>
J. Filter pack, bottom _____ 738.4 ft. MSL or _____ 21.0 ft.	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
K. Borehole, bottom _____ 738.4 ft. MSL or _____ 21.0 ft.	10. Screen material: Schedule 40 PVC a. Screen Type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
L. Borehole, diameter _____ 8.3 in.	b. Manufacturer _____ US Filter
M. O.D. well casing _____ 2.38 in.	c. Slot size: _____ 0.010 in. d. Slotted length: _____ 10.0 ft.
N. I.D. well casing _____ 2.08 in.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature R.M.O. Firm RMT, Inc. 744 Heartland Trail Madison, WI 53717 Tel: 608.831.4444 Fax: 608.831.3334

Route To: Watershed/Wastewater  Remediation/Redevelopment  Waste Management  Other

Facility/Project Name Tecumseh Products	Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name MW-24
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/> Lat. _____ " Long. _____ " or	Wis. Unique Well No. _____ DNR Well Number _____
Facility ID	St. Plane _____ ft. N, _____ ft. E. S / C / N	Date Well Installed 10/31/2002
Type of Well Well Code 11/mw	Section Location of Waste/Source _____ 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: (Person's Name and Firm) Shawn Boart Longyear
Distance from Waste/Source ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number _____

A. Protective pipe, top elevation \_\_\_\_\_ ft. MSL  
 B. Well casing, top elevation 758.50 ft. MSL  
 C. Land surface elevation 759.0 ft. MSL  
 D. Surface seal, bottom 758.0 ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

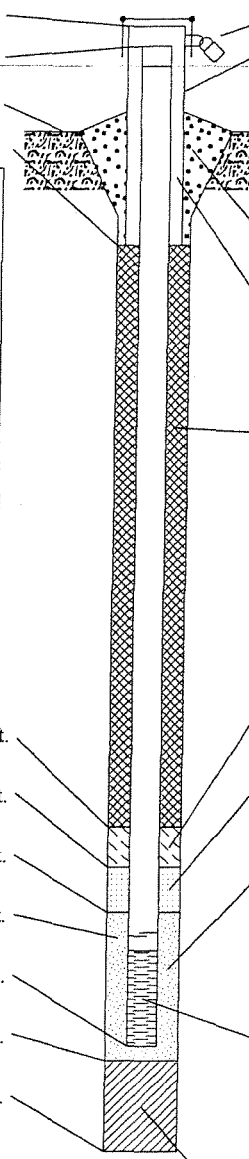
13. Sieve analysis attached?  Yes  No

14. Drilling method used: Rotary  5 0  
 Hollow Stem Auger  4 1  
 Other

15. Drilling fluid used: Water  0 2 Air  0 1  
 Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No  
 Describe \_\_\_\_\_

17. Source of water (attach analysis, if required):  
 \_\_\_\_\_



1. Cap and lock?  Yes  No

2. Protective cover pipe:  
 a. Inside diameter: \_\_\_\_\_ in.  
 b. Length: 1.5 ft.  
 c. Material: Steel  0 4  
 Other

d. Additional protection?  Yes  No  
 If yes, describe: \_\_\_\_\_

3. Surface seal:  
 Bentonite  3 0  
 Concrete  0 1  
 Other

4. Material between well casing and protective pipe:  
 Bentonite  3 0  
 Other

5. Annular space seal:  
 a. Granular/Chipped Bentonite  3 3  
 b. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite-sand slurry  3 5  
 c. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite slurry  3 1  
 d. \_\_\_\_\_ % Bentonite . . . Bentonite-cement grout  5 0  
 e. \_\_\_\_\_ Ft<sup>3</sup> volume added for any of the above  
 f. How installed: Tremie  0 1  
 Tremie pumped  0 2  
 Gravity  0 8

6. Bentonite seal:  
 a. Bentonite granules  3 3  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  3 2  
 c. \_\_\_\_\_ Other

7. Fine sand material: Manufacturer, product name & mesh size  
 a. #45 Badger  
 b. Volume added \_\_\_\_\_ ft<sup>3</sup>

8. Filter pack material: Manufacturer, product name & mesh size  
 a. #30 US Filter  
 b. Volume added \_\_\_\_\_ ft<sup>3</sup>

9. Well casing: Flush threaded PVC schedule 40  2 3  
 Flush threaded PVC schedule 80  2 4  
 Other

10. Screen material: Schedule 40 PVC  
 a. Screen Type: Factory cut  1 1  
 Continuous slot  0 1  
 Other   
 b. Manufacturer US Filter  
 c. Slot size: 0.010 in.  
 d. Slotted length: 10.0 ft.

11. Backfill material (below filter pack): None  1 4  
 Other

E. Bentonite seal, top 758.0 ft. MSL or 1.0 ft.  
 F. Fine sand, top 752.0 ft. MSL or 7.0 ft.  
 G. Filter pack, top 751.0 ft. MSL or 8.0 ft.  
 H. Screen joint, top 749.5 ft. MSL or 9.5 ft.  
 I. Well bottom 739.5 ft. MSL or 19.5 ft.  
 J. Filter pack, bottom 738.5 ft. MSL or 20.5 ft.  
 K. Borehole, bottom 738.5 ft. MSL or 20.5 ft.  
 L. Borehole, diameter 8.3 in.  
 M. O.D. well casing 2.38 in.  
 N. I.D. well casing 2.08 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature [Signature] Firm RMT, Inc. Tel: 608.831.4444  
 744 Heartland Trail Madison, WI 53717 Fax: 608.831.3334

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater  Remediation/Redevelopment  Waste Management  Other

Facility/Project Name Tecumseh Products		Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.		Well Name MW-25	
Facility License, Permit or Monitoring No.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/>		Wis. Unique Well No. DNR Well Number	
Facility ID		St. Plane _____ ft. N. _____ ft. E. S/C/N		Date Well Installed 10/31/2002	
Type of Well Well Code 11/mw		Section Location of Waste/Source _____/4 of ____/4 of Sec. ____ T. ____ N, R. ____ <input type="checkbox"/> E <input type="checkbox"/> W		Well Installed By: (Person's Name and Firm) Shawn	
Distance from Waste/Source ft.		Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known		Gov. Lot Number	
Enf. Stds. Apply <input type="checkbox"/>				Boart Longyear	

A. Protective pipe, top elevation _____ ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation 762.89 ft. MSL	2. Protective cover pipe: _____ 9.0 in.
C. Land surface elevation 763.4 ft. MSL	a. Inside diameter: _____ 1.0 ft.
D. Surface seal, bottom 762.4 ft. MSL or 1.0 ft.	b. Length: _____
	c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	3. Surface seal: Bentonite <input type="checkbox"/> 30 Concrete <input checked="" type="checkbox"/> 01 Other <input type="checkbox"/>
13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Other <input type="checkbox"/>
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight . . . Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite . . . Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft <sup>3</sup> volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____	7. Fine sand material: Manufacturer, product name & mesh size a. _____ #45 Badger b. Volume added _____ ft <sup>3</sup>
17. Source of water (attach analysis, if required): _____	8. Filter pack material: Manufacturer, product name & mesh size a. _____ #30 US Filter b. Volume added _____ ft <sup>3</sup>
E. Bentonite seal, top 762.4 ft. MSL or 1.0 ft.	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
F. Fine sand, top 750.4 ft. MSL or 13.0 ft.	10. Screen material: Schedule 40 PVC a. Screen Type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
G. Filter pack, top 749.4 ft. MSL or 14.0 ft.	b. Manufacturer US Filter c. Slot size: 0.010 in. d. Slotted length: 5.0 ft.
H. Screen joint, top 747.4 ft. MSL or 16.0 ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>
I. Well bottom 742.4 ft. MSL or 21.0 ft.	
J. Filter pack, bottom 736.4 ft. MSL or 27.0 ft.	
K. Borehole, bottom 736.4 ft. MSL or 27.0 ft.	
L. Borehole, diameter 8.3 in.	
M. O.D. well casing 2.38 in.	
N. I.D. well casing 2.08 in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature R.M.A. Firm RMT, Inc. 744 Heartland Trail Madison, WI 53717 Tel: 608.831.4444 Fax: 608.831.3334

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name Tecumseh Products	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> S. <input type="checkbox"/> E. <input type="checkbox"/> W.	Well Name MW-26
Facility License, Permit or Monitoring No.	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/>	Wis. Unique Well No. <input type="checkbox"/> DNR Well Number <input type="checkbox"/>
Facility ID	Lat. _____ ' _____ " Long. _____ ' _____ " or _____	Date Well Installed 10/31/2002
Type of Well Well Code 11/mw	St. Plane _____ ft. N, _____ ft. E. S / C / N	Well Installed By: (Person's Name and Firm) Randy Boart Longyear
Distance from Waste/Source ft.	Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W	
Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	
	Gov. Lot Number	

A. Protective pipe, top elevation \_\_\_\_\_ ft. MSL  
 B. Well casing, top elevation 762.90 ft. MSL  
 C. Land surface elevation 763.4 ft. MSL  
 D. Surface seal, bottom 762.4 ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

