



PROJECT
2733702

Montgomery
Watson
608-231-4747
11925 W Lake Park Dr
Suite 200
Milw WI 53224

Sed Received 10/29/93

FID 241092110

HW/GENCL

SITE INVESTIGATION

TILTON PROPERTY
3217 WEST VILLARD AVENUE
MILWAUKEE, WISCONSIN

OCTOBER 1993

PREPARED FOR:
MS. ANITA TILTON
MILWAUKEE, Wisconsin

•••

PREPARED BY:
WARZYN INC.
MILWAUKEE, WISCONSIN





October 28, 1993

Mr. Scott Ferguson
Wisconsin Department of Natural Resources
4041 North Richards Street
P.O. Box 12436
Milwaukee, Wisconsin 53212

Re: Site Investigation Report
Tilton Property
3217 West Villard Avenue
Milwaukee, Wisconsin

Dear Mr. Ferguson:

On behalf of Ms. Anita Tilton, Warzyn is submitting the enclosed Site Investigation report for the above-referenced property. The investigation was conducted in accordance with Warzyn's May 1992 Work Plan, which was approved by the Wisconsin Department of Natural Resources on November 25, 1992.

As discussed in the report, soil and groundwater at the site are contaminated with tetrachloroethene and trichloroethene and their degradation products. The groundwater contaminant concentrations exceed the Groundwater Quality Enforcement Standards (ES), as established in Chapter NR 140 Wis. Adm. Code. The vertical extent of soil contamination appears to be to a maximum depth of approximately 25 ft below ground surface (bgs). The horizontal extent of soil contamination has not been fully defined, but potentially follows the general groundwater flow pattern to the east. In the May 1992 Work Plan, Warzyn proposed to install two groundwater monitoring wells on the Soo Line Railroad property to assist in the delineation of potential contamination to the east. However, continuing efforts by Godfrey & Kahn and Warzyn have been unsuccessful in negotiating an access agreement to complete the work.

In order to further define the horizontal extent of soil and groundwater contamination, Warzyn proposes to perform a soil gas survey, and collect soil and groundwater samples using a hydraulic probe system. Recommendations for installation of additional permanent monitoring wells will be made, if appropriate, after reviewing results of the soil gas survey and soil and groundwater sampling. The proposed Work Plan is described in Section 7 of the report. Warzyn formally requests that the WDNR review the Work Plan and issue a letter of concurrence

THE PERFECT BALANCE
BETWEEN TECHNOLOGY
AND CREATIVITY.

MILWAUKEE
1125 WEST LAKE PARK DRIVE
SUITE 200
MILWAUKEE, WI 53224
(414) 359-1144
FAX (414) 359-1145



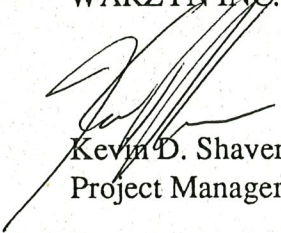


regarding the project direction and authorization to proceed with the soil gas survey and hydraulic probe sampling.

If you have any questions regarding the submittal of this report please contact me at (414) 359-1144.

Sincerely,

WARZYN INC.



Kevin D. Shaver, CHMM
Project Manager

Enclosures: As stated

cc: Ms. Pamela Barker, Godfrey & Kahn, S.C. (w/encl)
Mr. James L. Walt, Sr. (w/two encl)

KDS/lek/DRL
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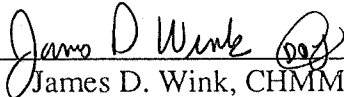


PROJECT
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SITE INVESTIGATION

TILTON PROPERTY
3217 WEST VILLARD AVENUE
MILWAUKEE, WISCONSIN

OCTOBER 1993


James D. Wink, CHMM
Environmental Scientist

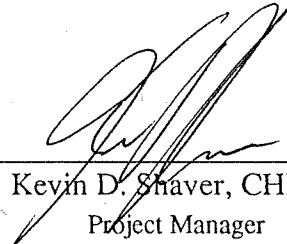

Kevin D. Shaver, CHMM
Project Manager

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INTRODUCTION

This report presents the results of a Site Investigation performed by Warzyn Inc. (Warzyn) on behalf of Ms. Anita Tilton for a property located at 3217 West Villard Avenue in Milwaukee, Wisconsin. The purpose of the investigation was to evaluate the extent of chlorinated volatile organic compound (VOC) contamination in the soil and groundwater north and east of the northeast corner of the existing building at the property.

The investigation was conducted in accordance with the May 1992 Work Plan submitted to the Wisconsin Department of Natural Resources (WDNR). On November 24, 1992, representatives of Godfrey & Kahn and Warzyn met with Mr. Scott Ferguson of the WDNR and agreed that response to the potential chlorinated VOC contamination at the property should be regulated by the WDNR through s. 144.76(3), Wis. Stat., rather than ss. 144.60-144.74, Wis. Stats. Based on this meeting and agreement, on November 25, 1992 the WDNR approved Warzyn's May 1992 Work Plan.

The submitted Work Plan outlined the implementation of two soil borings and installation of one groundwater monitoring well directly east of the property, on Soo Line Railroad Company (Soo Line) right-of-way. However, continuing efforts by Godfrey & Kahn and Warzyn have been unsuccessful in negotiating an access agreement with the Soo Line to complete the work.

[mil-608-178]

SITE DESCRIPTION

The subject property is located in the Northwest Quarter of the Southeast Quarter of Section 36, Township 8 North, Range 21 East, Milwaukee County, Wisconsin (Figure 1). The street address is 3217 West Villard Avenue.

The subject property is bounded by West Villard Avenue and by an industrial development to the north; the Chicago, Minneapolis, Saint Paul and Pacific (Soo Line) railroad tracks and by an industrial development to the east and southeast; and an industrial development, a church and a U.S. Post Office to the southwest and west.

The subject property is approximately 56,296 square ft in size and is occupied by a one-story brick building. The building is approximately 17,400 square ft in size. Approximately 16,400 square feet is occupied by a grocery store (Sheridan's Shop Rite) and 1,000 square ft by a pick-up dry cleaning store (Valet Cleaners). The remaining surface area of the property is covered with an asphalt parking lot.

The City of Milwaukee provides potable water and sanitary sewer services to the subject property and surrounding vicinity. According to the City of Milwaukee zoning records, the property is zoned industrial and business (I-B-85). A review of the Milwaukee, Wisconsin 7.5 minute U.S.G.S. topographic quadrangle map indicated that the surface topography in the vicinity gently slopes to the east-northeast towards Lincoln Creek, which is located approximately 950 ft to the east-northeast.

[mil-608-178]

REGIONAL GEOLOGY AND HYDROGEOLOGY

According to the Southeastern Wisconsin Regional Planning Commission (SEWRPC) publication, *A Solid Waste Management Plan for Milwaukee County, Wisconsin (July 1987)* the subject property is located on a glacial ground moraine. Surface water drainage is to the east towards Lincoln Creek, which is located approximately 950 ft to the east-northeast. The U.S. Department of Agriculture publication, *Soil Survey of Milwaukee and Waukesha Counties, Wisconsin (July 1971)* indicated surficial soil in the vicinity of the subject property is of the Ozaukee-Morley-Mequon Association. These types of soils are classified as well-drained to somewhat poorly-drained soils that have a subsoil of silty clay loam and silty clay. These types of soils are formed in thin layers of silty clay loam glacial till on moraines.

Historic well logs available from the WDNR-Southeast District Office for the Southwest and Northwest Quarters of Section 35 and Southeast and Northeast Quarters of Section 36 of Township 8 North, Range 21 East (approximately 0.5 mile radius from the subject property) indicate that unconsolidated glacial sediments consisting primarily of clay, but with some interbedded sand and gravels, extend from near ground surface to maximum depths of 65 to 170 feet, where bedrock was encountered. According to the SEWRPC publication, the surface of the bedrock in the vicinity of the subject property is composed of dolomite, some limestone, and shale of the Milwaukee Formation of Devonian Age.

According to the U.S. Department of the Interior publication, *Groundwater Conditions in the Milwaukee-Waukesha Area, Wisconsin (1953)* three primary aquifers are located in the vicinity of the subject property. The shallowest aquifer consists of permeable sand and gravel units within the unconsolidated glacial sediments and is generally referred to as the sand and gravel aquifer. The low-permeability clay and silt deposits (glacial till) that comprise much of the

unconsolidated glacial sediments are generally not considered aquifer materials because they do not yield adequate amounts of water to wells. The sand and gravel aquifer is generally hydraulically connected to the underlying Niagara aquifer, which consists of dolomite, shale and limestone of the Devonian age Milwaukee Formation and Silurian age Niagara Formation. This aquifer is the primary aquifer used in the Milwaukee vicinity for private domestic, commercial and some industrial wells. Underlying the Niagara aquifer is the Ordovician age Maquoketa shale, which is an aquitard between the Niagara aquifer and the underlying sandstone aquifer. The sandstone aquifer consists of Cambrian and Ordovician age sandstone and dolomite and is used for some high capacity commercial or industrial wells in the Milwaukee area.

According to the SEWRPC publication, the depth to seasonal high groundwater in the unconsolidated soils in the vicinity of the subject property was estimated to be about 10 to 30 feet in 1976. Based on a review of regional topographic maps, it appears shallow groundwater flow is in an easterly direction towards Lincoln Creek, which is located approximately 950 ft to the east-northeast (Figure 1). However, localized conditions may affect the depth to groundwater and flow direction at the property. Flow direction in the deeper Niagara and sandstone aquifers likely trends in an easterly direction.

During this investigation, no evidence was noted that suggests operations at the property have impacted either the Niagara or sandstone aquifers. The historic Well logs suggest 65 to 170 ft of generally clayey soils overlie the Niagara aquifer at the property. This thick layer of clay would tend to minimize the potential for contaminants to migrate to either the Niagara or sandstone aquifer.

According to the City of Milwaukee Water Department, the subject property and the surrounding vicinity have been serviced with potable water supply from the City since 1952.

[mil-608-178]

INVESTIGATION ACTIVITIES

The purpose of the investigation was to determine the horizontal and vertical extent of contamination in soil and groundwater.

SOIL BORINGS

On September 20, 1991 and March 3, 1993, Warzyn conducted a total of four soil borings (i.e., MW1 through MW4; Figure 2). A truck-mounted rotary drill rig was used to complete the borings. Soil samples were collected using a hollow-stem auger (HSA) and split-spoon sampling. The samples were collected every 2.5 ft to a maximum depth of 25 ft, in accordance with ASTM:D 1586-84 methods. As samples were obtained in the field, they were visually classified in accordance with ASTM:D 2487-84 and ASTM:D 2488 methods. Representative portions of the samples were returned to the laboratory for further examination and verification. Sample lithology was recorded using the Unified Soil Classification System. Soil boring logs (WDNR Form 4400-122) documenting soil types and subsurface conditions are provided in Appendix A.

The soil samples from each sampled interval were split into several glass sample jars, including a four-ounce jar sealed with aluminum foil for headspace screening and an eight-ounce jar for potential laboratory analysis. The soil samples in the four-ounce jars were approximately one-half full. An HNu Systems Model 101 photoionization detector (PID) was used to screen soil samples for indication of the potential presence of volatile organic compounds (VOCs). Specifically, a 10.2 eV lamp was used with the PID to screen the soils. This lamp was selected based upon the ionization potential of tetrachloroethane (9.32 eV) and trichloroethene (9.47 eV). The PID was calibrated daily with 52.1 ppm isobutylene gas in accordance with Warzyn's written instrument operating procedure. The four-ounce sample jars were allowed to warm to approximately 70°F for a minimum of 30 minutes. The selection of soil samples for analysis was based upon this PID screening, along with the visual evidence of potential

contamination (i.e., stained soils). The soil samples collected for laboratory analysis were clearly marked using a indelible marking pen indicating the sample date, location, and identification number. The samples were cooled to 4°C and shipped for analysis using chain-of-custody procedures.

The split-spoon sampler was cleaned between samples to minimize cross-contamination. The cleaning procedures consisted of a soap and water wash, with tap water and distilled water rinses. To avoid cross-contamination between soil borings, drilling augers and sampling equipment were cleaned with a high-pressure hot-water cleaner between holes.

MONITORING WELL INSTALLATION

Warzyn installed and developed four groundwater monitoring wells (MW1 through MW4) which were co-located at the soil boring locations (Figure 2). Well construction, development and sampling methods were in accordance with Chapter NR 141, Wis. Adm. Code and Warzyn's standard protocol (Appendix B). The well construction was documented on WDNR Form 4400-113A, and development was documented on WDNR Form 4400-113B (Appendix C). A summary of monitoring well information is provided on Table 1.

SOIL ANALYSES

Seven soil samples from the borings were submitted for VOC analysis. Samples exhibiting the highest PID reading or where the boring intersected the water table were selected for analysis in order to evaluate the maximum concentrations of on-site contamination. The samples were stored on ice and then transported under chain-of-custody procedures to Warzyn's Technical Services Laboratory in Madison, Wisconsin (WDNR Certification ID#113138300). The soil analytical laboratory results are provided in Appendix D.

WATER LEVEL MEASUREMENTS

The top of each monitoring well was surveyed on June 10, 1993 by National Survey and Engineering and referenced to mean sea level using an off-site benchmark for determining future groundwater elevations (Table 1). Water levels in the monitoring wells were measured on several dates using an electric water level indicator (Table 2).

GROUNDWATER SAMPLING

On October 2, 1991, a round of groundwater samples was collected from MW1 and MW2. Two additional rounds of groundwater samples were collected for MW1 through MW4 on April 4 and May 19, 1993. A field blank, bailer blank, and duplicate sample were collected to document the quality control (QC) of the sampling.

Prior to sample collection, wells were purged by removing a maximum of 3 to 5 well volumes, or until further yield could not be achieved. Purging and sample collection were accomplished by using a stainless steel bailer. The purged groundwater was containerized into 55-gallon drums. To avoid cross-contamination during groundwater sampling, the bailer was decontaminated between wells using a trisodium phosphate (TSP) wash and triple distilled water rinse.

The groundwater sample containers were clearly marked using an indelible marking pen indicating the sample date, location, and identification number. The samples were cooled to 4°C and shipped for analysis to Warzyn's Analytical Laboratory using chain-of-custody procedures. The collected groundwater samples were analyzed for VOCs using U.S. EPA Method 8010/8020 in SW 846, *Test Methods for Evaluating Solid Waste, November 1986*. Groundwater analytical laboratory reports are provided in Appendix E.

[mil-608-178]

INVESTIGATION RESULTS

SITE PHYSICAL CHARACTERISTICS

Site Geology and Soils

Fill materials were encountered in the soil borings from the ground surface to 3.5 ft to 7.0 ft below ground surface (Appendix A). The fill materials consisted of brown, fine to medium sand with some gravel, and brown to grayish black lean clay fill with a trace fine to medium sand and gravel. Beneath the fill materials was a layer of black fibrous peat approximately 1.0 ft to 3.5 ft thick and a 1.0 to 1.5 ft layer of organic clay. Stiff brown mottled lean clays with little fine to medium sand and trace gravel were observed to a maximum depth of 21.0 ft. Beneath the brown clay layer, a very stiff gray to grayish brown lean clay with little fine to medium sand and trace gravel extended to the bottom of the soil borings at 25.5 feet.

Site Hydrogeology

Depth to the water measurements for the four monitoring wells are listed in Table 2. Based on water levels measured in MW3 and MW4, the water table generally appears to be between 2 and 4 ft below ground surface, generally within the fill material. Wells MW1 and MW2 appear to be screened 10 to 12 ft below the water table, and thus, do not provide conclusive water table elevation information. Based on a comparison of water level elevations for MW3 and MW4 to water level elevations for MW1, downward vertical gradients appear to occur at the site. Groundwater flow generally appears to be from west to east, based on comparison of water level elevations in MW3 and MW4 and the land surface topography in the site vicinity. Although water level elevation is not sufficient to more accurately delineate groundwater flow direction, the land surface topography and shallow depth to water at the site suggests that groundwater flow may be somewhat to the northeast.

*MW-1 screened
MW-2
below water
table.
vertical grad.
GW = E-W*

NATURE AND EXTENT OF CONTAMINATION

Soil

As indicated in the boring logs (Appendix A), the PID readings ranged between 50-105 instruments units (i.u.) from 1.0 to 10.5 ft depth in MW1. The PID readings increased to 200 to 500 i.u. in the 13.5 to 20.5 ft depth interval and then decreased significantly (7 to 12 i.u.) in the 21.0 to 25.5 ft depth interval. Lower PID readings (0.1 to 4.8 i.u.) were also observed in MW3 and MW4.

Soil analytical results are summarized in Table 3. Elevated concentrations of tetrachloroethene (37,000 µg/kg), trichloroethane (3,000 µg/kg) and cis-1, 2-dichloroethene (2,800 µg/kg), trans-1, 2-dichloroethene (26 µg/kg) and vinyl chloride (31 µg/kg) were detected in the sample collected at the 3.5 to 5.5 ft depth interval in MW1 (B1:S2). The soil sample consisted of permeable fine to medium sand and was located above brown lean clay fill. A soil sample from the 16 to 18 ft depth interval (B1:S7) contained elevated concentrations of tetrachloroethene (140,000 µg/kg), trichloroethene (est. 420 µg/kg) and chlorobenzene (25 µg/kg).

Slightly elevated concentrations of tetrachloroethene (33 µg/kg), trichloroethene (7.7 µg/kg), methylene chloride (est. 20 µg/kg) and cis-1,2-dichloroethene (8.4 µg/kg) were detected in the shallow fill soil sample collected from the 1 to 3 ft depth interval in MW3 (B3:S1). Only cis-1,2-dichloroethene (36 µg/kg) was detected in the 6 to 8 ft depth sample (B3:S3) which was a stiff to hard mottled lean clay.

Elevated concentrations of tetrachloroethene (23,000 µg/kg), trichloroethene (490 µg/kg) and cis-1,2-dichloroethene (700 µg/kg) were detected in the peat layer soil sample from the 6 to 8 ft depth interval in MW4 (B4:S3). Lower concentrations of the compounds were detected in the soil sample collected from the stiff to hard lean clay directly beneath the peat layer (B4:S4). The soil sample collected from background soil boring MW2 (B2:S7) contained no detectable concentrations of VOCs.

Groundwater

Groundwater analytical results are summarized in Table 4. Elevated concentrations of tetrachloroethene (14,000 to 38,000 µg/L), trichloroethene (220 to 960 µg/L), cis-1,2-dichloroethene (560 to 960 µg/L) and vinyl chloride (11 to 33 µg/L) were detected in MW1. These concentrations exceeded the corresponding s. NR 140.16 Wis. Adm. Code Enforcement Standards (ES).

Generally lower concentrations of tetrachloroethene (2,400 to 2,900 µg/L) and trichloroethene (380 to 440 µg/L) were observed in the MW4. However concentrations of the degradation compounds cis-1,2-dichloroethene (920 to

1,100 µg/L) and vinyl chloride (42 to 48 µg/L) were slightly higher in MW4 than in MW1. Concentrations of these four compounds exceeded the corresponding ES.

Concentrations of cis-1,2-dichloroethene (180 to 190 µg/L) and vinyl chloride (4.8 µg/L) exceeded the ES in MW3. The groundwater samples collected from the MW2 (background monitoring well) contained no detectable concentrations of VOCs.

[mil-608-178]

CONCLUSIONS

Based on the results of the site investigation, the following conclusions are made:

- Chlorinated volatile organic compounds (VOCs), primarily tetrachloroethene and trichloroethene and their degradation products were detected in both soil and groundwater samples.
- The soils at the site generally consist of various fill materials extending to approximately 6 ft below ground surface. Beneath the fill materials are layers of fibrous peat and dark gray organic clay to a maximum depth of 9.5 ft. Beneath the organic layers are layers of stiff to very stiff brown to gray lean clays.
- The general horizontal extent of soil impact appears to radiate north and east from MW1. The soil contamination concentrations decrease with distance toward MW3 and MW4. However, elevated concentration still exist at these locations and indicate contamination may extend further to the north. The horizontal extent of off-site impact, if any, to the east and southeast has not been determined. The vertical extent of soil contamination appears to extend to a maximum depth of approximately 25 ft below ground surface in the vicinity of MW1.
- Groundwater flow generally appears to be to the east. The depth to groundwater generally appears to be 2 to 4 ft and downward vertical gradients appear to occur at the site.
- Concentrations of tetrachloroethane, trichloroethane, cis-1,2-dichloroethene and vinyl chloride in groundwater samples from MW1 and MW4 exceeded the groundwater quality Enforcement Standards (ES) established in Chapter NR 140, Wis. Adm. Code. Concentrations of cis-1,2-dichloroethene exceeded the ES in MW3. Similar to the soil

contamination, the groundwater contamination decreases with distance from MW1 toward the north. However, elevated concentration still exist at MW4, which indicates contamination may extend further to the north. In addition, groundwater contamination has not been delineated to the east and southeast (due to access agreement negotiation problems with the Soo Line).

[mil-608-178]

RECOMMENDATIONS

Conclusions of the site investigation indicate that the magnitude of soil and groundwater contamination decreases northward from the building on the Tilton Property. However, extent of contamination has not been fully determined further to the north on the Tilton property and to the northeast, east and southeast on the Soo Line Railroad property. Warzyn recommends further investigation in these areas, which will require continuing efforts to enter into an access agreement with the Soo Line.

To further investigate the extent and magnitude of contamination, Warzyn recommends conducting a soil gas survey and collecting soil and groundwater samples at multiple depths using a hydraulic probe system. Specifically, Warzyn proposes to collect approximately 24 soil gas samples at the locations shown on Figure 3. The soil gas samples will be analyzed for select chlorinated hydrocarbons previously identified at the site; including perchloroethylene, trichloroethylene, cis and trans-1,2-dichloroethene, vinyl chloride, and 1,1-dichloroethene. The analysis will be performed in accordance with U.S. EPA Method 8010 (modified) using an electron capture detector (ECD) and direct injection of the soil gas.

Soil samples will be collected using the hydraulic probe system at three locations shown on Figure 3. Soil samples will be collected at approximate depths of 4, 8, 12, and 16 ft, and two samples from each location will be selected for laboratory analysis. Groundwater samples will also be collected at ten locations (Figure 3) using the hydraulic probe system. Groundwater samples will be collected at approximate depths of 6 ft and/or 18 ft. The soil and groundwater samples will be submitted to Warzyn's Analytical Services Laboratory for analysis of the previously mentioned chlorinated hydrocarbons using U.S. EPA method 8010. If on-site analysis of the soil gas samples is preferred, additional soil gas, soil or groundwater samples may be collected or locations modified, based on the initial soil gas results.

Recommendations for installation of additional permanent monitoring wells will be made, if appropriate, after reviewing results of the soil gas survey and soil and groundwater sampling. However, results of the investigation may be sufficient to evaluate and select an appropriate remediation method, without the need for installing additional monitoring wells until after implementing the remediation.

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TABLE 1

**Monitoring Well Information
Tilton Property
3217 West Villard Avenue
Milwaukee, Wisconsin**

<u>Well</u>	<u>Date Installed</u>	<u>Well Depth (ft)</u>	<u>Screen Length (ft)</u>	<u>Land Surface Elevation (ft)</u>	<u>Top of Casing (ft)</u>	<u>Bottom of Screen Elev. (ft)</u>	<u>Top of Screen (ft)</u>
MW1	9/20/91	25.0	10.0	651.32	650.84	626.32	636.32
MW2	9/20/91	25.0	10.0	651.65	651.12	626.65	636.65
MW3	3/9/93	15.0	10.0	650.70	650.30	635.70	645.70
MW4	3/9/93	15.0	10.0	650.37	649.97	635.37	645.37

NOTES:

1. Elevations referenced to National Geodetic Vertical Datum (NGVD)
2. Well depths measured in feet below land surface.
3. All wells constructed of 2-inch diameter schedule 40 PVC pipe and screen (0.010-inch slot)

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TABLE 2

Water Level Elevation Information
 Tilton Property
 3217 West Villard Avenue
 Milwaukee, Wisconsin

	<u>MW1</u>	<u>MW2</u>	<u>MW3</u>	<u>MW4</u>
Top of Casing (TOC) Elevation (ft)	650.84	651.12	650.30	649.97
Ground Surface (GS) Elevations (ft)	651.32	651.65	650.70	650.37

Depth of Water Below Top of Casing, in Feet

<u>Date</u>				
09/30/91	7.34	4.97	---	---
10/01/91	2.88	2.93	---	---
04/07/93	6.89	7.54	2.28	2.02
05/19/93	9.02	8.54	2.98	2.96
07/21/93	8.19	7.04	3.27	3.12
09/03/93	6.72	6.80	3.74	3.53

Water Level Elevation, In Feet Above Sea Level

09/30/91	644.50	646.15	---	---
10/01/91	648.96	648.19	---	---
04/07/93	644.95	643.58	648.02	647.95
05/19/93	642.82	642.58	647.32	647.01
07/21/93	643.65	644.08	647.03	646.85
09/03/93	644.12	644.32	646.56	646.44

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TABLE 3

Summary of Soil Analytical Results
 Tilton Property
 3217 West Villard Avenue
 Milwaukee, Wisconsin

Concentration, in micrograms per kilogram ($\mu\text{g}/\text{kg}$)

<u>Sample Identification</u>	<u>Sample Depth (ft)</u>	<u>Chlorobenzene</u>	<u>cis-1,2-Dichloroethene</u>	<u>trans-1,2-Dichloroethene</u>	<u>Methylene Chloride</u>	<u>Tetrachloroethene</u>	<u>Trichloroethene</u>	<u>Vinyl Chloride</u>
MW1/B1:S2	3.5 - 5.5	ND	2,800	26	ND	37,000	3,000	31
MW1/B1:S7	16 - 18	25	ND	ND	ND	140,000	420(a)	ND
MW2/B2:S7	16 - 18	ND	ND	ND	ND	ND	ND	ND
MW3/B3:S1	1 - 3	ND	8.4	ND	20(a)	33	7.7	ND
MW3/B3:S3	6 - 8	ND	36	ND	ND	ND	ND	ND
MW4/B4:S3	6 - 8	ND	700	ND	ND	23,000	490	ND
MW4/B4:S4	8.5 - 10.5	ND	220	45	ND	33	9.1	26

Notes:

1. ND indicates nondetectable concentrations
2. (a) = result should be considered estimated with possible high bias as indicated by method QC.
3. Data compiled only for compounds with concentrations above quantitation limits.
4. Samples B1:S2, B1:S7 and B2:S7 were collected on September 20, 1991 and samples B3:S1, B3:S3, B4:S3 and B4:S4 were collected on March 3, 1993.

TABLE 4

Summary of Groundwater Analytical Results
 Tilton Property
 3217 West Villard Avenue
 Milwaukee, Wisconsin

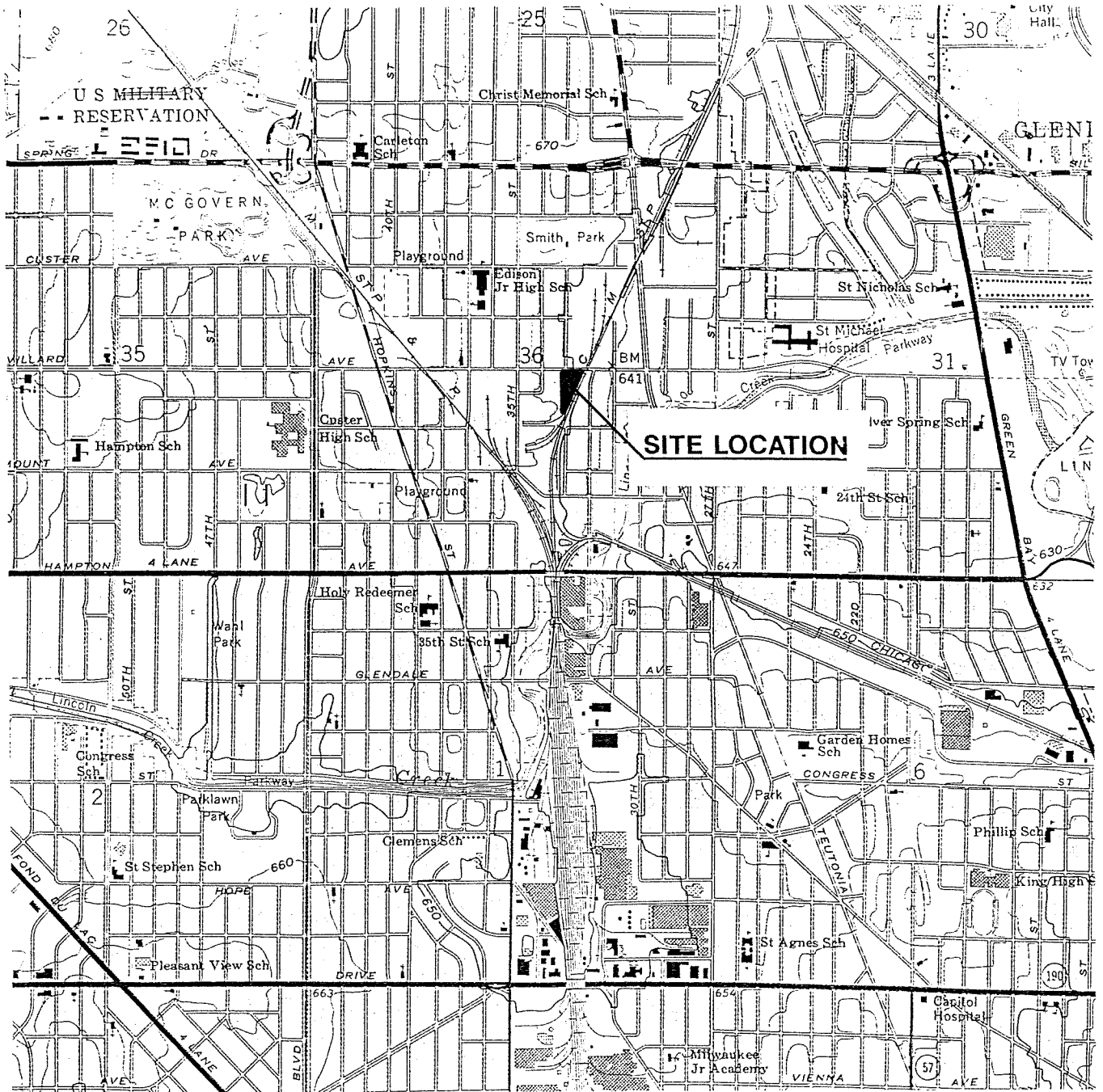
Concentration, in micrograms per liter ($\mu\text{g/L}$)