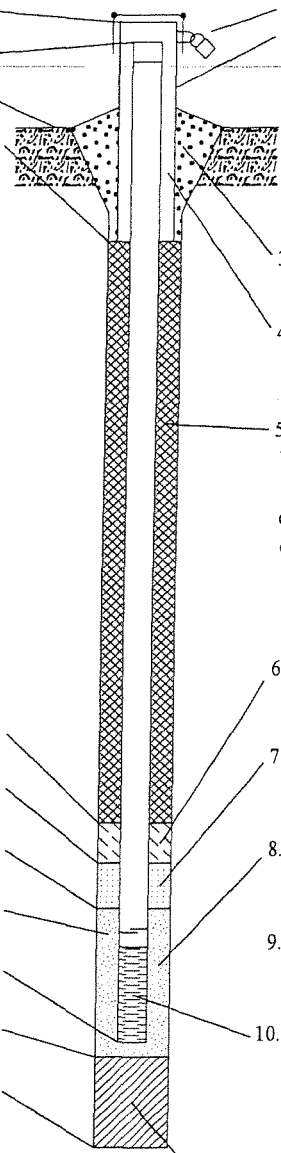
13. Sieve analysis attached?  Yes  No

14. Drilling method used: Rotary  5 0  
 Hollow Stem Auger  4 1  
 \_\_\_\_\_ Other

15. Drilling fluid used: Water  0 2 Air  0 1  
 Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No  
 Describe \_\_\_\_\_

17. Source of water (attach analysis, if required):  
 \_\_\_\_\_



1. Cap and lock?  Yes  No

2. Protective cover pipe:  
 a. Inside diameter: 9.0 in.  
 b. Length: 1.5 ft.  
 c. Material: Steel  0 4  
 Other

d. Additional protection?  Yes  No  
 If yes, describe: \_\_\_\_\_

3. Surface seal:  
 Bentonite  3 0  
 Concrete  0 1  
 Other

4. Material between well casing and protective pipe:  
 Bentonite  3 0  
 Other

5. Annular space seal:  
 a. Granular/Chipped Bentonite  3 3  
 b. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite-sand slurry  3 5  
 c. \_\_\_\_\_ Lbs/gal mud weight . . . Bentonite slurry  3 1  
 d. \_\_\_\_\_ % Bentonite . . . Bentonite-cement grout  5 0  
 e. \_\_\_\_\_ Ft<sup>3</sup> volume added for any of the above

f. How installed:  
 Tremie  0 1  
 Tremie pumped  0 2  
 Gravity  0 8

6. Bentonite seal:  
 a. Bentonite granules  3 3  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  3 2  
 c. \_\_\_\_\_ Other

7. Fine sand material: Manufacturer, product name & mesh size  
 a. #45 Badger  
 b. Volume added \_\_\_\_\_ ft<sup>3</sup>

8. Filter pack material: Manufacturer, product name & mesh size  
 a. #30 US Filter  
 b. Volume added \_\_\_\_\_ ft<sup>3</sup>

9. Well casing: Flush threaded PVC schedule 40  2 3  
 Flush threaded PVC schedule 80  2 4  
 Other

10. Screen material: Schedule 40 PVC  
 a. Screen Type: Factory cut  1 1  
 Continuous slot  0 1  
 Other

b. Manufacturer US Filter  
 c. Slot size: 0.010 in.  
 d. Slotted length: 5.0 ft.

11. Backfill material (below filter pack):  
 None  1 4  
 Other

E. Bentonite seal, top 762.4 ft. MSL or 1.0 ft.  
 F. Fine sand, top 748.9 ft. MSL or 14.5 ft.  
 G. Filter pack, top 747.9 ft. MSL or 15.5 ft.  
 H. Screen joint, top 745.9 ft. MSL or 17.5 ft.  
 I. Well bottom 740.9 ft. MSL or 22.5 ft.  
 J. Filter pack, bottom 738.9 ft. MSL or 24.5 ft.  
 K. Borehole, bottom 738.9 ft. MSL or 24.5 ft.  
 L. Borehole, diameter 8.3 in.  
 M. O.D. well casing 2.38 in.  
 N. I.D. well casing 2.08 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature R.M.A. Firm RMT, Inc. 744 Heartland Trail Madison, WI 53717  
 Tel: 608.831.4444 Fax: 608.831.3334

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>	County <b>Ozaukee</b>	Well Name <b>MW-23</b>	
Facility License, Permit or Monitoring Number	County Code <b>46</b>	Wis. Unique Well Number	DNR Well Number

1. Can this well be purged dry?  Yes  No

2. Well development method:

- surged with bailer and bailed 41
- surged with bailer and pumped 61
- surged with block and bailed 42
- surged with block and pumped 62
- surged with block, bailed, and pumped 70
- compressed air 20
- bailed only 10
- pumped only 51
- pumped slowly 50
- other

3. Time spent developing well **80 min.**

4. Depth of well (from top of well casing) **19.6 ft.**

5. Inside diameter of well **2.08 in.**

6. Volume of water in filter pack and well casing **5.6 gal.**

7. Volume of water removed from well **30.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added NA

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 12.31 ft.	12.39 ft.
Date	b. 11/1/2002	11/1/2002
Time	c. 11:20 <input type="checkbox"/> p.m.	12:50 <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	7.8 inches	1.4 inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>Opaque, gray, silty</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>Gray, very turbid, silty</u>

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids mg/l

15. COD mg/l

16. Well developed by: Person's Name and Firm

**Peter M. Chase**

**RMT, Inc.**

Facility Address or Owner/Responsible Party Address

Name: Peter M. Chase

Firm: RMT, Inc.

Street: 744 Heartland Trail

City/State/Zip: Madison, WI 53717

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: *Peter M. Chase*

Print Name: Peter M. Chase

Firm: RMT, Inc.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>	County <b>Ozaukee</b>	Well Name <b>MW-24</b>	
Facility License, Permit or Monitoring Number	County Code <b>46</b>	Wis. Unique Well Number	DNR Well Number

1. Can this well be purged dry?  Yes  No

2. Well development method:

- 4-1 surged with bailer and bailed
- 61 surged with bailer and pumped
- 42 surged with block and bailed
- 62 surged with block and pumped
- 70 surged with block, bailed, and pumped
- 20 compressed air
- 10 bailed only
- 51 pumped only
- 50 pumped slowly
- other

3. Time spent developing well **60 min.**

4. Depth of well (from top of well casing) **18.9 ft.**

5. Inside diameter of well **2.08 in.**

6. Volume of water in filter pack and well casing **3.3 gal.**

7. Volume of water removed from well **50.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added NA

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 14.71 ft.	14.66 ft.

Date b. 11/1/2002 11/1/2002

Time c. 10:10  p.m. 11:45  a.m.  p.m.  a.m.

12. Sediment in well bottom 0.1 inches 0.2 inches

13. Water clarity  
Clear  10 Turbid  15  
(Describe) Gray, opaque

Clear  20 Turbid  25  
(Describe) Gray, turbid

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids mg/l mg/l

15. COD mg/l mg/l

16. Well developed by: Person's Name and Firm

Peter M. Chase

RMT, Inc.

Facility Address or Owner/Responsible Party Address

Name: Peter M. Chase

Firm: RMT, Inc.

Street: 744 Heartland Trail

City/State/Zip: Madison, WI 53717

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: 

Print Name: Peter M. Chase

Firm: RMT, Inc.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>	County <b>Ozaukee</b>	Well Name <b>MW-25</b>	
Facility License, Permit or Monitoring Number	County Code <b>46</b>	Wis. Unique Well Number	DNR Well Number

1. Can this well be purged dry?  Yes  No

2. Well development method:

- 4.1 surged with bailer and bailed
- 6.1 surged with bailer and pumped
- 4.2 surged with block and bailed
- 6.2 surged with block and pumped
- 7.0 surged with block, bailed, and pumped
- 2.0 compressed air
- 1.0 bailed only
- 5.1 pumped only
- 5.0 pumped slowly
- other

3. Time spent developing well **80 min.**

4. Depth of well (from top of well casing) **20.1 ft.**

5. Inside diameter of well **2.08 in.**

6. Volume of water in filter pack and well casing **7.1 gal.**

7. Volume of water removed from well **45.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added NA

10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

17. Additional comments on development:

11. Depth to Water Before Development After Development

(from top of well casing) a. **10.75 ft.** **10.73 ft.**

Date b. **11/1/2002** **11/1/2002**

Time c.  a.m.  a.m.  
 p.m.  p.m.

12. Sediment in well bottom **2.0 inches** **4.0 inches**

13. Water clarity Clear  1.0 Clear  2.0  
Turbid  1.5 Turbid  2.5  
(Describe) (Describe)

Gray, opaque Gray, very turbid

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids **mg/l** **mg/l**

15. COD **mg/l** **mg/l**

16. Well developed by: Person's Name and Firm

**Peter M. Chase**  
**RMT, Inc.**

Facility Address or Owner/Responsible Party Address

Name: Peter M. Chase

Firm: RMT, Inc.

Street: 744 Heartland Trail

City/State/Zip: Madison, WI 53717

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: *Peter M. Chase*

Print Name: Peter M. Chase

Firm: RMT, Inc.



Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Tecumseh Products</b>	County <b>Ozaukee</b>	Well Name <b>MW-26</b>	
Facility License, Permit or Monitoring Number	County Code <b>46</b>	Wis. Unique Well Number	DNR Well Number

1. Can this well be purged dry?  Yes  No

2. Well development method:
- surged with bailer and bailed  41
  - surged with bailer and pumped  61
  - surged with block and bailed  42
  - surged with block and pumped  62
  - surged with block, bailed, and pumped  70
  - compressed air  20
  - bailed only  10
  - pumped only  51
  - pumped slowly  50
  - other

3. Time spent developing well **60 min.**

4. Depth of well (from top of well casing) **21.6 ft.**

5. Inside diameter of well **2.08 in.**

6. Volume of water in filter pack and well casing **4.6 gal.**

7. Volume of water removed from well **50.0 gal.**

8. Volume of water added (if any) **0.0 gal.**

9. Source of water added NA

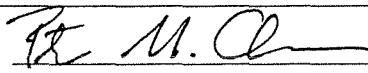
10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 15.18 ft.	15.55 ft.
Date	b. 11/1/2002	11/1/2002
Time	c. 08:15 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	09:30 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	0.1 inches	0.2 inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>Gray, opaque</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>Gray, turbid</u>
14. Total suspended solids	mg/l	mg/l
15. COD	mg/l	mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Person's Name and Firm  
**Peter M. Chase**  
**RMT, Inc.**

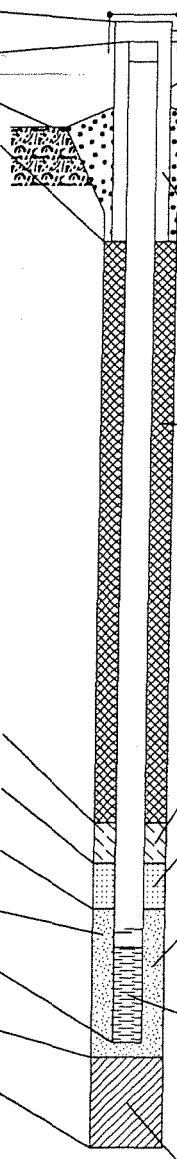
Facility Address or Owner/Responsible Party Address	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Peter M. Chase</u>	Signature: <u></u>
Firm: <u>RMT, Inc.</u>	Print Name: <u>Peter M. Chase</u>
Street: <u>744 Heartland Trail</u>	Firm: <u>RMT, Inc.</u>
City/State/Zip: <u>Madison, WI 53717</u>	

NOTE: See instructions for more information including a list of county codes and well type codes.

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name Tecumseh Products	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> S. <input type="checkbox"/> E. <input type="checkbox"/> W.	Well Name LI-1
Facility License, Permit or Monitoring No.	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/> Lat. ° ' " Long. ° ' " or	Wis. Unique Well No.   DNR Well Number
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed 10/30/2002
Type of Well Well Code 61/ij	Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____, T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: (Person's Name and Firm) Shawn Boart Longyear
Distance from Waste/Source ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number

A. Protective pipe, top elevation _____ ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside diameter: _____ 12.0 in. b. Length: _____ 1.5 ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation _____ ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
D. Surface seal, bottom _____ ft. MSL or 1.0 ft.	3. Surface seal: Bentonite <input type="checkbox"/> 30 Concrete <input checked="" type="checkbox"/> 01 Other <input type="checkbox"/>
<div style="border: 1px solid black; padding: 5px;"> <p>12. USCS classification of soil near screen:            GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>            SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>            Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 50            Hollow Stem Auger <input checked="" type="checkbox"/> 41            Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01            Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No            Describe: _____</p> <p>17. Source of water (attach analysis, if required):            _____</p> </div>	
E. Bentonite seal, top _____ ft. MSL or 1.0 ft.	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Other <input type="checkbox"/>
F. Fine sand, top _____ ft. MSL or 10.0 ft.	5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. _____ Lbs/gal mud weight ... Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight ... Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite ... Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft <sup>3</sup> volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08
G. Filter pack, top _____ ft. MSL or 11.0 ft.	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
H. Screen joint, top _____ ft. MSL or 12.0 ft.	7. Fine sand material: Manufacturer, product name & mesh size a. _____ b. Volume added _____ ft <sup>3</sup>
I. Well bottom _____ ft. MSL or 22.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size a. _____ b. Volume added _____ ft <sup>3</sup>
J. Filter pack, bottom _____ ft. MSL or 22.0 ft.	9. Well casing: Flush threaded PVC schedule 40 <input type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
K. Borehole, bottom _____ ft. MSL or 22.5 ft.	10. Screen material: a. Screen Type: Factory cut <input type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
L. Borehole, diameter 10.3 in.	b. Manufacturer _____ c. Slot size: _____ in. d. Slotted length: _____ ft.
M. O.D. well casing 4.09 in.	11. Backfill material (below filter pack): None <input type="checkbox"/> 14 Other <input type="checkbox"/>
N. I.D. well casing 2.08 in.	



I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature: *[Signature]* Firm: RMT, Inc. 744 Heartland Trail Madison, WI 53717  
 Tel: 608.831.4444 Fax: 608.831.3334

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater  Remediation/Redevelopment  Waste Management  Other

Facility/Project Name Tecumseh Products	Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name LI-2
Facility License, Permit or Monitoring No.	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/>	Wis. Unique Well No. / DNR Well Number
Facility ID	Lat. _____ " Long. _____ " or	Date Well Installed 11/01/2002
Type of Well Well Code 61/ij	St. Plane _____ ft. N, _____ ft. E. S / C / N	Well Installed By: (Person's Name and Firm) Shawn Boart Longyear
Distance from Waste/Source ft.	Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____, T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W	
Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	
	Gov. Lot Number	

A. Protective pipe, top elevation _____ ft. MSL		1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
B. Well casing, top elevation _____ ft. MSL		2. Protective cover pipe: a. Inside diameter: _____ 12.0 in. b. Length: _____ 1.5 ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>	
C. Land surface elevation _____ ft. MSL		d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____	
D. Surface seal, bottom _____ ft. MSL or 1.0 ft.		3. Surface seal: Bentonite <input type="checkbox"/> 30 Concrete <input checked="" type="checkbox"/> 01 Other <input type="checkbox"/>	
<div style="border: 1px solid black; padding: 5px;"> <p>12. USCS classification of soil near screen:                      GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/>                      SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/>                      Bedrock <input type="checkbox"/></p> <p>13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/></p> <p>15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99</p> <p>16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____</p> <p>17. Source of water (attach analysis, if required): _____</p> </div>		4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Other <input type="checkbox"/>	
E. Bentonite seal, top _____ ft. MSL or 1.0 ft.		5. Annular space seal: a. Granular/Chipped Bentonite <input checked="" type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight . . . Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite . . . Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft <sup>3</sup> volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input checked="" type="checkbox"/> 08	
F. Fine sand, top _____ ft. MSL or 10.0 ft.		6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>	
G. Filter pack, top _____ ft. MSL or 11.0 ft.		7. Fine sand material: Manufacturer, product name & mesh size a. _____ b. Volume added _____ ft <sup>3</sup>	
H. Screen joint, top _____ ft. MSL or 12.0 ft.		8. Filter pack material: Manufacturer, product name & mesh size a. _____ b. Volume added _____ ft <sup>3</sup>	
I. Well bottom _____ ft. MSL or 22.0 ft.		9. Well casing: Flush threaded PVC schedule 40 <input type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>	
J. Filter pack, bottom _____ ft. MSL or 22.0 ft.	10. Screen material: a. Screen Type: Factory cut <input type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/> b. Manufacturer _____ c. Slot size: _____ in. d. Slotted length: _____ ft.		
K. Borehole, bottom _____ ft. MSL or 22.5 ft.	11. Backfill material (below filter pack): None <input type="checkbox"/> 14 Other <input type="checkbox"/>		
L. Borehole, diameter 10.3 in.			
M. O.D. well casing 4.09 in.			
N. I.D. well casing 2.08 in.			

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Re M. Cl Firm RMT, Inc. 744 Heartland Trail Madison, WI 53717 Tel: 608.831.4444 Fax: 608.831.3334

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name Tecumseh Products		Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.		Well Name LI-3	
Facility License, Permit or Monitoring No.		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/>		Wis. Unique Well No. / DNR Well Number	
Facility ID		St. Plane _____ ft. N. _____ ft. E. S/C/N		Date Well Installed 11/01/2002	
Type of Well Well Code 61/j		Section Location of Waste/Source 1/4 of _____ 1/4 of Sec. _____ T. _____ N, R. _____ <input type="checkbox"/> E <input type="checkbox"/> W		Well Installed By: (Person's Name and Firm) Shawn	
Distance from Waste/Source ft. _____		Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known		Gov. Lot Number Boart Longyear	

A. Protective pipe, top elevation \_\_\_\_\_ ft. MSL

B. Well casing, top elevation \_\_\_\_\_ ft. MSL

C. Land surface elevation \_\_\_\_\_ ft. MSL

D. Surface seal, bottom \_\_\_\_\_ ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

13. Sieve analysis attached?  Yes  No

14. Drilling method used: Rotary  5 0  
 Hollow Stem Auger  4 1  
 Other

15. Drilling fluid used: Water  0 2 Air  0 1  
 Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No  
 Describe \_\_\_\_\_

17. Source of water (attach analysis, if required):  
 \_\_\_\_\_

E. Bentonite seal, top \_\_\_\_\_ ft. MSL or 1.0 ft.

F. Fine sand, top \_\_\_\_\_ ft. MSL or 10.0 ft.

G. Filter pack, top \_\_\_\_\_ ft. MSL or 11.0 ft.

H. Screen joint, top \_\_\_\_\_ ft. MSL or 12.0 ft.

I. Well bottom \_\_\_\_\_ ft. MSL or 22.0 ft.

J. Filter pack, bottom \_\_\_\_\_ ft. MSL or 22.0 ft.

K. Borehole, bottom \_\_\_\_\_ ft. MSL or 22.5 ft.

L. Borehole, diameter 10.3 in.

M. O.D. well casing 4.09 in.

N. I.D. well casing 2.08 in.

1. Cap and lock?  Yes  No

2. Protective cover pipe:  
 a. Inside diameter: 12.0 in.  
 b. Length: 1.5 ft.  
 c. Material: Steel  0 4  
 Other

3. Surface seal: Bentonite  3 0  
 Concrete  0 1  
 Other

4. Material between well casing and protective pipe:  
 Bentonite  3 0  
 Other

5. Annular space seal: a. Granular/Chipped Bentonite  3 3  
 b. \_\_\_\_\_ Lbs/gal mud weight ... Bentonite-sand slurry  3 5  
 c. \_\_\_\_\_ Lbs/gal mud weight ... Bentonite slurry  3 1  
 d. \_\_\_\_\_ % Bentonite ... Bentonite-cement grout  5 0  
 e. \_\_\_\_\_ Ft<sup>3</sup> volume added for any of the above  
 f. How installed: Tremie  0 1  
 Tremie pumped  0 2  
 Gravity  0 8

6. Bentonite seal: a. Bentonite granules  3 3  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  3 2  
 c. \_\_\_\_\_ Other

7. Fine sand material: Manufacturer, product name & mesh size  
 a. \_\_\_\_\_  
 b. Volume added \_\_\_\_\_ ft<sup>3</sup>

8. Filter pack material: Manufacturer, product name & mesh size  
 a. \_\_\_\_\_  
 b. Volume added \_\_\_\_\_ ft<sup>3</sup>

9. Well casing: Flush threaded PVC schedule 40  2 3  
 Flush threaded PVC schedule 80  2 4  
 Other

10. Screen material:  
 a. Screen Type: Factory cut  1 1  
 Continuous slot  0 1  
 Other   
 b. Manufacturer \_\_\_\_\_  
 c. Slot size: \_\_\_\_\_ in.  
 d. Slotted length: \_\_\_\_\_ ft.

11. Backfill material (below filter pack): None  1 4  
 Other

I hereby certify that the information on this form is true and correct to the best of my knowledge.

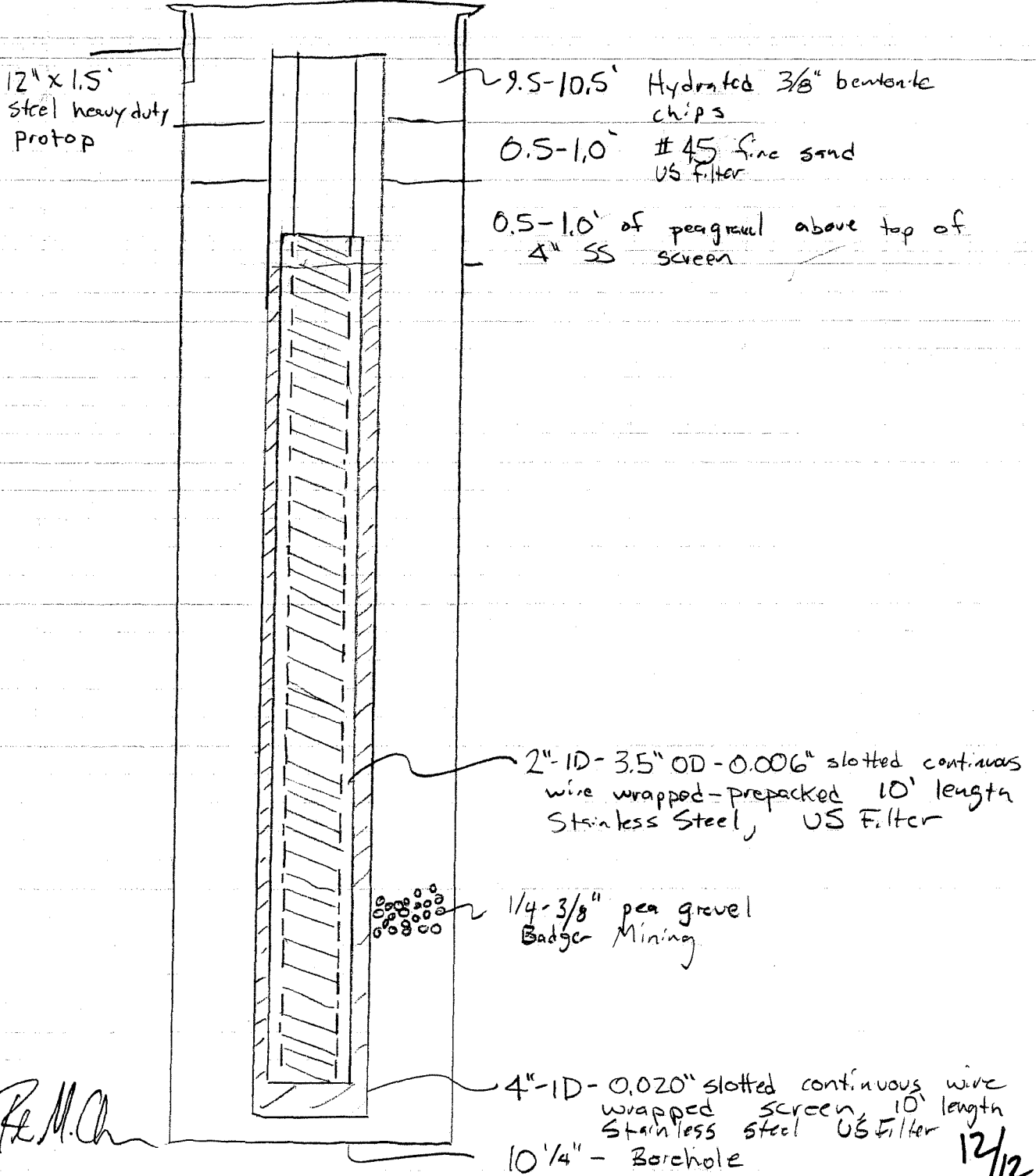
Signature R. M. Cl Firm RMT, Inc. Tel: 608.831.4444  
 744 Heartland Trail Madison, WI 53717 Fax: 608.831.3334



PROJECT / PROPOSAL NAME / LOCATION:	Tecumseh Products	PROJECT / PROPOSAL NO.	
SUBJECT:	Lactate well construction details		3084.27
PREPARED BY:	PMC	DATE:	11/1/02
CHECKED BY:		FINAL	<input checked="" type="checkbox"/>
		REVISION	<input type="checkbox"/>

Well Construction Diagram

LI-1, LI-2 & LI-3



R.M.A.

12/12



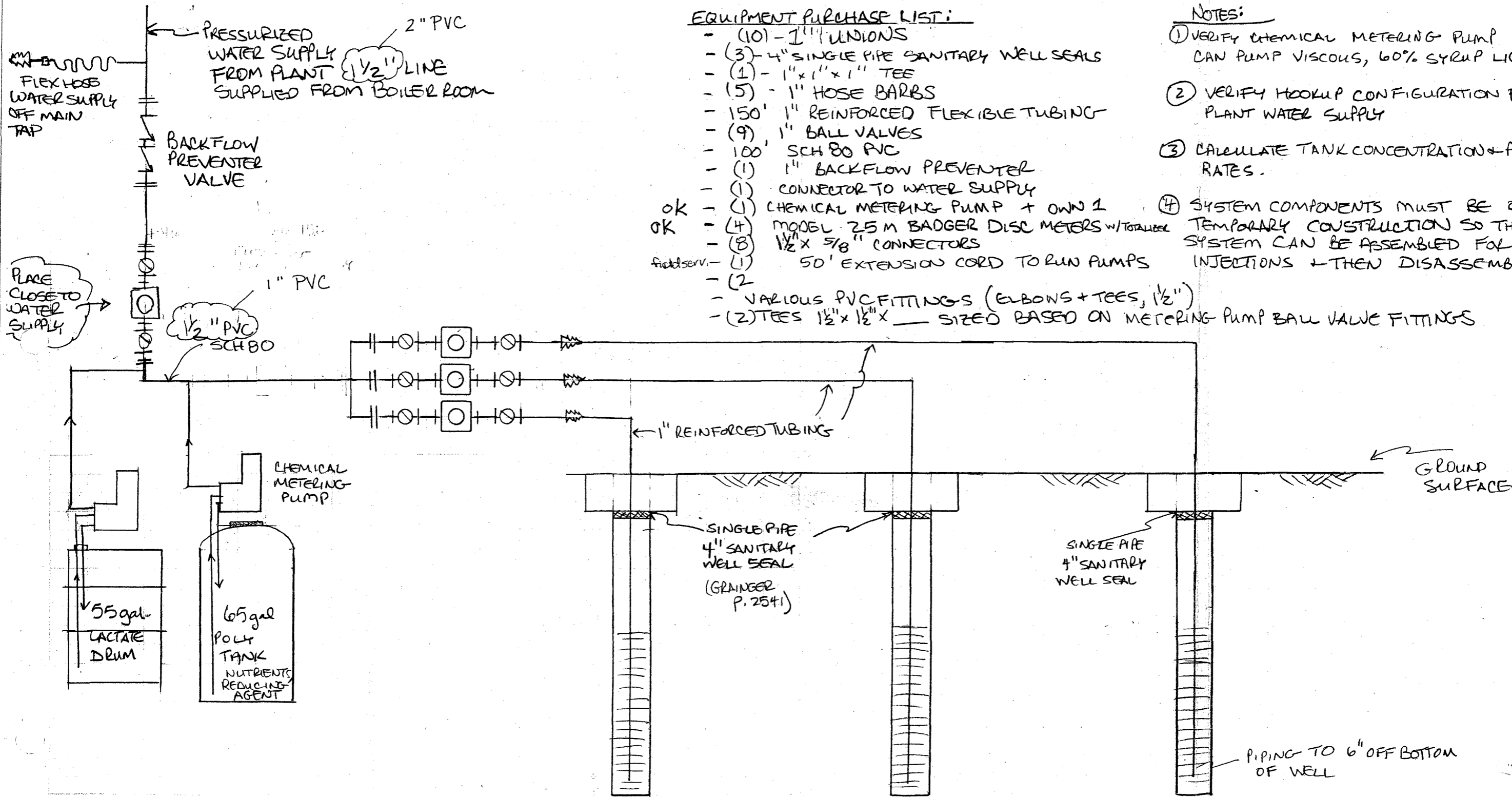
# Appendix F

## Recycling Dock Injection Setup

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PROJECT / PROPOSAL NAME / LOCATION: <b>TECUMSEH - GRAFTON</b>		PROJECT / PROPOSAL NO.: <b>3084.27</b>
SUBJECT: <b>RECYCLING DOCKS P&amp;ID</b>		
PREPARED BY: <b>SAK</b>	DATE: <b>6/24/02</b>	FINAL: <input checked="" type="checkbox"/>
CHECKED BY:	DATE:	REVISION: <input type="checkbox"/>