	Chlorobenzene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride	1,2-Dichloropropane
MW1									
10/2/91	2.0	1.8	560	5.8	14,000	16	220	11	1.3
4/4/93	ND	5.9	960	10	38,000	4.1	960	33	ND
5/19/93	ND	3.6	780	7.8	34,000	12	700	14	ND
MW2									
10/2/91	ND	ND	ND	ND	ND	ND	ND	ND	ND
4/4/93	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/19/93	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW3									
4/4/93	ND	ND	180	1.8	ND	ND	ND	ND	ND
5/19/93	ND	ND	190	3.6	ND	ND	ND	4.8	ND
MW4									
4/4/93	ND	2.0	1,100	9.2	2,900	10	440	42	ND
5/19/93	ND	2	920	16	2,400	8.2	380	48	ND
ES	*	7.0	70	100	5	1,000	5	0.2	5
PAL	*	0.024	7	20	0.5	200	0.18	0.0015	0.5

Notes:

- 1) Only parameters detected above the quantitation limits are listed.
- 2) ND = denotes concentrations of the parameters were not detected above the quantitation limit.
- 3) ES = Enforcement Standard, PAL = Preventive Action Limit. Both the PAL and ES have been established by Chapter NR 140, Wis. Adm. Code.
- 4) * = An asterisk means a PAL or ES has not currently been established.

R21E R22E



Management Review
Other

Technical Review
Project Manager

Graphic Standards CCM 10-12-93
Lead Professional

QUALITY CONTROL

NOTES

1. BASE MAP DEVELOPED FROM THE MILWAUKEE, WISCONSIN 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP, DATED 1958, PHOTOREVISED 1971.



QUADRANGLE LOCATION



SCALE IN FEET

FIGURE 1

WARZYN INC.

Developed By: _____ Drawn By: CCM

Approved By: _____ Date: 10/28/93

Reference: _____

Revisions: _____

SITE LOCATION MAP

SITE INVESTIGATION
TILTON PROPERTY
3217 WEST VILLARD AVENUE
MILWAUKEE, WISCONSIN

Drawing Number
2733702 **A1**



A

SOIL BORING LOGS

Facility/Project Name ESTATE OF AARON L. TILTON		License/Permit/Monitoring Number 27337.01		Boring Number MW1	
Boring Drilled By (Firm name and name of crew chief) 3217 West Villard Avenue -			Date Drilling Started 9/20/91	Date Drilling Completed 9/20/91	Drilling Method
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level ____ Feet MSL	Surface Elevation ____ Feet MSL	Borehole Diameter 2 1/4 inches

Boring Location
State Plane _____ N, _____ E S/C/N Lat _____
NW 1/4 of **SW** 1/4 of Section **36**, T **8** N, R **21** E/W Long _____
 Local Grid Location (if applicable) N E
 _____ Feet S _____ Feet W

County **Milwaukee** DNR County Code **41** Civil Town/City/or Village
City of Milwaukee

Sample Number	Length Recovered (In.)	Blow Counts	Depth in Ft	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					P 200	ROD/Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit			
				5" ASPHALT.											
SS1	M	11		FILL: 4" Brown Fine to Medium Sand, Some Gravel.				70.0							
SS2	M	0	5	12" Brown Fine to Medium Sand, Trace Gravel. Black Fine to Medium Sand, Trace Gravel and Cinders. Note: Water Observed at 4.0 Feet Above Clay Layer.				105.0							
SS3	M	5		FILL: Brown Lean Clay; Trace Fine to Medium Sand and Gravel.				50.0							
SS4	M	16	10	Note: Grading into Grayish Black in Color. Organic Wood Pieces Noted at 5.0 Feet. Stiff, Brown Mottled Lean CLAY; Little Fine to Medium Sand, Trace Gravel (CL).				100.0							
SS5	M	23						7.5							
SS6	M	17	15					200.0							
SS7	M	14						500.0							
SS8	M	15	20					450.0							
SS9	M	15		Grayish Brown Lean CLAY; Little Fine to Medium Sand, Trace Gravel (CL).				12.0							
SS10	M	10	25					7.0							
				End of Boring at 25.5 Feet.											

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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

Signature _____ EL / Firm **WARZYN INC.**

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other

Facility/Project Name ESTATE OF AARON L. TILTON		License/Permit/Monitoring Number 27337.01	Boring Number MW2	
Boring Drilled By (Firm name and name of crew chief) 3217 West Villard Avenue -		Date Drilling Started 9/20/91	Date Drilling Completed 9/20/91	Drilling Method
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level _____ Feet MSL	Surface Elevation _____ Feet MSL
				Borehole Diameter 2 1/4 inches

Boring Location
State Plane _____ N, _____ E S/C/N Lat _____
NW 1/4 of SW 1/4 of Section 36, T 8 N, R 21 E/W Long _____
Local Grid Location (if applicable)
_____ Feet N _____ Feet E
_____ Feet S _____ Feet W

County **Milwaukee** DNR County Code **41** Civil Town/City/or Village **City of Milwaukee**

Sample Number	Length Recovered (in.)	Blow Counts	Depth in Ft	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					P 200	ROD/Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit				
SS1	M	10		4" ASPHALT.												
				FILL: 8" Brown Fine to Medium Sand, Some Gravel.				0.2								
SS2	M	16	5	Brown to Black Lean Clay, Little Fine to Medium Sand, Trace Gravel.				ND								
SS3	M	28		Stiff, Brown Mottled Lean CLAY; Little Fine to Medium Sand, Trace Gravel (CL).				ND								
SS4	M	25	10					ND								
SS5	M	16		NOTE: Becoming Less Stiff at Approximately 11.0 Feet.				0.2								
SS6	M	14	15					ND								
SS7	M	14		Grayish Brown Lean CLAY; Little Fine to Medium Sand, Trace Gravel (CL).				0.4								
SS8	M	12	20	Note: Thin Gray Silt Seams Noted From 18.5 to 25.5 Feet.				0.2								
SS9	M	11						0.2								
SS10	M	14	25					0.2								
				End of Boring at 25.5 Feet. ND = Nondetect.												

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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Signature _____ EL / Firm **WARZYN INC.**

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- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other

Facility/Project Name Tilton		License/Permit/Monitoring Number 2733702	Boring Number B03	
Boring Drilled By (Firm name and name of crew chief) J & J Soil Testing Ltd. - Eugene Lehman		Date Drilling Started 3/3/93	Date Drilling Completed 3/3/93	Drilling Method 2 1/4" ID HSA
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level ____ Feet MSL	Surface Elevation ____ Feet MSL
Boring Location State Plane _____ N, _____ E S/C/N		Local Grid Location (if applicable)		Borehole Diameter 6.2 inches
NW 1/4 of SE 1/4 of Section 36 , T 8 N, R 21 E/W		Long _____ Feet		_____ Feet
County Milwaukee		DNR County Code	Civil Town/City/or Village Milwaukee	

Sample Number	Length Recovered (in.)	Blow Counts	Depth in Ft	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties					P 200	ROD/Comments
								PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit		
1	19	8 10 10 7		3" Asphalt; Light Gray Crushed Dolomite Basecourse. FILL: Alternating Layers of Brown Lean Clay, Brown Sand, and Black Cinders.	FILL			4.8	20	M				
2	10	3 1 2 1	5	Black Fibrous PEAT. (PT) Dark Gray Organic CLAY. (OL)	PT OL			0.1	3	M				
3	15	1 3 4 8		Stiff to Hard, Brown Mottled Lean CLAY; Little Sand and Gravel. (CL)	CL			0.4	7	M				
4	24	3 3 6 8	10					0.1	9	M				
5	24	6 11 20 24						0.9	31	M				
6	24	7 9 13 15	15					1.2	32	M				
7	24	5 7 9 10		Very Stiff, Gray Lean CLAY; Little Sand and Gravel. (CL)	CL			1.2	16	M				
8	24	4 6 10 11	20					0.4	16	M				
9	24	3 5 6 8						0.6	11	M				
10	24	1 5 6 6	25					0.2	11	M				
				End of Boring at 25.5 Ft.										

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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

Signature _____ / Firm **WARZYN INC.**

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other

Facility/Project Name Tilton		License/Permit/Monitoring Number 2733702	Boring Number B04	
Boring Drilled By (Firm name and name of crew chief) J & J Soil Testing Ltd. - Eugene Lehman		Date Drilling Started 3/3/93	Date Drilling Completed 3/3/93	Drilling Method 2 1/4" ID HSA
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level ____ Feet MSL	Surface Elevation ____ Feet MSL
Boring Location State Plane _____ N, _____ E S/C/N		Local Grid Location (if applicable)		
NW 1/4 of SE 1/4 of Section 36 , T 8 N, R 21 E/W		Lat _____ Long _____		
County Milwaukee		DNR County Code	Civil Town/City/or Village Milwaukee	

Sample Number	Length Recovered (in.)	Blow Counts	Depth in Ft	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	Soil Properties						ROD/Comments
								P10/F10	Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	14	11 12 8 7		3" Asphalt; Light Gray Crushed Dolomite Basecourse. FILL: Dark Brown Lean Clay, Numerous Cinders and Brick Pieces, Little Sand and Gravel.	FILL			ND	20	M				
2	3	8 5 3 1	5	Black, Fibrous PEAT (PT).	PT			0.4	8	M				
3	2	3 3 4 3		Dark Gray Organic CLAY (OL).	OL			0.8	7	M				
4	23	3 3 3 4	10	Stiff to Hard, Brown Mottled Lean CLAY; Little Sand and Gravel, Occasional Thin Wet Silty Sand Seams (CL).	CL			0.7	6	M				
5	16	9 12 16 15						0.1	28	M				
6	24	10 8 12 14	15					0.3	20	M				
7	24	5 7 9 10						0.1	16	M				
8	24	6 7 8 9	20	Very Stiff, Gray Lean CLAY; Little Sand and Gravel, Occasional Wet Silty Sand Seams.	CL			0.1	15	M				
9	24	4 3 4 5						ND	7	M				
10	24	4 6 7 8	25					ND	13	M				
				End of Boring at 25.5 Ft. ND = Non Detect.										

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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

Signature _____ Firm **WARZYN INC.**

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

B

PROTOCOL FOR INSTALLATION OF
GROUNDWATER MONITORING WELLS

PROTOCOL FOR GROUNDWATER MONITORING WELL INSTALLATION AND SAMPLING

Groundwater monitoring wells are installed using hollow stem auger (HSA) borings. Soil sampling is conducted during well installation. The drilling and well installation are directed by a Warzyn Scientist who documents geologic materials encountered during drilling, field screens auger cuttings and soil samples, and observes the drilling activities and supervises installation of groundwater monitoring wells.

Wells are constructed of 2 inch I.D. schedule 40 flushjoint PVC riser pipe, above an 0.010 inch slot, flushjoint PVC screen. The annular space surrounding the screen is backfilled with silica sand filter pack to a height not less than 2 feet above the top of the well screen. A minimum of one foot of bentonite pellets or granular bentonite is placed above this backfill, to provide a low permeability seal at the ground surface. Well screens are positioned to monitor selected areas of the water column. In high traffic areas, a flushmount protective casing with a locking well cap is generally installed at the surface and secured with concrete. In low traffic areas, a "stickup" locking protective casing and protective bumper posts are typically installed.

After installation, wells are developed using a stainless steel bailer by purging at least 5-10 well volumes of water from each well, or until the well water is visually clear. Wells are allowed to stabilize prior to sampling, to ensure the collected sample is representative of groundwater at the location. Prior to sample collection the wells are purged by removing a maximum of 3-5 well volumes, or until further yield cannot be achieved. Purging and sample collection is accomplished using a teflon or stainless steel bailer.

The bailer is decontaminated between wells using a trisodium phosphate (TSP) wash and triple distilled water rinse, as per U.S. EPA protocol. All samples are collected in laboratory glassware. All drilling equipment and tools are steam-cleaned prior to mobilization onto the site, between boreholes, and upon completion of the drilling program. Well materials are also steam-cleaned prior to installation.

In accordance with Warzyn's Site Safety Plan, a photoionization detector (PID) and explosimeter are used to monitor ambient air concentrations at the sampling locations. Personal protective equipment is utilized by site personnel during performance of sampling activities, as specified in the Site Safety Plan.

Groundwater samples are collected, placed in laboratory cleaned, glass jars and labelled, identifying sample number, location and date, and sampling personnel. Samples submitted for analysis are preserved on ice and shipped in a cooler overnight to Warzyn's analytical laboratory in Madison, Wisconsin. Warzyn standard chain of custody procedures are followed regarding shipment and receipt of samples. As part of the Quality Assurance/Quality Control (QA/QC) procedure for groundwater sampling, duplicate and trip blank samples may be collected and submitted for analyses. A duplicate consists of filling two sets of sample bottles using standard sampling equipment and procedures. A trip blank consists of two 40-ml vials prepared with distilled water and placed with the samples transported.