# Appendix G Waste Disposal Form

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December 4, 2002

Randi Williams  
RMT, Inc.  
744 Heartland Trail  
Madison WI 53717

Re: Special Waste Approval Letter

Dear Randi:

We are pleased to advise that the special waste listed below was approved on 11/26/02 for bio-remediation at the Superior Hickory Meadows Landfill. The attached profile is your documentation that verifies this waste stream is not a hazardous or unauthorized waste and also verifies approval to accept this waste stream by the Hickory Meadows Landfill as indicated by the signature of our approvals department and our general manager. The waste approval is valid as follows:

<b>Generator:</b>	<b>Tecumseh Products Co.</b>
<b>Address of Waste Generated:</b>	<b>900 North Street Grafton WI 53024</b>
<b>Waste Stream:</b>	<b>C-soil</b>
<b>Waste Category:</b>	<b>34d</b>
<b>Profile Number:</b>	<b>HML02-168</b>
<b>Profile Recertification Date:</b>	<b>OTO</b>
<b>Waste Disposal Method:</b>	<b>BIO</b>

Please note the special conditions for acceptance are as follows:

1. **No Free Liquids**
2. **Each load must have a manifest signed by an authorized representative or agent of Tecumseh Products Company accompanying the waste for disposal.**

We greatly appreciate the confidence and trust you have placed in selecting Superior/Onyx Hickory Meadows Landfill, LLC, to manage your bioremediation and disposal needs. As an additional note, we have fulfilled all Wisconsin DNR regulations and our landfill meets or exceeds the design, construction and operating standards promulgated under 40 CFR 258.

If you have questions or need assistance with additional waste disposal, please do not hesitate to contact us at (920) 853-8553.

Sincerely,

  
Gary Bartels  
General Manager

11/26/2002 14:37 FAX  
11/26/02 10:56

8920 853 3513

HICKORY MEADOWS

- HML

PORT WASHINGTON

001/001

001/001

Nov-26-2002 11:05am From-RMT INC

T-784 P.002/004 F-728



### Special Waste Profile Sheet Contaminated Soil

Profile # HML 02-168

Designated Facility: Superior Hickory Meadows Landfill

Pecfa  Bio Pile

Sales Representative: GARY BARTELS

Non-Pecfa  Landfill

#### A. Generator

Name Terumseh Products Company  
Site Address 900 North Street  
City, State, Zip Grafton WI 53024  
Contact Glenn Elmer  
Phone (262) 377-2700  
Fax (262) 377-4485

#### B. Billing

Name RMT Inc  
Address 747 Heartland Trail  
City, State Madison WI Zip 53717  
Contact Brenda Rehn  
Phone (608) 831-4444  
Fax (608) 831-3334

#### C. Description of Waste

Soil Contaminated With:  Unleaded Gasoline  Leaded Gasoline  Diesel  Fuel Oil  Waste Oil  Other  
Source of Contamination:  LUST  AST  Spill  Other Unknown  
Quantity of Soil approx 150 cy Frequency \_\_\_\_\_ Free Liquids None

#### D. Other Waste Data or Comments

Source area: Loading dock area suspected of diesel contamination

#### E. Sample/Analysis Information

Check all that apply:

Sample submitted with profile  Laboratory Analysis submitted  Material Safety Data Sheet submitted

Laboratory Name EnChem Inc. Sample Date 10-15-02 Sample I.D. S-1

#### F. Generator Certification

- This waste is not a hazardous waste as defined in Wisconsin Administrative Code NR 605 or 40 CFR 261.
- This waste does not contain regulated quantities of PCB's.
- This waste does not contain regulated quantities of herbicides or pesticides.
- This waste does not contain regulated quantities of F500 solvents as defined in Wisconsin Administrative Code NR 605.
- This waste does not contain infectious wastes as defined in Wisconsin Administrative Code NR 526.
- To the best of my knowledge, all the information in this and all attached documents contain true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix 1 and was obtained by using this or an equivalent sampling method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Generator's Signature

Title

Manager - Environmental

Print Name

ISHARAT SHAH

Date

11/19/2002

#### G. Landfill Approval

My approval is based upon the laboratory analysis of a representative sample and/or material safety data sheet submitted by the generator.

Landfill Signature

Date

11-26-02

Approvals Signature

Date

11-26-2

Waste Category

34D Analytical Protocol BTEX

Disposal Operation

Bio

Recarb. Date

OTC

VOC Concentration

Do's will be on Do's

**- Analytical Report -**

**Project Name :** TECUMSEH  
**Project Number :** 3084.27  
**Field ID :** S-2  
**Lab Sample Number :** 828914-001  
**WI DNR LAB ID :** 405132750

**Client :** RMT - MADISON  
**Report Date :** 12/6/02  
**Collection Date :** 11/21/02  
**Matrix Type :** SOIL

**Inorganic Results**

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Solids, percent	89				%		11/22/02	SM2540G	SM2540G	Jl

**Organic Results**

**Preservation Date :** 11/25/02

**DIESEL RANGE ORGANICS - SOIL**

**Prep Method:** Wi MOD DRO

**Prep Date:** 11/26/02

**Analyst:** KEG

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	1000			68	mg/kg		11/26/02	Wi MOD DRO
Blank spike	83			50	%Recov		11/26/02	Wi MOD DRO
Blank spike duplicate	76			50	%Recov		11/26/02	Wi MOD DRO
Blank	< 5.0			5.0	mg/kg		11/26/02	Wi MOD DRO

All soil results are reported on a dry weight basis unless otherwise



# Appendix H

## Laboratory Reports

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**- Analytical Report -**

Project Name : TECUMSEH PRODUCTS

Project Number : 3084.27

Client: RMT - MADISON

WI DNR LAB ID : 405132750

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
828913-001	MW-8	11/21/02			
828913-002	MW-23	11/20/02			
828913-003	MW-24	11/20/02			
828913-004	MW-25	11/20/02			
828913-005	MW-26	11/21/02			

Please visit our Internet homepage at: [www.enchem.com](http://www.enchem.com)

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

  
Approval Signature

1-02-03  
Date



- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-8  
Lab Sample Number : 828913-001  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/21/02  
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Chloride	27	0.61	1.9		mg/L		12/03/02	EPA 300.0	EPA 300.0	JL

Organic Results

SPECIAL VOLATILE LIST - WATER

Prep Method: SW846 5030B

Prep Date: 12/2/02

Analyst: HW

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 0.25	0.25	0.80		ug/L		12/02/02	SW846 8260B
n-Butylbenzene	1.5	0.65	2.1		ug/L	Q	12/02/02	SW846 8260B
Bromodichloromethane	< 0.23	0.23	0.73		ug/L		12/02/02	SW846 8260B
Bromobenzene	< 0.74	0.74	2.4		ug/L		12/02/02	SW846 8260B
s-Butylbenzene	0.95	0.62	2.0		ug/L	Q	12/02/02	SW846 8260B
t-Butylbenzene	< 0.96	0.96	3.1		ug/L		12/02/02	SW846 8260B
2-Chlorotoluene	< 0.66	0.66	2.1		ug/L		12/02/02	SW846 8260B
4-Chlorotoluene	< 0.89	0.89	2.8		ug/L		12/02/02	SW846 8260B
Carbon tetrachloride	< 0.47	0.47	1.5		ug/L		12/02/02	SW846 8260B
Chlorobenzene	< 0.58	0.58	1.8		ug/L		12/02/02	SW846 8260B
Chlorodibromomethane	< 0.84	0.84	2.7		ug/L		12/02/02	SW846 8260B
Chloroethane	2.3	0.84	2.7		ug/L	Q	12/02/02	SW846 8260B
Chloroform	< 0.45	0.45	1.4		ug/L		12/02/02	SW846 8260B
Chloromethane	< 0.27	0.27	0.86		ug/L		12/02/02	SW846 8260B
1,1-Dichloroethane	160	0.87	2.8		ug/L		12/02/02	SW846 8260B
1,2-Dichloroethane	< 0.55	0.55	1.8		ug/L		12/02/02	SW846 8260B
1,1-Dichloroethene	1.9	0.56	1.8		ug/L		12/02/02	SW846 8260B
cis-1,2-Dichloroethene	3.0	0.81	2.6		ug/L		12/02/02	SW846 8260B
trans-1,2-Dichloroethene	2.1	0.80	2.5		ug/L	Q	12/02/02	SW846 8260B
1,2-Dibromo-3-chloropropane	< 0.88	0.88	2.8		ug/L		12/02/02	SW846 8260B
1,2-Dibromoethane	< 0.66	0.66	2.1		ug/L		12/02/02	SW846 8260B
1,2-Dichlorobenzene	< 0.71	0.71	2.3		ug/L		12/02/02	SW846 8260B
1,2-Dichloropropane	1.2	0.39	1.2		ug/L		12/02/02	SW846 8260B
1,3-Dichlorobenzene	< 0.58	0.58	1.8		ug/L		12/02/02	SW846 8260B
1,3-Dichloropropane	< 0.62	0.62	2.0		ug/L		12/02/02	SW846 8260B
1,4-Dichlorobenzene	< 0.63	0.63	2.0		ug/L		12/02/02	SW846 8260B
2,2-Dichloropropane	< 0.99	0.99	3.2		ug/L		12/02/02	SW846 8260B
Dichlorodifluoromethane	< 0.57	0.57	1.8		ug/L		12/02/02	SW846 8260B
Diisopropyl ether	< 0.60	0.60	1.9		ug/L		12/02/02	SW846 8260B
Ethylbenzene	17	0.53	1.7		ug/L		12/02/02	SW846 8260B
Hexachlorobutadiene	< 0.95	0.95	3.0		ug/L		12/02/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-8  
Lab Sample Number : 828913-001  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/21/02  
Matrix Type : WATER

p-Isopropyltoluene	1.1	0.58	1.8	ug/L	Q	12/02/02	SW846 8260B
Isopropylbenzene	2.6	0.66	2.1	ug/L		12/02/02	SW846 8260B
Methylene chloride	0.54	0.47	1.5	ug/L	Q	12/02/02	SW846 8260B
Methyl-tert-butyl-ether	< 0.87	0.87	2.8	ug/L		12/02/02	SW846 8260B
Naphthalene	48	0.63	2.0	ug/L		12/02/02	SW846 8260B
n-Propylbenzene	3.5	0.95	3.0	ug/L		12/02/02	SW846 8260B
1,1,2,2-Tetrachloroethane	< 0.77	0.77	2.5	ug/L		12/02/02	SW846 8260B
Tetrachloroethene	0.66	0.63	2.0	ug/L	Q	12/02/02	SW846 8260B
Toluene	49	0.84	2.7	ug/L		12/02/02	SW846 8260B
1,1,1-Trichloroethane	110	0.65	2.1	ug/L		12/02/02	SW846 8260B
1,1,2-Trichloroethane	0.64	0.50	1.6	ug/L	Q	12/02/02	SW846 8260B
1,2,3-Trichlorobenzene	< 0.77	0.77	2.5	ug/L		12/02/02	SW846 8260B
1,2,4-Trichlorobenzene	< 0.57	0.57	1.8	ug/L		12/02/02	SW846 8260B
Fluorotrichloromethane	1.0	0.85	2.7	ug/L	Q	12/02/02	SW846 8260B
1,2,4-Trimethylbenzene	42	0.69	2.2	ug/L		12/02/02	SW846 8260B
1,3,5-Trimethylbenzene	11	0.64	2.0	ug/L		12/02/02	SW846 8260B
Trichloroethene	0.56	0.39	1.2	ug/L	Q	12/02/02	SW846 8260B
Vinyl chloride	1.5	0.11	0.35	ug/L		12/02/02	SW846 8260B
Xylenes, -m, -p	55	1.1	3.5	ug/L		12/02/02	SW846 8260B
Xylene, -o	38	0.73	2.3	ug/L		12/02/02	SW846 8260B
4-Bromofluorobenzene	104			%Recov		12/02/02	SW846 8260B
Dibromofluoromethane	126			%Recov		12/02/02	SW846 8260B
Toluene-d8	126			%Recov		12/02/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-23  
Lab Sample Number : 828913-002  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/20/02  
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Chloride	220	0.61	1.9		mg/L		12/03/02	EPA 300.0	EPA 300.0	JL

Organic Results

SPECIAL VOLATILE LIST - WATER

Prep Method: SW846 5030B

Prep Date: 12/2/02

Analyst: HW

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 130	130	410		ug/L		12/04/02	SW846 8260B
n-Butylbenzene	< 330	330	1100		ug/L		12/04/02	SW846 8260B
Bromodichloromethane	< 120	120	380		ug/L		12/04/02	SW846 8260B
Bromobenzene	< 370	370	1200		ug/L		12/04/02	SW846 8260B
s-Butylbenzene	< 310	310	990		ug/L		12/04/02	SW846 8260B
t-Butylbenzene	< 480	480	1500		ug/L		12/04/02	SW846 8260B
2-Chlorotoluene	< 330	330	1100		ug/L		12/04/02	SW846 8260B
4-Chlorotoluene	< 450	450	1400		ug/L		12/04/02	SW846 8260B
Carbon tetrachloride	< 230	230	730		ug/L		12/04/02	SW846 8260B
Chlorobenzene	< 290	290	920		ug/L		12/04/02	SW846 8260B
Chlorodibromomethane	< 420	420	1300		ug/L		12/04/02	SW846 8260B
Chloroethane	< 420	420	1300		ug/L		12/04/02	SW846 8260B
Chloroform	< 230	230	730		ug/L		12/04/02	SW846 8260B
Chloromethane	< 140	140	450		ug/L		12/04/02	SW846 8260B
1,1-Dichloroethane	47000	440	1400		ug/L		12/04/02	SW846 8260B
1,2-Dichloroethane	< 280	280	890		ug/L		12/04/02	SW846 8260B
1,1-Dichloroethene	< 280	280	890		ug/L		12/04/02	SW846 8260B
cis-1,2-Dichloroethene	< 410	410	1300		ug/L		12/04/02	SW846 8260B
trans-1,2-Dichloroethene	< 400	400	1300		ug/L		12/04/02	SW846 8260B
1,2-Dibromo-3-chloropropane	< 440	440	1400		ug/L		12/04/02	SW846 8260B
1,2-Dibromoethane	< 330	330	1100		ug/L		12/04/02	SW846 8260B
1,2-Dichlorobenzene	< 360	360	1100		ug/L		12/04/02	SW846 8260B
1,2-Dichloropropane	< 200	200	640		ug/L		12/04/02	SW846 8260B
1,3-Dichlorobenzene	< 290	290	920		ug/L		12/04/02	SW846 8260B
1,3-Dichloropropane	< 310	310	990		ug/L		12/04/02	SW846 8260B
1,4-Dichlorobenzene	< 320	320	1000		ug/L		12/04/02	SW846 8260B
2,2-Dichloropropane	< 500	500	1600		ug/L		12/04/02	SW846 8260B
Dichlorodifluoromethane	< 280	280	890		ug/L		12/04/02	SW846 8260B
Diisopropyl ether	< 300	300	960		ug/L		12/04/02	SW846 8260B
Ethylbenzene	< 270	270	860		ug/L		12/04/02	SW846 8260B
Hexachlorobutadiene	< 470	470	1500		ug/L		12/04/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS

Project Number : 3084.27

Field ID : MW-23

Lab Sample Number : 828913-002

WI DNR LAB ID : 405132750

Client : RMT - MADISON

Report Date : 12/5/02

Collection Date : 11/20/02

Matrix Type : WATER

p-Isopropyltoluene	< 290	290	920	ug/L		12/04/02	SW846 8260B
Isopropylbenzene	< 330	330	1100	ug/L		12/04/02	SW846 8260B
Methylene chloride	< 230	230	730	ug/L		12/04/02	SW846 8260B
Methyl-tert-butyl-ether	< 440	440	1400	ug/L		12/04/02	SW846 8260B
Naphthalene	< 320	320	1000	ug/L		12/04/02	SW846 8260B
n-Propylbenzene	< 470	470	1500	ug/L		12/04/02	SW846 8260B
1,1,2,2-Tetrachloroethane	< 390	390	1200	ug/L		12/04/02	SW846 8260B
Tetrachloroethene	< 320	320	1000	ug/L		12/04/02	SW846 8260B
Toluene	760	420	1300	ug/L	Q	12/04/02	SW846 8260B
1,1,1-Trichloroethane	< 330	330	1100	ug/L		12/04/02	SW846 8260B
1,1,2-Trichloroethane	< 250	250	800	ug/L		12/04/02	SW846 8260B
1,2,3-Trichlorobenzene	< 390	390	1200	ug/L		12/04/02	SW846 8260B
1,2,4-Trichlorobenzene	< 280	280	890	ug/L		12/04/02	SW846 8260B
Fluorotrichloromethane	< 430	430	1400	ug/L		12/04/02	SW846 8260B
1,2,4-Trimethylbenzene	< 340	340	1100	ug/L		12/04/02	SW846 8260B
1,3,5-Trimethylbenzene	< 320	320	1000	ug/L		12/04/02	SW846 8260B
Trichloroethene	< 200	200	640	ug/L		12/04/02	SW846 8260B
Vinyl chloride	530	55	180	ug/L		12/04/02	SW846 8260B
Xylenes, -m, -p	< 550	550	1800	ug/L		12/04/02	SW846 8260B
Xylene, -o	< 370	370	1200	ug/L		12/04/02	SW846 8260B
4-Bromofluorobenzene	102			%Recov		12/04/02	SW846 8260B
Dibromofluoromethane	123			%Recov		12/04/02	SW846 8260B
Toluene-d8	129			%Recov		12/04/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-24  
Lab Sample Number : 828913-003  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/20/02  
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Chloride	110	0.61	1.9		mg/L		12/03/02	EPA 300.0	EPA 300.0	JL