KDS/erw/DRL
[mil-608-178a]
2733702/159

C

MONITORING WELL CONSTRUCTION
DETAILS AND DEVELOPMENT
FORMS

Facility/Project Name <u>Tellus Property</u> <u>Shop Rite Supermarket</u>	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name <u>B1 (MWI)</u>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or _____	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane _____ ft. N. _____ ft. E.	Date Well Installed <u>09/20/91</u> m m g c y y
Distance Well Is From Waste/Source Boundary <u>NA</u> ft.	Section Location of Waste/Source <u>NW 1/4 of SE 1/4 of Sec. 36, T. 8 N, R. 21 E, W.</u>	Well Installed By: (Person's Name and Firm) <u>Kenneth R Kuehn</u> <u>Warzyn, Inc.</u>
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	

A. Protective pipe, top elevation 651.32 ft. MSL

B. Well casing, top elevation 650.84 ft. MSL

C. Land surface elevation 651.3 ft. MSL

D. Surface seal, bottom 649.5 ft. MSL or 1.8 ft.

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

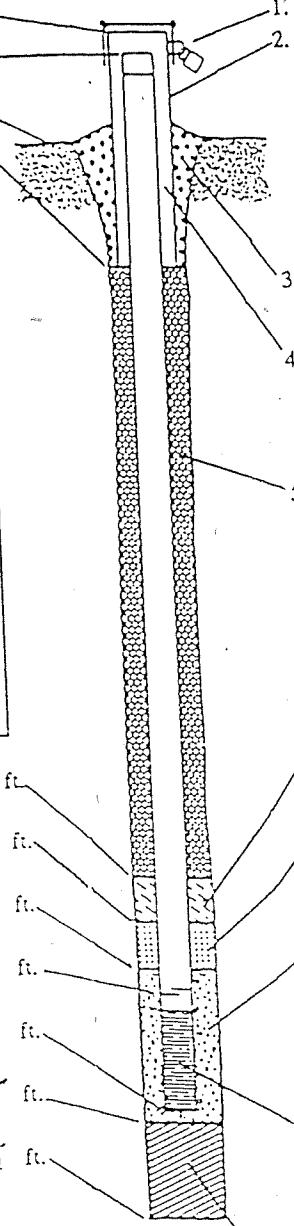
13. Sieve analysis attached? Yes No

14. Drilling method used: Rotary 50
Hollow Stem Auger 41
Other

15. Drilling fluid used: Water 02 Air 01
Drilling Mud 03 None 99

16. Drilling additives used? Yes No
Describe NA

17. Source of water (attach analysis):
NA



1. Cap and lock? Yes No

2. Protective cover pipe: Flushmount cover

a. Inside diameter: 8.1 in

b. Length: 12.0 ft

c. Material: Steel 04
Aluminum Other

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

3. Surface seal: Bentonite 30
Concrete 01
Other

4. Material between well casing and ~~flushmount cover~~ Flushmount cover
Bentonite 30
Annular space seal

5. Annular space seal: Sand (chips) Other
a. Granular Bentonite 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry 35
c. _____ Lbs/gal mud weight . . . Bentonite slurry 31
d. _____ % Bentonite . . . Bentonite-cement grout 50
e. 3 Ft³ volume added for any of the above
f. How installed: Tremie 01
Tremie pumped 02
Gravity 03

6. Bentonite seal: a. Bentonite granules 33
b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 32
c. Bentonite chips Other

7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint Sands and Gravels #45/55

b. Volume added 2 ft³

8. Filter pack material: Manufacturer, product name and mesh size
a. Red Flint Sands and Gravels #30

b. Volume added 6 ft³

9. Well casing: Flush threaded PVC schedule 40 23
Flush threaded PVC schedule 80 24
Other

10. Screen material: Flush threaded PVC (40)
a. Screen type: Factory cut 11
Continuous slot 01
Other

b. Manufacturer Timco

c. Slot size: 0.010 in.

d. Slotted length: 10.0 ft.

11. Backfill material (below filter pack): None 14
Other

E. Bentonite seal, top 649.5 ft. MSL or 1.5 ft.

F. Fine sand, top 640.3 ft. MSL or 11.0 ft.

G. Filter pack, top 637.8 ft. MSL or 13.5 ft.

H. Screen joint, top 636.3 ft. MSL or 15.0 ft.

I. Well bottom 626.3 ft. MSL or 25.0 ft.

J. Filter pack, bottom 625.8 ft. MSL or 25.5 ft.

K. Borehole, bottom 625.8 ft. MSL or 25.5 ft.

L. Borehole, diameter 6.2 in.

M. O.D. well casing 2.25 in.

N. I.D. well casing 2.00 in.

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

Signature Kenneth R Kuehn Firm Warzyn, Inc

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>Shop Rite Supermarket</u> <i>To Her Property</i>	County Name <u>Milwaukee</u>	Well Name <u>B1</u>
Facility License, Permit or Monitoring Number	County Code	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 39 min.
4. Depth of well (from top of well casing) 24.7 ft.
5. Inside diameter of well 6.20 in.
6. Volume of water in filter pack and well casing 18.4 gal.
7. Volume of water removed from well 9.0 gal.
8. Volume of water added (if any) NA gal.
9. Source of water added NA
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>6.31</u> ft.	<u>24.37</u> ft.
Date	b. <u>09/27/91</u> m m d d y y	<u>09/27/91</u> m m d d y y
Time	c. <u>1:03</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	<u>1:42</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	<u>2.4</u> inches	<u>00.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>Brown in Color with many fines (silt). No odor or sheen observed.</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>Brown in Color with many fines (silt). No odor or sheen observed.</u>
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. Additional comments on development:

Well developed by: Person's Name and Firm

Name: Kenneth R Kuehn

Firm: Warzgn Inc.

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

Signature: Kenneth R Kuehn

Print Initials: KR K

Firm: Warzgn, Inc.

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>Shop Rite Supermarket To Her Property</u>	County Name <u>Milwaukee</u>	Well Name <u>B1</u>
Facility License, Permit or Monitoring Number	County Code	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	<input checked="" type="checkbox"/> 41
surged with bailer and pumped	<input type="checkbox"/> 61
surged with block and bailed	<input type="checkbox"/> 42
surged with block and pumped	<input type="checkbox"/> 62
surged with block, bailed and pumped	<input type="checkbox"/> 70
compressed air	<input type="checkbox"/> 20
bailed only	<input type="checkbox"/> 10
pumped only	<input type="checkbox"/> 51
pumped slowly	<input type="checkbox"/> 50
Other	<input type="checkbox"/>

3. Time spent developing well 39 min.

4. Depth of well (from top of well casing) 24.7 ft.

5. Inside diameter of well 6.20 in.

6. Volume of water in filter pack and well casing 18.4 gal.

7. Volume of water removed from well 9.0 gal.

8. Volume of water added (if any) NA gal.

9. Source of water added NA

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

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>6.31</u> ft.	<u>24.37</u> ft.
Date	b. <u>09/22/91</u> m m d d y y	<u>09/22/91</u> m m d d y y
Time	c. <u>1:03</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	<u>1:42</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	<u>2.4</u> inches	<u>00.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>Brown in Color with mang fines (silt). No odor or sheen observed.</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>Brown in Color with mang fines (silt). No odor or sheen observed.</u>

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. Additional comments on development

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Kenneth R Kuehn</u>	Signature: <u>Kenneth R Kuehn</u>
Firm: <u>Warzgn Inc.</u>	Print Initials: <u>K R K</u>
	Firm: <u>Warzgn, Inc.</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>Tilton Property</u> <u>VILLARD AVE. PHASE II ESA</u>	County Name <u>MILWAUKEE</u>	Well Name <u>MW1 (B1)</u>
Facility License, Permit or Monitoring Number	County Code <u>41</u>	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 45 min.
4. Depth of well (from top of well casing) 25.0 ft.
5. Inside diameter of well 2.05 in.
6. Volume of water in filter pack and well casing 8.9 gal.
7. Volume of water removed from well 10.0 gal.
8. Volume of water added (if any) --- gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>6.89</u> ft.	_____ ft.
Date	b. <u>04/07/93</u> m m d d y y	___/___/___ m m d d y y
Time	c. <u>2:30</u> <input checked="" type="checkbox"/> p.m.	___:___ <input type="checkbox"/> a.m. / <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>1.0</u> inches	<u>0.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>REDDISH BROWN</u> <u>VERY TURBID</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>REDDISH BROWN</u> <u>LESS TURBID</u>

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. Additional comments on development:
WELL PREVIOUSLY DEVELOPED BY KRK

Well developed by: Person's Name and Firm

Name: TERRY J. MARCH

Firm: WARZYN, INC.

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

Signature: _____

Print Initials: _____

Firm: _____

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name <u>Shop Rite Supermarket</u>	Local Grid Location of Well ft. <input type="checkbox"/> N <input type="checkbox"/> S	Well Name <u>B 2 (Mwa)</u>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane _____ ft. N. _____ ft. E.	Date Well Installed <u>09/20/91</u> m m d d y y
Distance Well Is From Waste/Source Boundary <u>NA</u> ft.	Section Location of Waste/Source <u>NW 1/4 of SE 1/4 of Sec. 36, T. 8 N, R. 21</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: (Person's Name and Firm) <u>Kenneth R Kuehn</u> <u>Warzyn, Inc.</u>
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	

A. Protective pipe, top elevation 651.65 ft. MSL

B. Well casing, top elevation 651.12 ft. MSL

C. Land surface elevation 651.6 ft. MSL

D. Surface seal, bottom 649.8 ft. MSL or 1.8 ft.

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

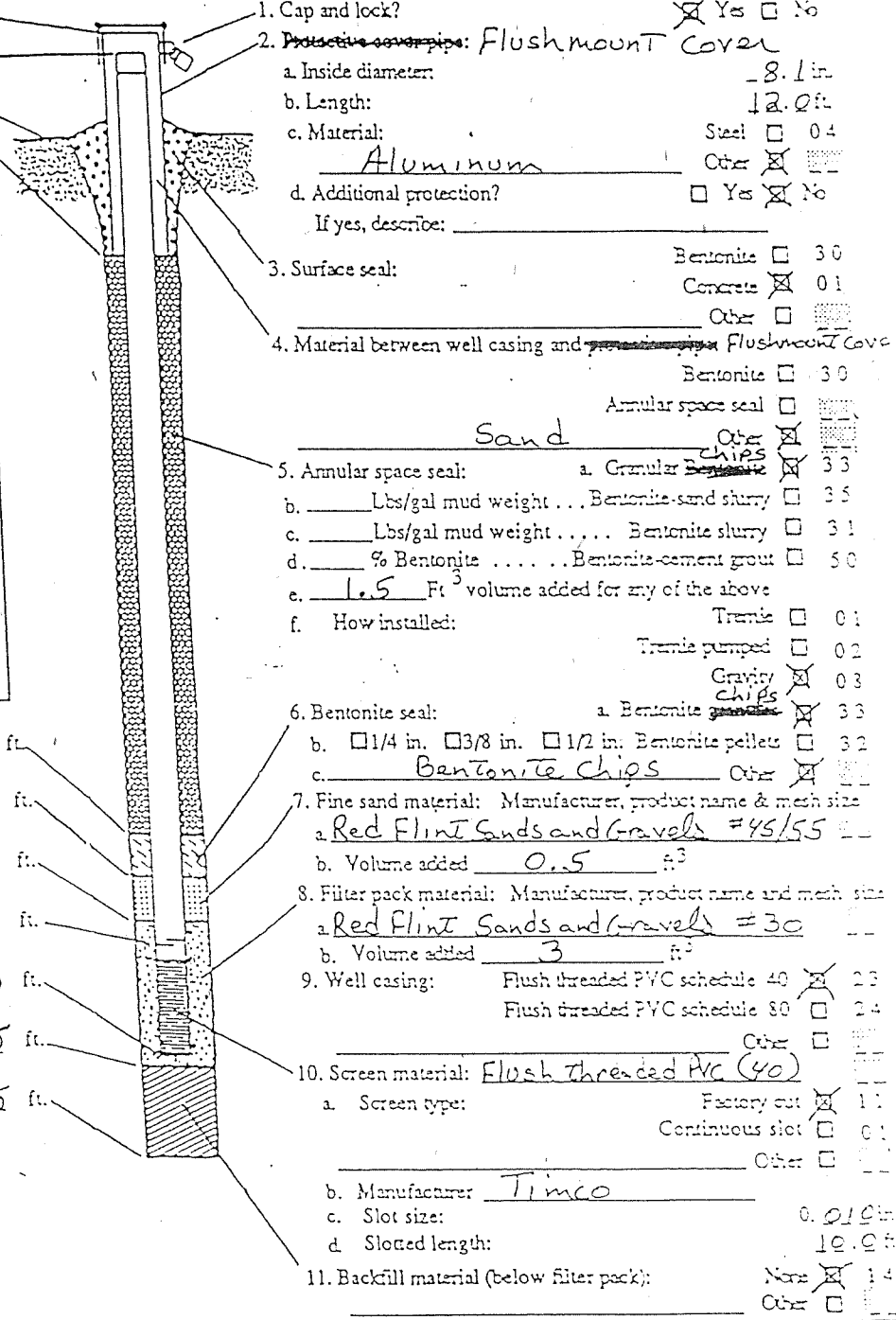
13. Sieve analysis attached? Yes No

14. Drilling method used: Rotary 50
 Hollow Stem Auger 41
 Other

15. Drilling fluid used: Water 02 Air 01
 Drilling Mud 03 None 99

16. Drilling additives used? Yes No
 Describe NA

17. Source of water (attach analysis):
NA



E. Bentonite seal, top 649.8 ft. MSL or 1.8 ft.

F. Fine sand, top 640.6 ft. MSL or 11.0 ft.

G. Filter pack, top 638.6 ft. MSL or 13.0 ft.

H. Screen joint, top 636.6 ft. MSL or 15.0 ft.

I. Well bottom 626.6 ft. MSL or 25.0 ft.

J. Filter pack, bottom 624.1 ft. MSL or 25.5 ft.

K. Borehole, bottom 624.1 ft. MSL or 25.5 ft.

L. Borehole, diameter 6.2 in.

M. O.D. well casing 2.25 in.

N. I.D. well casing 2.00 in.

1. Cap and lock? Yes No

2. Protective cover pipe: Flush mounted cover
 a. Inside diameter: 8.1 in.
 b. Length: 12.0 ft.
 c. Material: Aluminum Steel 04
 Other
 d. Additional protection? Yes No
 If yes, describe: _____

3. Surface seal: Bentonite 30
 Concrete 01
 Other

4. Material between well casing and Flush mounted cover
 Bentonite 30
 Annular space seal
Sand Other
 a. Granular chips 33
 b. _____ Lbs/gal mud weight ... Bentonite-sand slurry 35
 c. _____ Lbs/gal mud weight ... Bentonite slurry 31
 d. _____ % Bentonite ... Bentonite-cement grout 50
 e. 1.5 Ft³ volume added for any of the above
 f. How installed: Tremie 01
 Tremie pumped 02
 Gravity 03
chips

5. Annular space seal: a. Granular chips 33
 b. _____ Lbs/gal mud weight ... Bentonite-sand slurry 35
 c. _____ Lbs/gal mud weight ... Bentonite slurry 31
 d. _____ % Bentonite ... Bentonite-cement grout 50
 e. 1.5 Ft³ volume added for any of the above
 f. How installed: Tremie 01
 Tremie pumped 02
 Gravity 03
chips

6. Bentonite seal: a. Bentonite chips 33
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 32
 c. Bentonite chips Other

7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Sands and Gravels #45/55
 b. Volume added 0.5 ft³

8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Sands and Gravels #30
 b. Volume added 3 ft³

9. Well casing: Flush threaded PVC schedule 40 23
 Flush threaded PVC schedule 80 24
 Other

10. Screen material: Flush threaded PVC (40)
 a. Screen type: Factory cut 11
 Continuous slot 01
 Other

b. Manufacturer Timco
 c. Slot size: 0.010 in.
 d. Slotted length: 10.0 ft.

11. Backfill material (below filter pack): None 14
 Other

I hereby certify that the information on this form is true and correct to the best of my knowledge.
 Signature Kenneth R Kuehn Firm Warzyn, Inc.

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 150, Wis. Stats. and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>Shop Rite Supermarket</u>	County Name <u>Milwaukee</u>	Well Name <u>B2</u>
Facility License, Permit or Monitoring Number _____	County Code _____	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 17 min.
4. Depth of well (from top of well casing) 23.5 ft.
5. Inside diameter of well 6.20 in.
6. Volume of water in filter pack and well casing 4.0 gal.
7. Volume of water removed from well 1.7 gal.
8. Volume of water added (if any) NA gal.
9. Source of water added NA
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>19.57</u> ft.	<u>23.39</u> ft.
Date	b. <u>09/22/91</u> m m d d y y	<u>09/22/91</u> m m d d y y
Time	c. <u>7:38</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>8:05</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>00.0</u> inches	<u>00.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>Brown in color with little fines (silt). No odor or sheen observed.</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>Brown in color with little fines (silt). No odor or sheen observed.</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. Additional comments on development:

Well developed by: Person's Name and Firm

Name: Kenneth R Kuehn

Firm: Warzgn, Inc

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

Signature: Kenneth R Kuehn

Print Initials: KRK

Firm: Warzgn, Inc

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>711th Property</u> <u>Shop Rite Supermarket</u>	County Name <u>Milwaukee</u>	Well Name <u>B2</u>
Facility License, Permit or Monitoring Number	County Code	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 17 min.

4. Depth of well (from top of well casing) 23.5 ft.

5. Inside diameter of well 6.20 in.

6. Volume of water in filter pack and well casing 4.0 gal.

7. Volume of water removed from well 1.7 gal.

8. Volume of water added (if any) NA gal.

9. Source of water added NA

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

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>19.57</u> ft.	<u>23.39</u> ft.
Date	b. <u>09/22/91</u> m m d d y y	<u>09/22/91</u> m m d d y y
Time	c. <u>7:30</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>8:05</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>00.0</u> inches	<u>00.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>Brown in Color with little fines (silt). No odor or sheen observed.</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>Brown in Color with little fines (silt). No odor or sheen observed.</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. Additional comments on development:

Well developed by: Person's Name and Firm

Name: Kenneth R Kuehn

Firm: Warzgn, Inc

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

Signature: Kenneth R Kuehn

Print Initials: KRK

Firm: Warzgn, Inc

6.24

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>VILLARD AVE. PHASE II ESA</u>	County Name <u>MILWAUKEE</u>	Well Name <u>MW2 (B2)</u>
Facility License, Permit or Monitoring Number _____	County Code <u>41</u>	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 30 min.
4. Depth of well (from top of well casing) 23.9 ft.
5. Inside diameter of well 2.05 in.
6. Volume of water in filter pack and well casing 8.9 gal.
7. Volume of water removed from well 10.0 gal.
8. Volume of water added (if any) _____ gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>7.54</u> ft.	_____ ft.
Date	b. <u>04/07/93</u> m m d d y y	____/____/____ m m d d y y
Time	c. <u>11:50</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	____:____ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>0.0</u> inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>REDDISH-BROWN</u> <u>SLIGHTLY</u> <u>TURBID</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>REDDISH BROWN</u> <u>SLIGHTLY TURBID</u>

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. Additional comments on development:
WELL PREVIOUSLY DEVELOPED BY KRK

Well developed by: Person's Name and Firm

Name: TERRY J. MARCH

Firm: WARZYN, INC.

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

Signature: _____

Print Initials: _____

Firm: _____

Facility/Project Name TILTON	Local Grid Location of Well ft. <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W	Well Name MW3 (B3)
Agency License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or _____	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane _____ ft. N. _____ ft. E.	Date Well Installed 03/03/93 m m d d y y
Distance Well Is From Waste/Source Boundary _____ ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 36 T. 8 N. R. 21 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: (Person's Name and Firm) Eugene Lehman J + J Soil Testing Ltd.
Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	

A. Protective pipe, top elevation **650.7** ft. MSL Yes No

Well casing, top elevation **630.30** ft. MSL

C. Land surface elevation **650.7** ft. MSL

Surface seal, bottom **649.7** ft. MSL or **1.0** ft.

2. 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 50
Hollow Stem Auger 41
Other

15. Drilling fluid used: Water 02 Air 01
Drilling Mud 03 None 99

16. Drilling additives used? Yes No
Describe _____

17. Source of water (attach analysis): _____

E. Bentonite seal, top **649.7** ft. MSL or **1.0** ft.

F. Fine sand, top **647.7** ft. MSL or **3.0** ft.

G. Filter pack, top **646.7** ft. MSL or **4.0** ft.

H. Screen joint, top **645.7** ft. MSL or **5.0** ft.

I. Well bottom **635.7** ft. MSL or **15.0** ft.

J. Filter pack, bottom **635.7** ft. MSL or **15.0** ft.

K. Borehole, bottom **635.7** ft. MSL or **15.0** ft.

L. Borehole, diameter **8.2** in.

M. O.D. well casing **2.40** in.

N. I.D. well casing **2.00** in.

1. Cap and lock? Yes No

2. Protective cover pipe: Flush-Mount

a. Inside diameter: **8.5** in.

b. Length: **12.0** ft.

c. Material: Steel 04
Aluminum Other

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

3. Surface seal: Bentonite 30
Concrete 01
Other

4. Material between well casing and protective pipe: Bentonite 30
Annular space seal
SAND Other

5. Annular space seal: a. Granular Bentonite 35
b. _____ Lbs/gal mud weight ... Bentonite-sand slurry 35
c. _____ Lbs/gal mud weight ... Bentonite slurry 31
d. _____ % Bentonite ... Bentonite-cement grout 50
e. _____ Ft³ volume added for any of the above
f. How installed: Tremie 01
Tremie pumped 02
Gravity 03

6. Bentonite seal: a. Bentonite granules 33
b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 32
c. _____ Other

7. Fine sand material: Manufacturer, product name & mesh size
a. **Red Flint Filter Sand and Gravel**
b. Volume added **1/2 Bag** ft³ #45-#55

8. Filter pack material: Manufacturer, product name and mesh size
a. **Red Flint Filter Sand + Gravel #30**
b. Volume added **7 Bags** ft³

9. Well casing: Flush threaded PVC schedule 40 23
Flush threaded PVC schedule 80 24
Other

10. Screen material: **Flush-threaded PVC schedule 40**
a. Screen type: Factory cut 11
Continuous slot 01
Other

b. Manufacturer **TIMCO**
c. Slot size: **0.010** in.
d. Slotted length: **10.0** ft.

11. Backfill material (below filter pack): None 14
Other

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

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>VILLARD AVE. PHASE II ESA</u>	County Name <u>MILWAUKEE</u>	Well Name <u>MW3</u>
Facility License, Permit or Monitoring Number _____	County Code <u>41</u>	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 75 min.
4. Depth of well (from top of well casing) 14.6 ft.
5. Inside diameter of well 2.05 in.
6. Volume of water in filter pack and well casing 12.3 gal.
7. Volume of water removed from well 25.0 gal.
8. Volume of water added (if any) — gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>2.28</u> ft.	_____ ft.
Date	b. <u>04/07/93</u> m m d d y y	___/___/___ m m d d y y
Time	c. <u>12:20</u> <input checked="" type="checkbox"/> p.m.	___:___ <input type="checkbox"/> a.m. / <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>0.5</u> inches	<u>0.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>REDDISH BROWN</u> <u>MODERATELY</u> <u>TURBID</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>REDDISH-BROWN</u> <u>SLIGHTLY TURBID</u>
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. Additional comments on development:
WELL BAILED DRY AND ALLOWED TO PARTIALLY RECHARGE AND BAILED DRY < ADDITIONAL

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>TERRY J. MARCH</u>	Signature: _____
Firm: <u>WARZYN, INC.</u>	Print Initials: _____
	Firm: _____

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>VILLARD AVE. PHASE II ESA</u>	County Name <u>MILWAUKEE</u>	Well Name <u>MW3</u>
Facility License, Permit or Monitoring Number	County Code <u>41</u>	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 75 min.
4. Depth of well (from top of well casing) 14.6 ft
5. Inside diameter of well 2.05 in.
6. Volume of water in filter pack and well casing 12.3 gal.
7. Volume of water removed from well 25.0 gal.
8. Volume of water added (if any) --- gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>2.28</u> ft.	_____ ft.
Date	b. <u>04/07/93</u> m m d d y y	____/____/____ m m d d y y
Time	c. <u>12:20</u> <input checked="" type="checkbox"/> p.m.	____:____ <input type="checkbox"/> a.m. / <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>0.5</u> inches	<u>0.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>REDDISH BROWN</u> <u>MODERATELY</u> <u>TURBID</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>REDDISH-BROWN</u> <u>SLIGHTLY TURBID</u>
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. Additional comments on development:
WELL BAILED DRY AND ALLOWED TO PARTIALLY RECHARGE AND BAILED DRY < ADDITIONAL TIME

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>TERRY J. MARCH</u>	Signature: _____
Firm: <u>WARZYN, INC.</u>	Print Initials: _____
	Firm: _____

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name TILTON	Local Grid Location of Well ft. <input type="checkbox"/> N <input type="checkbox"/> S <input type="checkbox"/> E <input type="checkbox"/> W	Well Name MW4 (B4)
Utility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane _____ ft. N. _____ ft. E.	Date Well Installed 03/03/93 m m c c y y
Distance Well Is From Waste/Source Boundary _____ ft.	Section Location of Waste/Source NW 1/4 of S6 1/4 of Sec. 36 T. 8 N. R. 21 E. W.	Well Installed By: (Person's Name and Firm) Eugene Lehman
Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	J + J Soil Testing Ltd.

A. Protective pipe, top elevation 650.37 ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Well casing, top elevation 649.97 ft. MSL	2. Protective cover pipe: Flush-mount
C. Land surface elevation 650.4 ft. MSL	a. Inside diameter: 8 in.
Surface seal, bottom 649.4 ft. MSL or 1.0 ft.	b. Length: 01.0 ft.
2. 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 type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input checked="" type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	c. Material: Steel <input type="checkbox"/> 04 Aluminum Other <input checked="" type="checkbox"/>
13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	3. Surface seal: Bentonite <input type="checkbox"/> 30 Concrete <input checked="" type="checkbox"/> 01 Other <input type="checkbox"/>
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	4. Material between well casing and protective pipe: Bentonite <input type="checkbox"/> 30 Annular space seal <input type="checkbox"/> Other <input checked="" type="checkbox"/> SAND
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. Annular space seal: a. Granular 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 ³ 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"/> 03
Describe _____	6. Bentonite seal: a. Bentonite granules <input checked="" type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> 32 c. _____ Other <input type="checkbox"/>
17. Source of water (attach analysis): _____	7. Fine sand material: Manufacturer, product name & mesh size a. Red Flint Filter Sand + Gravel #45-#55 b. Volume added 1/2 Bag ft ³
E. Bentonite seal, top 649.4 ft. MSL or 1.0 ft.	8. Filter pack material: Manufacturer, product name and mesh size a. Red Flint Filter Sand + Gravel #30 b. Volume added 6 1/2 Bags ft ³
F. Fine sand, top 647.4 ft. MSL or 3.0 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"/>
G. Filter pack, top 646.4 ft. MSL or 4.0 ft.	10. Screen material: Flush-threaded PVC schedule 40 a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
H. Screen joint, top 645.4 ft. MSL or 5.0 ft.	b. Manufacturer TIMCO
I. Well bottom 635.4 ft. MSL or 15.0 ft.	c. Slot size: 0.010 in.
J. Filter pack, bottom 635.4 ft. MSL or 15.0 ft.	d. Slotted length: 10.0 ft.
K. Borehole, bottom 635.4 ft. MSL or 15.0 ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> 14 Other <input type="checkbox"/>
L. Borehole, diameter 8.2 in.	
M. O.D. well casing 2.40 in.	
N. I.D. well casing 2.00 in.	

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

Signature _____ Firm _____

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>VILLARD AVE. PHASE II ESA</u>	County Name <u>MILWAUKEE</u>	Well Name <u>MW4</u>
Facility License, Permit or Monitoring Number _____	County Code <u>41</u>	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 90 min.
4. Depth of well (from top of well casing) 14.2 ft.
5. Inside diameter of well 2.05 in.
6. Volume of water in filter pack and well casing 12.2 gal.
7. Volume of water removed from well 90.0 gal.
8. Volume of water added (if any) --- gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>2.02</u> ft.	<u>2.04</u> ft.
Date	b. <u>04/07/93</u> m m d d y y	<u>04/07/93</u> m m d d y y
Time	c. _____ <input type="checkbox"/> a.m. _____ <input checked="" type="checkbox"/> p.m.	_____ <input type="checkbox"/> a.m. _____ <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	<u>3.0</u> inches	<u>0.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>DARK GRAY</u> <u>VERY TURBID</u> <u>MUCH SILT</u> <u>AND FINE SAND</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>GRAY</u> <u>LESS TURBID</u> <u>SOME SILT</u>
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

15. Additional comments on development:

Well developed by: Person's Name and Firm

Name: TERRY J. MARCH

Firm: WARZYN, INC.

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

Signature: _____

Print Initials: _____

Firm: _____

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name <u>VILLARD AVE. PHASE II ESA</u>	County Name <u>MILWAUKEE</u>	Well Name <u>MW4</u>
Facility License, Permit or Monitoring Number _____	County Code <u>41</u>	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 90 min.
4. Depth of well (from top of well casing) 14.2 ft.
5. Inside diameter of well 2.05 in.
6. Volume of water in filter pack and well casing 12.2 gal.
7. Volume of water removed from well 90.0 gal.
8. Volume of water added (if any) --- gal.
9. Source of water added N/A
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>2.02</u> ft.	<u>2.04</u> ft.
Date	b. <u>04/07/93</u> m m d d y y	<u>04/07/93</u> m m d d y y
Time	c. _____ <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	<u>3.0</u> inches	<u>0.0</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>DARK GRAY</u> <u>VERY TURBID</u> <u>MUCH SILT</u> <u>AND FINE SAND</u>	Clear <input type="checkbox"/> 20 Turbid <input checked="" type="checkbox"/> 25 (Describe) <u>GRAY</u> <u>LESS TURBID</u> <u>SOME SILT</u>
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

15. Additional comments on development:

Well developed by: Person's Name and Firm

Name: TERRY J. MARCH

Firm: WARZYN, INC.