Organic Results

SPECIAL VOLATILE LIST - WATER

Prep Method: SW846 5030B

Prep Date: 12/2/02

Analyst: HW

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	0.64	0.25	0.80		ug/L	Q	12/02/02	SW846 8260B
n-Butylbenzene	< 0.65	0.65	2.1		ug/L		12/02/02	SW846 8260B
Bromodichloromethane	< 0.23	0.23	0.73		ug/L		12/02/02	SW846 8260B
Bromobenzene	< 0.74	0.74	2.4		ug/L		12/02/02	SW846 8260B
s-Butylbenzene	< 0.62	0.62	2.0		ug/L		12/02/02	SW846 8260B
t-Butylbenzene	< 0.96	0.96	3.1		ug/L		12/02/02	SW846 8260B
2-Chlorotoluene	< 0.66	0.66	2.1		ug/L		12/02/02	SW846 8260B
4-Chlorotoluene	< 0.89	0.89	2.8		ug/L		12/02/02	SW846 8260B
Carbon tetrachloride	< 0.47	0.47	1.5		ug/L		12/02/02	SW846 8260B
Chlorobenzene	< 0.58	0.58	1.8		ug/L		12/02/02	SW846 8260B
Chlorodibromomethane	< 0.84	0.84	2.7		ug/L		12/02/02	SW846 8260B
Chloroethane	31	0.84	2.7		ug/L		12/02/02	SW846 8260B
Chloroform	< 0.45	0.45	1.4		ug/L		12/02/02	SW846 8260B
Chloromethane	< 0.27	0.27	0.86		ug/L		12/02/02	SW846 8260B
1,1-Dichloroethane	140	0.87	2.8		ug/L		12/02/02	SW846 8260B
1,2-Dichloroethane	2.1	0.55	1.8		ug/L		12/02/02	SW846 8260B
1,1-Dichloroethene	< 0.56	0.56	1.8		ug/L		12/02/02	SW846 8260B
cis-1,2-Dichloroethene	14	0.81	2.6		ug/L		12/02/02	SW846 8260B
trans-1,2-Dichloroethene	2.9	0.80	2.5		ug/L		12/02/02	SW846 8260B
1,2-Dibromo-3-chloropropane	< 0.88	0.88	2.8		ug/L		12/02/02	SW846 8260B
1,2-Dibromoethane	< 0.66	0.66	2.1		ug/L		12/02/02	SW846 8260B
1,2-Dichlorobenzene	< 0.71	0.71	2.3		ug/L		12/02/02	SW846 8260B
1,2-Dichloropropane	2.4	0.39	1.2		ug/L		12/02/02	SW846 8260B
1,3-Dichlorobenzene	< 0.58	0.58	1.8		ug/L		12/02/02	SW846 8260B
1,3-Dichloropropane	< 0.62	0.62	2.0		ug/L		12/02/02	SW846 8260B
1,4-Dichlorobenzene	< 0.63	0.63	2.0		ug/L		12/02/02	SW846 8260B
2,2-Dichloropropane	< 0.99	0.99	3.2		ug/L		12/02/02	SW846 8260B
Dichlorodifluoromethane	< 0.57	0.57	1.8		ug/L		12/02/02	SW846 8260B
Diisopropyl ether	< 0.60	0.60	1.9		ug/L		12/02/02	SW846 8260B
Ethylbenzene	4.1	0.53	1.7		ug/L		12/02/02	SW846 8260B
Hexachlorobutadiene	< 0.95	0.95	3.0		ug/L		12/02/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-24  
Lab Sample Number : 828913-003  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/20/02  
Matrix Type : WATER

p-Isopropyltoluene	< 0.58	0.58	1.8	ug/L	12/02/02	SW846 8260B
Isopropylbenzene	< 0.66	0.66	2.1	ug/L	12/02/02	SW846 8260B
Methylene chloride	1.5	0.47	1.5	ug/L	12/02/02	SW846 8260B
Methyl-tert-butyl-ether	< 0.87	0.87	2.8	ug/L	12/02/02	SW846 8260B
Naphthalene	4.7	0.63	2.0	ug/L	12/02/02	SW846 8260B
n-Propylbenzene	< 0.95	0.95	3.0	ug/L	12/02/02	SW846 8260B
1,1,2,2-Tetrachloroethane	< 0.77	0.77	2.5	ug/L	12/02/02	SW846 8260B
Tetrachloroethene	< 0.63	0.63	2.0	ug/L	12/02/02	SW846 8260B
Toluene	< 0.84	0.84	2.7	ug/L	12/02/02	SW846 8260B
1,1,1-Trichloroethane	< 0.65	0.65	2.1	ug/L	12/02/02	SW846 8260B
1,1,2-Trichloroethane	< 0.50	0.50	1.6	ug/L	12/02/02	SW846 8260B
1,2,3-Trichlorobenzene	< 0.77	0.77	2.5	ug/L	12/02/02	SW846 8260B
1,2,4-Trichlorobenzene	< 0.57	0.57	1.8	ug/L	12/02/02	SW846 8260B
Fluorotrichloromethane	< 0.85	0.85	2.7	ug/L	12/02/02	SW846 8260B
1,2,4-Trimethylbenzene	5.0	0.69	2.2	ug/L	12/02/02	SW846 8260B
1,3,5-Trimethylbenzene	< 0.64	0.64	2.0	ug/L	12/02/02	SW846 8260B
Trichloroethene	29	0.39	1.2	ug/L	12/02/02	SW846 8260B
Vinyl chloride	2.0	0.11	0.35	ug/L	12/02/02	SW846 8260B
Xylenes, -m, -p	5.7	1.1	3.5	ug/L	12/02/02	SW846 8260B
Xylene, -o	4.0	0.73	2.3	ug/L	12/02/02	SW846 8260B
4-Bromofluorobenzene	100			%Recov	12/02/02	SW846 8260B
Dibromofluoromethane	126			%Recov	12/02/02	SW846 8260B
Toluene-d8	129			%Recov	12/02/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-25  
Lab Sample Number : 828913-004  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/20/02  
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Chloride	32	0.61	1.9		mg/L		12/03/02	EPA 300.0	EPA 300.0	JJ

Organic Results

SPECIAL VOLATILE LIST - WATER

Prep Method: SW846 5030B

Prep Date: 12/3/02

Analyst: HW

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	< 0.62	0.62	2.0		ug/L		12/03/02	SW846 8260B
n-Butylbenzene	< 1.6	1.6	5.1		ug/L		12/03/02	SW846 8260B
Bromodichloromethane	< 0.58	0.58	1.8		ug/L		12/03/02	SW846 8260B
Bromobenzene	< 1.8	1.8	5.7		ug/L		12/03/02	SW846 8260B
s-Butylbenzene	< 1.6	1.6	5.1		ug/L		12/03/02	SW846 8260B
t-Butylbenzene	< 2.4	2.4	7.6		ug/L		12/03/02	SW846 8260B
2-Chlorotoluene	< 1.7	1.7	5.4		ug/L		12/03/02	SW846 8260B
4-Chlorotoluene	< 2.2	2.2	7.0		ug/L		12/03/02	SW846 8260B
Carbon tetrachloride	< 1.2	1.2	3.8		ug/L		12/03/02	SW846 8260B
Chlorobenzene	< 1.4	1.4	4.5		ug/L		12/03/02	SW846 8260B
Chlorodibromomethane	< 2.1	2.1	6.7		ug/L		12/03/02	SW846 8260B
Chloroethane	< 2.1	2.1	6.7		ug/L		12/03/02	SW846 8260B
Chloroform	< 1.1	1.1	3.5		ug/L		12/03/02	SW846 8260B
Chloromethane	< 0.68	0.68	2.2		ug/L		12/03/02	SW846 8260B
1,1-Dichloroethane	< 2.2	2.2	7.0		ug/L		12/03/02	SW846 8260B
1,2-Dichloroethane	< 1.4	1.4	4.5		ug/L		12/03/02	SW846 8260B
1,1-Dichloroethene	1.6	1.4	4.5		ug/L	Q	12/03/02	SW846 8260B
cis-1,2-Dichloroethene	110	2.0	6.4		ug/L		12/03/02	SW846 8260B
trans-1,2-Dichloroethene	2.2	2.0	6.4		ug/L	Q	12/03/02	SW846 8260B
1,2-Dibromo-3-chloropropane	< 2.2	2.2	7.0		ug/L		12/03/02	SW846 8260B
1,2-Dibromoethane	< 1.7	1.7	5.4		ug/L		12/03/02	SW846 8260B
1,2-Dichlorobenzene	< 1.8	1.8	5.7		ug/L		12/03/02	SW846 8260B
1,2-Dichloropropane	< 0.97	0.97	3.1		ug/L		12/03/02	SW846 8260B
1,3-Dichlorobenzene	< 1.4	1.4	4.5		ug/L		12/03/02	SW846 8260B
1,3-Dichloropropane	< 1.6	1.6	5.1		ug/L		12/03/02	SW846 8260B
1,4-Dichlorobenzene	< 1.6	1.6	5.1		ug/L		12/03/02	SW846 8260B
2,2-Dichloropropane	< 2.5	2.5	8.0		ug/L		12/03/02	SW846 8260B
Dichlorodifluoromethane	< 1.4	1.4	4.5		ug/L		12/03/02	SW846 8260B
Diisopropyl ether	< 1.5	1.5	4.8		ug/L		12/03/02	SW846 8260B
Ethylbenzene	2.9	1.3	4.1		ug/L	Q	12/03/02	SW846 8260B
Hexachlorobutadiene	< 2.4	2.4	7.6		ug/L		12/03/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-25  
Lab Sample Number : 828913-004  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/20/02  
Matrix Type : WATER