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

Signature: _____

Print Initials: _____

Firm: _____

D

SOIL ANALYTICAL RESULTS

LABORATORY RESULTS VOLATILE ORGANIC REPORT

Project: Villard Phase II

Project #: 27337.01

Location: Milwaukee, Wisconsin

Date Sampled: 9/20/91

Compound	Reporting Limits (ug/kg)	3337-001 B1-S2	3337-002 B1-S7	3337-003 B2-S7
Benzene	5.0	<5.0	<5.0	<5.0
Bromodichloromethane	5.0	<5.0	<5.0	<5.0
Bromoform	5.0	<5.0	<5.0	<5.0
Bromomethane	10	<10	<10	<10
Carbon tetrachloride	5.0	<5.0	<5.0	<5.0
Chlorobenzene	5.0	<5.0	25	<5.0
Chlorodibromomethane	5.0	<5.0	<250 (a)	<5.0
Chloroethane	10	<10	<10	<10
2-Chloroethylvinyl ether	50	<50	<50	<50
Chloroform	5.0	<5.0	<5.0	<5.0
Chloromethane	10	<10	<10	<10
1,2-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	5.0	2800	<20 (a)	<5.0
trans-1,2-Dichloroethene	5.0	26	<5.0	<5.0
1,2-Dichloropropane	5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	5.0	<5.0	<5.0	<5.0
Ethylbenzene	5.0	<5.0	<5.0	<5.0
Methylene chloride	15	<15	<15	<15
1,1,2,2-Tetrachloroethane	5.0	<5.0	<5.0	<5.0
Tetrachloroethene	5.0	37000	140000	<5.0
Toluene	5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	5.0	<5.0	<5.0	<5.0
Trichloroethene	5.0	3000	420 (b)	<5.0
Trichlorofluoromethane	5.0	<5.0	<5.0	<5.0
Vinyl chloride	5.0	31	<5.0	<5.0
m and p-Xylene	10	<10	<10	<10
o-Xylene	5.0	<5.0	<5.0	<5.0

(a) Elevated quantitation limit necessary to overcome interference.

(b) Result should be considered estimated, concentration exceeds working calibration range.

Solids are analyzed on an "as received" or wet weight basis.

Method Reference: SW846, "Test Methods for Evaluating Solid Waste", November 1986. Method 8010/8020.

Ck'd: *[Signature]* App'd: *[Signature]*
Date Issued: 10/5/91



CHAIN OF CUSTODY RECORD

PROJ. NO. 27337-01		PROJECT NAME Villar Phase II			NO. OF CON- TAINERS	REMARKS Soil	
LOCATION: Milwaukee, WI							
SAMPLERS: (Signature) Kenneth R. Kuska KRS 9/20/91							
LAB NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION		
3337001	9/20/91	12:40		X	B1-S2	1x802 X	
✓-002	9/20/91	14:10		X	B1-S7	1x802 X	
✓-003	9/20/91	12:00		X	B2-S7	1x802 X	
	9/20/91			X	Temperature Blank	1x402	
Relinquished by: (Signature) Kenneth R. Kuska KRS		Date / Time 9/20/91 15:50	Received by: (Signature) <i>[Signature]</i>		Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature) <i>[Signature]</i>		Date / Time 9/20/91 16:45	Received by: (Signature) <i>[Signature]</i>		Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)		Date / Time	Received for Laboratory by: (Signature) <i>[Signature]</i>		Date / Time 9-23-91 9:40 AM		
Remarks Shipped Federal Express on 9/20/91 to Wazyn in Madison WI under chain-of-custody Seal # 90-009251					PROJECT MANAGER: Kevin D. Shaver		

VOCs 604/802
 8010/8020
 9/21

Shipped, sealed on ice with fed exp

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6349-0001	B3,S1 1.0-3.0 FT.	Benzene	< 5	5	Solid	ug/kg	
		Bromodichloromethane	< 5	5	Solid	ug/kg	
		Bromoform	< 5	5	Solid	ug/kg	
		Bromomethane	< 10	10	Solid	ug/kg	
		Carbon tetrachloride	< 5	5	Solid	ug/kg	
		Chlorobenzene	< 5	5	Solid	ug/kg	
		Chlorodibromomethane	< 5	5	Solid	ug/kg	
		Chloroethane	< 10	10	Solid	ug/kg	
		2-Chloroethylvinyl ether	< 50	50	Solid	ug/kg	
		Chloroform	< 5	5	Solid	ug/kg	
		Chloromethane	< 10	10	Solid	ug/kg	
		1,2-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,3-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,4-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,1-Dichloroethane	< 5	5	Solid	ug/kg	
		1,2-Dichloroethane	< 5	5	Solid	ug/kg	
		1,1-Dichloroethene	< 5	5	Solid	ug/kg	
		cis-1,2-Dichloroethene	8.4	5	Solid	ug/kg	
		trans-1,2-Dichloroethene	< 5	5	Solid	ug/kg	
		1,2-Dichloropropane	< 5	5	Solid	ug/kg	
		cis-1,3-Dichloropropene	< 5	5	Solid	ug/kg	
		trans-1,3-Dichloropropene	< 5	5	Solid	ug/kg	
		Ethylbenzene	< 5	5	Solid	ug/kg	
		Methylene chloride	20	15	Solid	ug/kg	A9
		1,1,2,2-Tetrachloroethane	< 5	5	Solid	ug/kg	
		Tetrachloroethene	33	5	Solid	ug/kg	
		Toluene	< 5	5	Solid	ug/kg	
		1,1,1-Trichloroethane	< 5	5	Solid	ug/kg	
		1,1,2-Trichloroethane	< 5	5	Solid	ug/kg	
		Trichloroethene	7.7	5	Solid	ug/kg	
Trichlorofluoromethane	< 5	5	Solid	ug/kg			
Vinyl chloride	< 5	5	Solid	ug/kg			
m + p-Xylene	< 10	10	Solid	ug/kg			
o-Xylene	< 5	5	Solid	ug/kg			

Sample Date: 03-MAR-93
 Analysis Date: 11-MAR-93

Note: Results in ug/kg are reported on an "as received" or wet weight basis.

RL = Reporting Limit
 WI Lab Certification ID#: 113138300

ck'd: *clw* App'd: *dfm*
 Date Issued: 3/19/93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6349-0002	B3,S3 6.0-8.0 FT.	Benzene	< 5	5	Solid	ug/kg	
		Bromodichloromethane	< 5	5	Solid	ug/kg	
		Bromoform	< 5	5	Solid	ug/kg	
		Bromomethane	< 10	10	Solid	ug/kg	
		Carbon tetrachloride	< 5	5	Solid	ug/kg	
		Chlorobenzene	< 5	5	Solid	ug/kg	
		Chlorodibromomethane	< 5	5	Solid	ug/kg	
		Chloroethane	< 10	10	Solid	ug/kg	
		2-Chloroethylvinyl ether	< 50	50	Solid	ug/kg	
		Chloroform	< 5	5	Solid	ug/kg	
		Chloromethane	< 10	10	Solid	ug/kg	
		1,2-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,3-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,4-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,1-Dichloroethane	< 5	5	Solid	ug/kg	
		1,2-Dichloroethane	< 5	5	Solid	ug/kg	
		1,1-Dichloroethene	< 5	5	Solid	ug/kg	
		cis-1,2-Dichloroethene	36	5	Solid	ug/kg	
		trans-1,2-Dichloroethene	< 5	5	Solid	ug/kg	
		1,2-Dichloropropane	< 5	5	Solid	ug/kg	
		cis-1,3-Dichloropropene	< 5	5	Solid	ug/kg	
		trans-1,3-Dichloropropene	< 5	5	Solid	ug/kg	
		Ethylbenzene	< 5	5	Solid	ug/kg	
		Methylene chloride	< 15	15	Solid	ug/kg	
		1,1,2,2-Tetrachloroethane	< 5	5	Solid	ug/kg	
		Tetrachloroethene	< 5	5	Solid	ug/kg	
		Toluene	< 5	5	Solid	ug/kg	
		1,1,1-Trichloroethane	< 5	5	Solid	ug/kg	
		1,1,2-Trichloroethane	< 5	5	Solid	ug/kg	
		Trichloroethene	< 5	5	Solid	ug/kg	
Trichlorofluoromethane	< 5	5	Solid	ug/kg			
Vinyl chloride	< 5	5	Solid	ug/kg			
m + p-Xylene	< 10	10	Solid	ug/kg			
o-Xylene	< 5	5	Solid	ug/kg			

Sample Date: 03-MAR-93
 Analysis Date: 11-MAR-93

Note: Results in ug/kg are reported on an "as received" or wet weight basis.

RL = Reporting Limit
 WI Lab Certification ID#: 113138300

ck'd: *dlk* App'd: *[Signature]*
 Date Issued: 3/19/93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6349-0003	B4,S3 6.0-8.0 FT.	Benzene	< 5	5	Solid	ug/kg	
		Bromodichloromethane	< 50	5	Solid	ug/kg	A3
		Bromoform	< 50	5	Solid	ug/kg	A3
		Bromomethane	< 100	10	Solid	ug/kg	A3
		Carbon tetrachloride	< 50	5	Solid	ug/kg	A3
		Chlorobenzene	< 50	5	Solid	ug/kg	A3
		Chlorodibromomethane	< 50	5	Solid	ug/kg	A3
		Chloroethane	< 100	10	Solid	ug/kg	A3
		2-Chloroethylvinyl ether	< 500	50	Solid	ug/kg	A3
		Chloroform	< 50	5	Solid	ug/kg	A3
		Chloromethane	< 100	10	Solid	ug/kg	A3
		1,2-Dichlorobenzene	< 50	5	Solid	ug/kg	A3
		1,3-Dichlorobenzene	< 50	5	Solid	ug/kg	A3
		1,4-Dichlorobenzene	< 50	5	Solid	ug/kg	A3
		1,1-Dichloroethane	< 50	5	Solid	ug/kg	A3
		1,2-Dichloroethane	< 50	5	Solid	ug/kg	A3
		1,1-Dichloroethene	< 50	5	Solid	ug/kg	A3
		cis-1,2-Dichloroethene	700	5	Solid	ug/kg	
		trans-1,2-Dichloroethene	< 50	5	Solid	ug/kg	A3
		1,2-Dichloropropane	< 50	5	Solid	ug/kg	A3
		cis-1,3-Dichloropropene	< 50	5	Solid	ug/kg	A3
		trans-1,3-Dichloropropene	< 50	5	Solid	ug/kg	A3
		Ethylbenzene	< 5	5	Solid	ug/kg	
		Methylene chloride	< 150	15	Solid	ug/kg	A3
		1,1,2,2-Tetrachloroethane	< 50	5	Solid	ug/kg	A3
		Tetrachloroethene	23000	5	Solid	ug/kg	
		Toluene	< 5	5	Solid	ug/kg	
		1,1,1-Trichloroethane	< 50	5	Solid	ug/kg	A3
		1,1,2-Trichloroethane	< 50	5	Solid	ug/kg	A3
		Trichloroethene	490	5	Solid	ug/kg	
Trichlorofluoromethane	< 50	5	Solid	ug/kg	A3		
Vinyl chloride	< 50	5	Solid	ug/kg	A3		
m + p-Xylene	< 10	10	Solid	ug/kg			
o-Xylene	< 5	5	Solid	ug/kg			

Sample Date: 03-MAR-93
 Analysis Date: 11, 15, 16-MAR-93

Note: Results in ug/kg are reported on an "as received" or wet weight basis.

RL = Reporting Limit
 WI Lab Certification ID#: 113138300

Ck'd: *dlk* App'd: *[Signature]*
 Date Issued: 3/19/93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6349-0004	B4,S4 8.5-10.5 FT.	Benzene	< 5	5	Solid	ug/kg	
		Bromodichloromethane	< 5	5	Solid	ug/kg	
		Bromoform	< 5	5	Solid	ug/kg	
		Bromomethane	< 10	10	Solid	ug/kg	
		Carbon tetrachloride	< 5	5	Solid	ug/kg	
		Chlorobenzene	< 5	5	Solid	ug/kg	
		Chlorodibromomethane	< 5	5	Solid	ug/kg	
		Chloroethane	< 10	10	Solid	ug/kg	
		2-Chloroethylvinyl ether	< 50	50	Solid	ug/kg	
		Chloroform	< 5	5	Solid	ug/kg	
		Chloromethane	< 10	10	Solid	ug/kg	
		1,2-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,3-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,4-Dichlorobenzene	< 5	5	Solid	ug/kg	
		1,1-Dichloroethane	< 5	5	Solid	ug/kg	
		1,2-Dichloroethane	< 5	5	Solid	ug/kg	
		1,1-Dichloroethene	< 5	5	Solid	ug/kg	
		cis-1,2-Dichloroethene	220	5	Solid	ug/kg	
		trans-1,2-Dichloroethene	45	5	Solid	ug/kg	
		1,2-Dichloropropane	< 5	5	Solid	ug/kg	
		cis-1,3-Dichloropropene	< 5	5	Solid	ug/kg	
		trans-1,3-Dichloropropene	< 5	5	Solid	ug/kg	
		Ethylbenzene	< 5	5	Solid	ug/kg	
		Methylene chloride	< 15	15	Solid	ug/kg	
		1,1,2,2-Tetrachloroethane	< 5	5	Solid	ug/kg	
		Tetrachloroethene	33	5	Solid	ug/kg	
		Toluene	< 5	5	Solid	ug/kg	
		1,1,1-Trichloroethane	< 5	5	Solid	ug/kg	
		1,1,2-Trichloroethane	< 5	5	Solid	ug/kg	
		Trichloroethene	9.1	5	Solid	ug/kg	
Trichlorofluoromethane	< 5	5	Solid	ug/kg			
Vinyl chloride	26	5	Solid	ug/kg			
m + p-Xylene	< 10	10	Solid	ug/kg			
o-Xylene	< 5	5	Solid	ug/kg			

Sample Date: 03-MAR-93
 Analysis Date: 11, 12-MAR-93

Note: Results in ug/kg are reported on an "as received" or wet weight basis.

RL = Reporting Limit
 WI Lab Certification ID#: 113138300

ck'd: *dlk* App'd: *gfm*
 Date Issued: 3/19/93

STANDARD REPORT FOOTNOTES

- A1 Elevated quantitation limit due to low sample volume.
- A2 Elevated quantitation limit necessary to overcome interference.
- A3 Elevated quantitation limit necessary to overcome difficult matrix.
- A4 Result should be considered estimated with possible low bias due to unknown interference.
- A5 Result should be considered estimated with possible low bias due to difficult matrix.
- A6 Result should be considered estimated with possible low bias as indicated by method QC.
- A7 Result should be considered estimated with possible high bias due to unknown interference.
- A8 Result should be considered estimated with possible high bias due to difficult matrix.
- A9 Result should be considered estimated with possible high bias as indicated by method QC.
- A10 Result should be considered estimated due to non-homogeneous sample matrix.
- A11 Sample received past recommended hold time.
- A12 Analysis requested past recommended hold time.
- A13 Initial analysis performed within hold time; confirmation analysis performed past recommended hold time. Results from repeat analysis are reported.
- A14 Initial analysis performed within hold time; necessary dilution performed past recommended hold time. Results from repeat analysis are reported.
- A15 Result should be considered estimated with possible high bias; analyte detected in method blank.
- A16 Elevated quantitation limit indicated by batch QC.
- W1 Sample contained <0.5% solids; filtered sample was analyzed as the TCLP extract.
- W2 Analysis performed on a 10% sample solution (10 grams sample + 90 mL calcium chloride solution).
- W3 There is no regulatory holdtime for sulfite. Analysis is recommended as soon as possible after collection.
- M1 Results are qualitative only, as requested.
- M2 Total analysis performed; total concentration indicates that TCLP regulatory level could not be exceeded.
- G1 Result should be considered estimated, concentration exceeds working calibration range.
- G2 Elevated quantitation limit due to the concentration of petroleum hydrocarbons in the sample.
- G3 Elevated quantitation limit due to the concentration of non-specific hydrocarbons in the sample.
- G4 Analyte coelutes with _____; result calculated from calibration standards in a 1:1 ratio of these two compounds.
- G5 Sample required extensive cleanup; Endrin Aldehyde is not recovered from these techniques.
- G6 Petroleum-type odor detected from this sample.
- G7 Elevated quantitation limit due to the concentration of PCBs in the sample.
- G8 Result should be considered estimated with possible high bias due to coelution with an additional hydrocarbon product.
- G9 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products.
- G10 Presence of one or more unidentified peaks eluting earlier than the retention time window.
- G11 Presence of one or more unidentified peaks eluting later than the retention time window.
- G12 Result is estimated. The method used is a screening procedure for this compound.
- G13 Measurement performed using test strips.
- G14 Measurement upon receipt performed using test strips.
- G15 n-Nitrosodiphenylamine decomposes in the GC inlet and cannot be separated from Diphenylamine.
- G16 Measurement upon receipt performed using test strips. Adjusted to pH <2.



METHOD REFERENCES

Compounds	Soil/Groundwater	Wastewater
Alcohol	8015*	8015*
BEXT	8020	602
DRO	Modified DRO	Modified DRO
GRO	Modified GRO	Modified GRO
Herbicides	8150	8150
Pesticides	8080	608
Pesticide/PCBs	8080	608
PCBs	8080**	608
PNA (GC/MS)	8270	8270
PNA (HPLC)	8310	8310
PVOCs	8020	8020
SVOCs	8270	8270
TPH	D-3328-78*	D-3328-78*
TRPH	418.1 & 9073	418.1 & 9073
VOCs	8021	8021
VOCs	8010/8020***	601/602

SW846, "Test Methods for Evaluating Solid Waste", 3rd Ed., December 1987.

EPA-600, "Methods for Organic Chemical Analysis of Water and Wastes",
March, 1984.

ASTM, "Annual Book of ASTM Standards", 1990.

Wisconsin DNR Modified 9073 TRPH, PUBL-SW-140, Wisconsin DNR,
April 1992.

Wisconsin DNR Modified DRO, PUBL-SW-141, Wisconsin DNR, April 1992.

Wisconsin DNR Modified GRO, PUBL-SW-140, Wisconsin DNR, April 1992.

- * With Modifications
- ** With Modifications for Oil Matrix.
- *** With Modifications for Soil Gas Matrix.



Sampler MUST check one box:
 Is this a PECFA job that
 must be Subcontracted? Yes
 No

No 015855

CHAIN OF CUSTODY RECORD

PROJECT No.		PROJECT NAME		CITY & STATE	AMPLERS (Signature)	No. OF CONTAINERS	REMARKS
2733702/168		TILTON ESTATE					
LAB No.	DATE	TIME	COMP.	GRAB	STATION LOCATION		
349-0001	3-03-93	9:30am		/	B3, S1 1.0-3.0ft.	1	Soil Soil; Routine Turnaround Time " " " " " " " " " " " "
-0002	3-03-93	10:15am		/	B3, S3 6.0-8.0ft	1	
-0003	3-03-93	12:45pm		/	B4, S3 6.0-8.0ft	1	
-0004	3-03-93	1:15pm		/	B4, S4 8.5-10.5ft	1	

Volatile Organic Compounds
 (8010-8020)
 X 3-5-93

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
<i>John E. Gull</i>	3-04-93 10:15am				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)		Date/Time	
		<i>Lisa Flee</i>		3/5/93 9:30	

EMARKS Chain of Custody Seal # 90 009462 and # 90 009463
 Routed to Analytical Laboratory via Dunham Courier Service.

PROJECT MANAGER:
 Kevin D. Schaver

Not Lost, NO TS needed per J. Gull received intact on ice

E

GROUNDWATER ANALYTICAL RESULTS

LABORATORY RESULTS
 VOLATILE ORGANIC REPORT

Project: Shop Rite Food Store

Project #: 27337.01

Location: Milwaukee, Wisconsin

Date Sampled: 10/1/91

Compound	Reporting Limits (ug/L)	3407-001 Well B1 (Groundwater)	3407-002 Well B2 (Groundwater)	3407-003 Bailer Blank
Benzene	1.0	<1.0	<1.0	<1.0
Bromodichloromethane	1.0	<1.0	<1.0	<1.0
Bromoform	1.0	<1.0	<1.0	<1.0
Bromomethane	2.0	<2.0	<2.0	<2.0
Carbon tetrachloride	1.0	<1.0	<1.0	<1.0
Chlorobenzene	1.0	2.0	<1.0	<1.0
Chlorodibromomethane	1.0	<250 (a)	<1.0	<1.0
Chloroethane	2.0	<2.0	<2.0	<2.0
2-Chloroethylvinyl ether	10	<10	<10	<10
Chloroform	1.0	<1.0	<1.0	<1.0
Chloromethane	2.0	<2.0	<2.0	<2.0
1,2-Dichlorobenzene	1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	1.0	1.8	<1.0	<1.0
cis-1,2-Dichloroethene	1.0	560	<1.0	<1.0
trans-1,2-Dichloroethene	1.0	5.8	<1.0	<1.0
1,2-Dichloropropane	1.0	1.3	<1.0	<1.0
cis-1,3-Dichloropropene	1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	1.0	<1.0	<1.0	<1.0
Ethylbenzene	1.0	<1.0	<1.0	<1.0
Methylene chloride	3.0	<3.0	<3.0	<3.0
1,1,2,2-Tetrachloroethane	1.0	<1.0	<1.0	<1.0
Tetrachloroethene	1.0	14000	<1.0	<1.0
Toluene	1.0	16	<1.0	<1.0
1,1,1-Trichloroethane	1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	1.0	<1.0	<1.0	<1.0
Trichloroethene	1.0	220	<1.0	<1.0
Trichlorofluoromethane	1.0	<1.0	<1.0	<1.0
Vinyl chloride	1.0	11	<1.0	<1.0
m and p-Xylene	2.0	<2.0	<2.0	<2.0
o-Xylene	1.0	<1.0	<1.0	<1.0

(a) Elevated quantitation limit necessary to overcome interference.

Method Reference: EPA-600, "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewaters", July 1982. Method 601/602.

Ck'd: *aw* App'd: *66*
 Date Issued: *10/16/91*



CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	REMARKS			
27337.01		Shop Rite Food Store						
SAMPLERS: (Signature)		LOCATION: Milwaukee, WI						
3407-001		10/1/91	7:15AM	X	Well B1 (groundwater)	* Vials preserved w/ HCl		
1-003		10/1/91	7:25AM	X	Boiler Blank			
V-002		10/1/91	7:35AM	X	Well B2 (groundwater)			
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	Date / Time	Received by: (Signature)
3407-001		10/1/91 8:30AM		[Signature]				
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[Signature]				[Signature]				
Relinquished by: (Signature)		Date / Time		Received for laboratory by: (Signature)		Date / Time		
[Signature]				[Signature]		10-2-91 10:00 AM		
Remarks		PROJECT MANAGER:		Kevin Shaver.		Shipped via Badger Bus on 10/1/91 under chain of custody seals # 90004195 90004198		
[Signature]		[Signature]		[Signature]		[Signature]		

Volatile organic
 compounds (VOC)

SW

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6561-0001	MW1	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 2.6	1	GroundH2O	ug/L	A2
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 100	1	GroundH2O	ug/L	A2
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 20	1	GroundH2O	ug/L	A2
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	5.9	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	960	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	10	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 10	1	GroundH2O	ug/L	A2
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	38000	1	GroundH2O	ug/L	
		Toluene	4.1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 4	1	GroundH2O	ug/L	A2
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	960	1	GroundH2O	ug/L	
Trichlorofluoromethane	< 1	1	GroundH2O	ug/L			
Vinyl chloride	33	1	GroundH2O	ug/L			
m + p-Xylene	< 2	2	GroundH2O	ug/L			
o-Xylene	< 1	1	GroundH2O	ug/L			

Sample Date: 14-APR-93
 Analysis Date: 20, 21-APR-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6561-0002	MW2	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 14-APR-93
 Analysis Date: 21, 22, 23-APR-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6561-0003	MW3	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	180	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	1.8	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 14-APR-93
 Analysis Date: 21, 22, 23-APR-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6561-0004	MW4	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 20	1	GroundH2O	ug/L	A2
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 10	1	GroundH2O	ug/L	A2
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 100	1	GroundH2O	ug/L	A2
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 100	1	GroundH2O	ug/L	A2
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 2	1	GroundH2O	ug/L	A2
		1,1-Dichloroethene	2	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	1100	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	9.2	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 100	1	GroundH2O	ug/L	A2
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	2900	1	GroundH2O	ug/L	
		Toluene	10	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 20	1	GroundH2O	ug/L	A2
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	440	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	42	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 14-APR-93
 Analysis Date: 21, 22-APR-93

Ck'd: *[Signature]* App'd: *[Signature]*
 Date Issued: 4/25/93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6561-0005	FIELD BLANK	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 14-APR-93
 Analysis Date: 21, 22-APR-93

Ck'd: *Thy* App'd: *Jian*
 Date Issued: 4/28/93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231 4747
 FAX (608) 231 4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6561-0006	TRIP BLANK	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	5.4	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	1.6	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	8.8	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 14-APR-93
 Analysis Date: 21, 22-APR-93

- A1 Elevated quantitation limit due to low sample volume.
- A2 Elevated quantitation limit necessary to overcome interference.
- A3 Elevated quantitation limit necessary to overcome difficult matrix.
- A4 Result should be considered estimated with possible low bias due to unknown interference.
- A5 Result should be considered estimated with possible low bias due to difficult matrix.
- A6 Result should be considered estimated with possible low bias as indicated by method QC.
- A7 Result should be considered estimated with possible high bias due to unknown interference.
- A8 Result should be considered estimated with possible high bias due to difficult matrix.
- A9 Result should be considered estimated with possible high bias as indicated by method QC.
- A10 Result should be considered estimated due to non-homogeneous sample matrix.
- A11 Sample received past recommended hold time.
- A12 Analysis requested past recommended hold time.
- A13 Initial analysis performed within hold time; confirmation analysis performed past recommended hold time. Results from repeat analysis are reported.
- A14 Initial analysis performed within hold time; necessary dilution performed past recommended hold time. Results from repeat analysis are reported.
- A15 Result should be considered estimated with possible high bias; analyte detected in method blank.
- A16 Elevated quantitation limit indicated by batch QC.
- W1 Sample contained <0.5% solids; filtered sample was analyzed as the TCLP extract.
- W2 Analysis performed on a 10% sample solution (10 grams sample + 90 mL calcium chloride solution).
- W3 There is no regulatory holdtime for sulfite. Analysis is recommended as soon as possible after collection.
- M1 Results are qualitative only, as requested.
- M2 Total analysis performed; total concentration indicates that TCLP regulatory level could not be exceeded.
- G1 Result should be considered estimated, concentration exceeds working calibration range.
- G2 Elevated quantitation limit due to the concentration of petroleum hydrocarbons in the sample.
- G3 Elevated quantitation limit due to the concentration of non-specific hydrocarbons in the sample.
- G4 Analyte coelutes with _____; result calculated from calibration standards in a 1:1 ratio of these two compounds.
- G5 Sample required extensive cleanup; Endrin Aldehyde is not recovered from these techniques.
- G6 Petroleum-type odor detected from this sample.
- G7 Elevated quantitation limit due to the concentration of PCBs in the sample.
- G8 Result should be considered estimated with possible high bias due to coelution with an additional hydrocarbon product.
- G9 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products.
- G10 Presence of one or more unidentified peaks eluting earlier than the retention time window.
- G11 Presence of one or more unidentified peaks eluting later than the retention time window.
- G12 Result is estimated. The method used is a screening procedure for this compound.
- G13 Measurement performed using test strips.
- G14 Measurement upon receipt performed using test strips.
- G15 n-Nitrosodiphenylamine decomposes in the GC inlet and cannot be separated from Diphenylamine.
- G16 Measurement upon receipt performed using test strips. Adjusted to pH <2.



METHOD REFERENCES

MADISON
ONE SCIENCE COURT
P.O. BOX 5385
MADISON, WI 53705
(608) 231-4747
FAX (608) 231-4777

Compounds	Soil/Groundwater	Wastewater
Alcohol	8015*	8015*
BEXT	8020***	602
DRO	Modified DRO	Modified DRO
GRO	Modified GRO***	Modified GRO
Herbicides	8150	8150
Pesticides	8080	608
Pesticide/PCBs	8080	608
PCBs	8080**	608
PCBs	8080****	608
PCP Screen	8040****	8040****
PNA (GC/MS)	8270	8270
PNA (HPLC)	8310	8310
PVOCs	8020***	8020
SVOCs	8270	8270
TPH	D-3328-78*	D-3328-78*
TRPH	418.1 & 9073	418.1 & 9073
VOCs	8021	8021
VOCs	8010/8020***	601/602

SW846, "Test Methods for Evaluating Solid Waste", 3rd Ed., December 1987.

EPA-600, "Methods for Organic Chemical Analysis of Water and Wastes",
March, 1984.

ASTM, "Annual Book of ASTM Standards", 1990.

Wisconsin DNR Modified 9073 TRPH, PUBL-SW-140, Wisconsin DNR,
April 1992.

Wisconsin DNR Modified DRO, PUBL-SW-141, Wisconsin DNR, April 1992.

Wisconsin DNR Modified GRO, PUBL-SW-140, Wisconsin DNR, April 1992.