p-Isopropyltoluene	< 1.4	1.4	4.5	ug/L		12/03/02	SW846 8260B
Isopropylbenzene	< 1.7	1.7	5.4	ug/L		12/03/02	SW846 8260B
Methylene chloride	< 1.2	1.2	3.8	ug/L		12/03/02	SW846 8260B
Methyl-tert-butyl-ether	< 2.2	2.2	7.0	ug/L		12/03/02	SW846 8260B
Naphthalene	< 1.6	1.6	5.1	ug/L		12/03/02	SW846 8260B
n-Propylbenzene	< 2.4	2.4	7.6	ug/L		12/03/02	SW846 8260B
1,1,2,2-Tetrachloroethane	< 1.9	1.9	6.1	ug/L		12/03/02	SW846 8260B
Tetrachloroethene	< 1.6	1.6	5.1	ug/L		12/03/02	SW846 8260B
Toluene	< 2.1	2.1	6.7	ug/L		12/03/02	SW846 8260B
1,1,1-Trichloroethane	< 1.6	1.6	5.1	ug/L		12/03/02	SW846 8260B
1,1,2-Trichloroethane	< 1.2	1.2	3.8	ug/L		12/03/02	SW846 8260B
1,2,3-Trichlorobenzene	< 1.9	1.9	6.1	ug/L		12/03/02	SW846 8260B
1,2,4-Trichlorobenzene	< 1.4	1.4	4.5	ug/L		12/03/02	SW846 8260B
Fluorotrichloromethane	< 2.1	2.1	6.7	ug/L		12/03/02	SW846 8260B
1,2,4-Trimethylbenzene	< 1.7	1.7	5.4	ug/L		12/03/02	SW846 8260B
1,3,5-Trimethylbenzene	< 1.6	1.6	5.1	ug/L		12/03/02	SW846 8260B
Trichloroethene	260	0.97	3.1	ug/L		12/03/02	SW846 8260B
Vinyl chloride	24	0.28	0.89	ug/L		12/03/02	SW846 8260B
Xylenes, -m, -p	6.8	2.8	8.9	ug/L	Q	12/03/02	SW846 8260B
Xylene, -o	3.4	1.8	5.7	ug/L	Q	12/03/02	SW846 8260B
4-Bromofluorobenzene	105			%Recov		12/03/02	SW846 8260B
Dibromofluoromethane	125			%Recov		12/03/02	SW846 8260B
Toluene-d8	129			%Recov		12/03/02	SW846 8260B



- Analytical Report -

Project Name : TECUMSEH PRODUCTS  
Project Number : 3084.27  
Field ID : MW-26  
Lab Sample Number : 828913-005  
WI DNR LAB ID : 405132750

Client : RMT - MADISON  
Report Date : 12/5/02  
Collection Date : 11/21/02  
Matrix Type : WATER

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Chloride	170	0.61	1.9		mg/L		12/03/02	EPA 300.0	EPA 300.0	JJ

Organic Results

SPECIAL VOLATILE LIST - WATER

Prep Method: SW846 5030B

Prep Date: 12/4/02

Analyst: JJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Benzene	9.5	6.2	20		ug/L	Q	12/04/02	SW846 8260B
n-Butylbenzene	< 16	16	51		ug/L		12/04/02	SW846 8260B
Bromodichloromethane	< 5.8	5.8	18		ug/L		12/04/02	SW846 8260B
Bromobenzene	< 18	18	57		ug/L		12/04/02	SW846 8260B
s-Butylbenzene	< 16	16	51		ug/L		12/04/02	SW846 8260B
t-Butylbenzene	< 24	24	76		ug/L		12/04/02	SW846 8260B
2-Chlorotoluene	< 16	16	51		ug/L		12/04/02	SW846 8260B
4-Chlorotoluene	< 22	22	70		ug/L		12/04/02	SW846 8260B
Carbon tetrachloride	< 12	12	38		ug/L		12/04/02	SW846 8260B
Chlorobenzene	< 14	14	45		ug/L		12/04/02	SW846 8260B
Chlorodibromomethane	< 21	21	67		ug/L		12/04/02	SW846 8260B
Chloroethane	< 21	21	67		ug/L		12/04/02	SW846 8260B
Chloroform	< 11	11	35		ug/L		12/04/02	SW846 8260B
Chloromethane	< 6.8	6.8	22		ug/L		12/04/02	SW846 8260B
1,1-Dichloroethane	69	22	70		ug/L	Q	12/04/02	SW846 8260B
1,2-Dichloroethane	< 14	14	45		ug/L		12/04/02	SW846 8260B
1,1-Dichloroethene	< 14	14	45		ug/L		12/04/02	SW846 8260B
cis-1,2-Dichloroethene	2400	20	64		ug/L		12/04/02	SW846 8260B
trans-1,2-Dichloroethene	31	20	64		ug/L	Q	12/04/02	SW846 8260B
1,2-Dibromo-3-chloropropane	< 22	22	70		ug/L		12/04/02	SW846 8260B
1,2-Dibromoethane	< 16	16	51		ug/L		12/04/02	SW846 8260B
1,2-Dichlorobenzene	< 18	18	57		ug/L		12/04/02	SW846 8260B
1,2-Dichloropropane	< 9.8	9.8	31		ug/L		12/04/02	SW846 8260B
1,3-Dichlorobenzene	< 14	14	45		ug/L		12/04/02	SW846 8260B
1,3-Dichloropropane	< 16	16	51		ug/L		12/04/02	SW846 8260B
1,4-Dichlorobenzene	< 16	16	51		ug/L		12/04/02	SW846 8260B
2,2-Dichloropropane	< 25	25	80		ug/L		12/04/02	SW846 8260B
Dichlorodifluoromethane	< 14	14	45		ug/L		12/04/02	SW846 8260B
Diisopropyl ether	< 15	15	48		ug/L		12/04/02	SW846 8260B
Ethylbenzene	< 13	13	41		ug/L		12/04/02	SW846 8260B
Hexachlorobutadiene	< 24	24	76		ug/L		12/04/02	SW846 8260B

- Analytical Report -

Project Name : TECUMSEH PRODUCTS

Project Number : 3084.27

Field ID : MW-26

Lab Sample Number : 828913-005

WI DNR LAB ID : 405132750

Client : RMT - MADISON

Report Date : 12/5/02

Collection Date : 11/21/02

Matrix Type : WATER

p-Isopropyltoluene	< 14	14	45	ug/L		12/04/02	SW846 8260B
Isopropylbenzene	< 16	16	51	ug/L		12/04/02	SW846 8260B
Methylene chloride	< 12	12	38	ug/L		12/04/02	SW846 8260B
Methyl-tert-butyl-ether	< 22	22	70	ug/L		12/04/02	SW846 8260B
Naphthalene	< 16	16	51	ug/L		12/04/02	SW846 8260B
n-Propylbenzene	< 24	24	76	ug/L		12/04/02	SW846 8260B
1,1,2,2-Tetrachloroethane	< 19	19	61	ug/L		12/04/02	SW846 8260B
Tetrachloroethene	< 16	16	51	ug/L		12/04/02	SW846 8260B
Toluene	< 21	21	67	ug/L		12/04/02	SW846 8260B
1,1,1-Trichloroethane	21	16	51	ug/L	Q	12/04/02	SW846 8260B
1,1,2-Trichloroethane	< 12	12	38	ug/L		12/04/02	SW846 8260B
1,2,3-Trichlorobenzene	< 19	19	61	ug/L		12/04/02	SW846 8260B
1,2,4-Trichlorobenzene	< 14	14	45	ug/L		12/04/02	SW846 8260B
Fluorotrichloromethane	< 21	21	67	ug/L		12/04/02	SW846 8260B
1,2,4-Trimethylbenzene	< 17	17	54	ug/L		12/04/02	SW846 8260B
1,3,5-Trimethylbenzene	< 16	16	51	ug/L		12/04/02	SW846 8260B
Trichloroethene	950	9.8	31	ug/L		12/04/02	SW846 8260B
Vinyl chloride	290	2.8	8.9	ug/L		12/04/02	SW846 8260B
Xylenes, -m, -p	< 28	28	89	ug/L		12/04/02	SW846 8260B
Xylene, -o	< 18	18	57	ug/L		12/04/02	SW846 8260B
4-Bromofluorobenzene	106			%Recov		12/04/02	SW846 8260B
Dibromofluoromethane	95			%Recov		12/04/02	SW846 8260B
Toluene-d8	117			%Recov		12/04/02	SW846 8260B

Organic Data Qualifiers

- B Analyte is present in the method blank. Method blank criteria are evaluated to the laboratory method detection limit. Additionally, method blank acceptance may be based on project specific criteria or determined from analyte concentrations in the sample and are evaluated on a sample-by-sample basis.
- C Elevated detection limit (see Sample Narrative).
- D Analyte value from diluted analysis, or surrogate result not applicable due to sample dilution.
- E Analyte concentration exceeds calibration range (see Sample Narrative).
- F Surrogate results outside control criteria.
- H(n) Extraction or analysis performed "n" days past holding time.
- J Qualitative evidence of analyte present: concentration detected is greater than the method detection limit but less than the reporting limit.
- K Detection limit may be elevated due to the presence of an unrequested analyte.
- N Spiked sample recovery not within control limits.
- P The relative percent difference between the two columns for detected concentrations was greater than 40%.
- Q The analyte has been detected between the limit of detection (LOD) and limit of quantitation (LOQ). The results are qualified due to the uncertainty of analyte concentrations within this range.
- S The relative percent difference between quantitation and confirmation columns exceeds internal quality control criteria. Because the result is unconfirmed, it has been reported as a non-detect with an elevated detection limit.
- U The analyte was not detected above the reporting limit.
- W Sample received with headspace.
- X See Sample Narrative.
- & Laboratory Control Spike recovery not within control limits.
- \* Duplicate analyses not within control limits.
- SUB1 Assay was subcontracted to an approved lab.
- SUB2 Assay was subcontracted to En Chem Green Bay WI Cert. #405132750.

12/12