- * With Modifications
- ** With Modifications for Oil Matrix
- *** With Modifications for Soil Gas Matrix
- **** With Modifications for Wipe Matrix



CHAIN OF CUSTODY RECORD

Sampler MUST check one box:
Is this a PECFA job that
must be Subcontracted? _____

Yes
 No

No 015827

PROJECT No.		PROJECT NAME		CITY & STATE	No. OF CONTAINERS	VOC's (method 8010/8020)	REMARKS
2733702 / 132		Tilton Remedial Investigation					
SAMPLERS (Signature)							
LAB No.	DATE	TIME	COMP.	GRAB	STATION LOCATION		
6561-001	4/14/93	1410		X	MW1	2	Preserv. with HCl, Groundwater Samples GW
-0002		1250			MW2		
-0003		1330			MW3		
-0004		1350			MW4		
-0005		1310			FIELD BLANK		
-0006		1000			TRIP BLANK		
		1000			TEMP BLANK (250 ml.)		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
<i>[Signature]</i>	4/14/93 1700				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)		Date/Time	
		<i>[Signature]</i>		4-15-93 1:30pm	

REMARKS: Shipped ^{ON ICE} VIA DUNHAM TO WARZYN ANALYTICAL SERVICES ON 4/14/93. *Subtract, add 100 (#2)*

PROJECT MANAGER: Kevin D. Shaver

C.O.C. sent #5 93095019 502

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6729-0001	MW1	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 5	1	GroundH2O	ug/L	A2
		Bromoform	< 5	1	GroundH2O	ug/L	A2
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 20	1	GroundH2O	ug/L	A2
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 25	1	GroundH2O	ug/L	A2
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 25	1	GroundH2O	ug/L	A2
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	3.6	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	780	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	7.8	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 25	1	GroundH2O	ug/L	A2
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	34000	1	GroundH2O	ug/L	
		Toluene	12	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 25	1	GroundH2O	ug/L	A2
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	700	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	14	1	GroundH2O	ug/L	
m + p-Xylene	< 2	2	GroundH2O	ug/L			
o-Xylene	< 1	1	GroundH2O	ug/L			

Sample Date: 19-MAY-93
 Analysis Date: 22, 25, 26, 27-MAY-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6729-0002	MW2	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 19-MAY-93
 Analysis Date: 22, 25-MAY-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6729-0003	MW3	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	190	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	3.6	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	4.8	1	GroundH2O	ug/L	
m + p-Xylene	< 2	2	GroundH2O	ug/L			
o-Xylene	< 1	1	GroundH2O	ug/L			

Sample Date: 19-MAY-93
 Analysis Date: 22, 25, 26-MAY-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6729-0004	MW4	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 25	1	GroundH2O	ug/L	A2
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 25	1	GroundH2O	ug/L	A2
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	2	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	920	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	16	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 25	1	GroundH2O	ug/L	A2
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	2400	1	GroundH2O	ug/L	
		Toluene	8.2	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 10	1	GroundH2O	ug/L	A2
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	380	1	GroundH2O	ug/L	
Trichlorofluoromethane	< 1	1	GroundH2O	ug/L			
Vinyl chloride	48	1	GroundH2O	ug/L			
m + p-Xylene	< 2	2	GroundH2O	ug/L			
o-Xylene	< 1	1	GroundH2O	ug/L			

Sample Date: 19-MAY-93
 Analysis Date: 22, 25-MAY-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6729-0005	FIELD BLANK	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 19-MAY-93
 Analysis Date: 24, 25-MAY-93

VOLATILE ORGANIC REPORT
 TILTON PROPERTY
 MILWAUKEE WI
 Project Number: 2733702

MADISON
 ONE SCIENCE COURT
 P.O. BOX 5385
 MADISON, WI 53705
 (608) 231-4747
 FAX (608) 231-4777

Sample #	Site	Test	Result	RL	Matrix	Units	Footnotes
6729-0006	TRIP BLANK	Benzene	< 1	1	GroundH2O	ug/L	
		Bromodichloromethane	< 1	1	GroundH2O	ug/L	
		Bromoform	< 1	1	GroundH2O	ug/L	
		Bromomethane	< 2	2	GroundH2O	ug/L	
		Carbon tetrachloride	< 1	1	GroundH2O	ug/L	
		Chlorobenzene	< 1	1	GroundH2O	ug/L	
		Chlorodibromomethane	< 1	1	GroundH2O	ug/L	
		Chloroethane	< 2	2	GroundH2O	ug/L	
		2-Chloroethylvinyl ether	< 10	10	GroundH2O	ug/L	
		Chloroform	< 1	1	GroundH2O	ug/L	
		Chloromethane	< 2	2	GroundH2O	ug/L	
		1,2-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,3-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,4-Dichlorobenzene	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,2-Dichloroethane	< 1	1	GroundH2O	ug/L	
		1,1-Dichloroethene	< 1	1	GroundH2O	ug/L	
		cis-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		trans-1,2-Dichloroethene	< 1	1	GroundH2O	ug/L	
		1,2-Dichloropropane	< 1	1	GroundH2O	ug/L	
		cis-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		trans-1,3-Dichloropropene	< 1	1	GroundH2O	ug/L	
		Ethylbenzene	< 1	1	GroundH2O	ug/L	
		Methylene chloride	< 3	3	GroundH2O	ug/L	
		1,1,2,2-Tetrachloroethane	< 1	1	GroundH2O	ug/L	
		Tetrachloroethene	< 1	1	GroundH2O	ug/L	
		Toluene	< 1	1	GroundH2O	ug/L	
		1,1,1-Trichloroethane	< 1	1	GroundH2O	ug/L	
		1,1,2-Trichloroethane	< 1	1	GroundH2O	ug/L	
		Trichloroethene	< 1	1	GroundH2O	ug/L	
		Trichlorofluoromethane	< 1	1	GroundH2O	ug/L	
		Vinyl chloride	< 1	1	GroundH2O	ug/L	
		m + p-Xylene	< 2	2	GroundH2O	ug/L	
		o-Xylene	< 1	1	GroundH2O	ug/L	

Sample Date: 19-MAY-93
 Analysis Date: 25-MAY-93

Ck'd: *Kaf* App'd: *efm*
 Date Issued: 6/1/93



STANDARD REPORT FOOTNOTES

ONE SCIENCE COURT
P.O. BOX 5385
MADISON, WI 53705
(608) 231 4747
FAX (608) 231 4777

- A1 Elevated quantitation limit due to low sample volume.
- A2 Elevated quantitation limit necessary to overcome interference.
- A3 Elevated quantitation limit necessary to overcome difficult matrix.
- A4 Result should be considered estimated with possible low bias due to unknown interference.
- A5 Result should be considered estimated with possible low bias due to difficult matrix.
- A6 Result should be considered estimated with possible low bias as indicated by method QC.
- A7 Result should be considered estimated with possible high bias due to unknown interference.
- A8 Result should be considered estimated with possible high bias due to difficult matrix.
- A9 Result should be considered estimated with possible high bias as indicated by method QC.
- A10 Result should be considered estimated due to non-homogeneous sample matrix.
- A11 Sample received past recommended hold time.
- A12 Analysis requested past recommended hold time.
- A13 Initial analysis performed within hold time; confirmation analysis performed past recommended hold time. Results from repeat analysis are reported.
- A14 Initial analysis performed within hold time; necessary dilution performed past recommended hold time. Results from repeat analysis are reported.
- A15 Result should be considered estimated with possible high bias; analyte detected in method blank.
- A16 Elevated quantitation limit indicated by batch QC.
- W1 Sample contained <0.5% solids; filtered sample was analyzed as the TCLP extract.
- W2 Analysis performed on a 10% sample solution (10 grams sample + 90 mL calcium chloride solution).
- W3 There is no regulatory holdtime for sulfite. Analysis is recommended as soon as possible after collection.
- M1 Results are qualitative only, as requested.
- M2 Total analysis performed; total concentration indicates that TCLP regulatory level could not be exceeded.
- G1 Result should be considered estimated, concentration exceeds working calibration range.
- G2 Elevated quantitation limit due to the concentration of petroleum hydrocarbons in the sample.
- G3 Elevated quantitation limit due to the concentration of non-specific hydrocarbons in the sample.
- G4 Analyte coelutes with _____; result calculated from calibration standards in a 1:1 ratio of these two compounds.
- G5 Sample required extensive cleanup; Endrin Aldehyde is not recovered from these techniques.
- G6 Petroleum-type odor detected from this sample.
- G7 Elevated quantitation limit due to the concentration of PCBs in the sample.
- G8 Result should be considered estimated with possible high bias due to coelution with an additional hydrocarbon product.
- G9 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products.
- G10 Presence of one or more unidentified peaks eluting earlier than the retention time window.
- G11 Presence of one or more unidentified peaks eluting later than the retention time window.
- G12 Result is estimated. The method used is a screening procedure for this compound.
- G13 Measurement performed using test strips.
- G14 Measurement upon receipt performed using test strips.
- G15 n-Nitrosodiphenylamine decomposes in the GC inlet and cannot be separated from Diphenylamine.
- G16 Measurement upon receipt performed using test strips. Adjusted to pH <2.



METHOD REFERENCES

Compounds	Soil/Groundwater	Wastewater
Alcohol	8015*	8015*
BEXT	8020***	602
DRO	Modified DRO	Modified DRO
GRO	Modified GRO***	Modified GRO
Herbicides	8150	8150
Pesticides	8080	608
Pesticide/PCBs	8080	608
PCBs	8080**	608
PCBs	8080****	608
PCP Screen	8040****	8040****
PNA (GC/MS)	8270	8270
PNA (HPLC)	8310	8310
PVOCs	8020***	8020
SVOCs	8270	8270
TPH	D-3328-78*	D-3328-78*
TRPH	418.1 & 9073	418.1 & 9073
VOCs	8021	8021
VOCs	8010/8020***	601/602

SW846, "Test Methods for Evaluating Solid Waste", 3rd Ed., December 1987.

EPA-600, "Methods for Organic Chemical Analysis of Water and Wastes",
March, 1984.

ASTM, "Annual Book of ASTM Standards", 1990.

Wisconsin DNR Modified 9073 TRPH, PUBL-SW-140, Wisconsin DNR,
April 1992.

Wisconsin DNR Modified DRO, PUBL-SW-141, Wisconsin DNR, April 1992.

Wisconsin DNR Modified GRO, PUBL-SW-140, Wisconsin DNR, April 1992.

- * With Modifications
- ** With Modifications for Oil Matrix
- *** With Modifications for Soil Gas Matrix
- **** With Modifications for Wipe Matrix



DO NOT WRITE IN THESE SPACES
 Is this project to be subcontracted?
 YES
 NO

No 003793

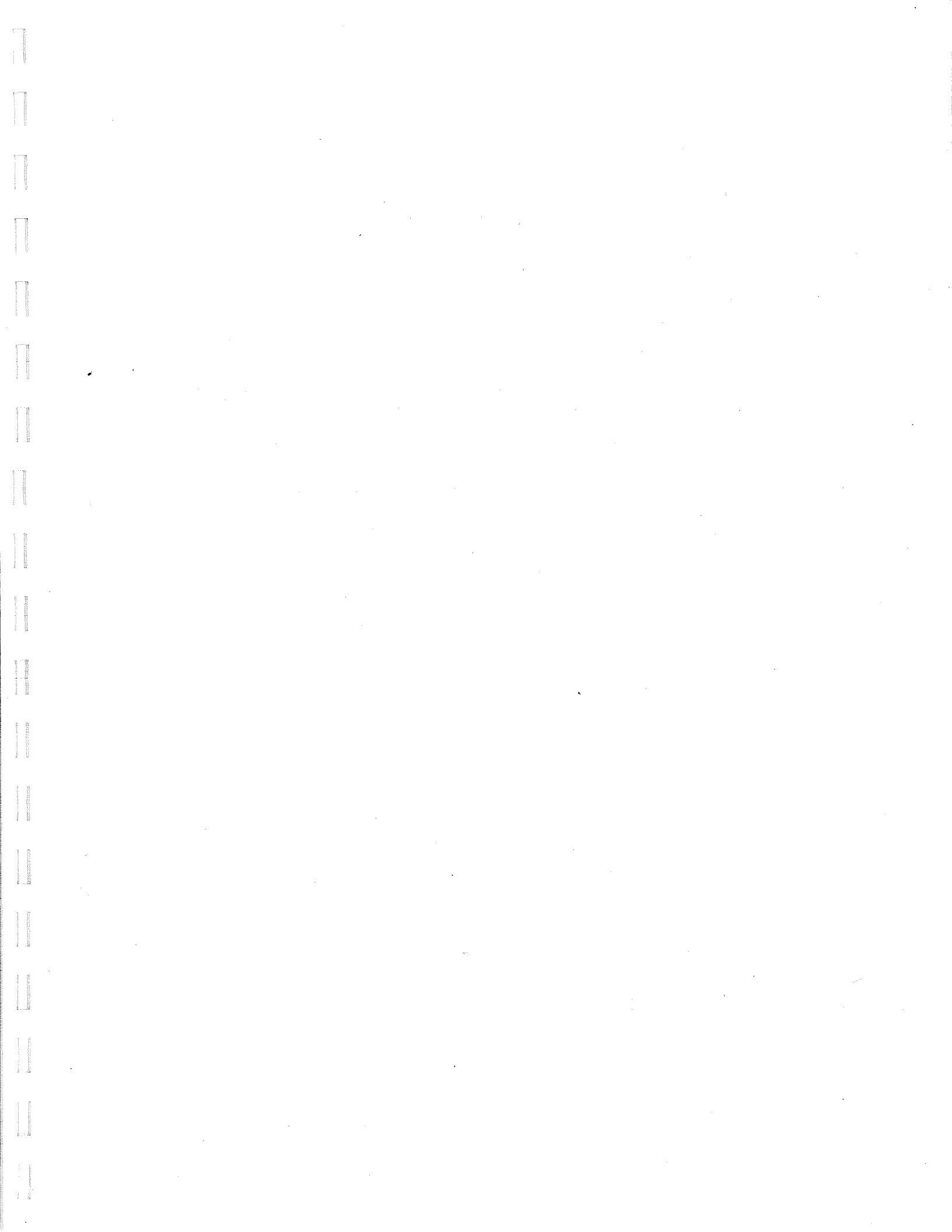
CHAIN OF CUSTODY RECORD

PROJECT No. 2733702 / 132	PROJECT NAME Tilton Property	No. OF CONTAINERS	VOC's (in 100 & 8010 / 8020)	REMARKS GW
CITY & STATE milwaukee, WI				
AMPLERS (Signature) <i>[Signature]</i>				

LAB No.	DATE	TIME	COMP.	GRAB	STATION LOCATION	No. OF CONTAINERS	VOC's (in 100 & 8010 / 8020)	REMARKS
229-001	5-19-93	1110		X	MW1	2	X	Solvent odor
002		1040			MW2			
003		1210			MW3			Solvent odor
004		1150			MW4			
000		1120			Trip Blank			
1-005		1215			Field Blank			
		1300			Temp. Blank	1		no analysis

Relinquished by: (Signature) <i>[Signature]</i>	Date / Time 5-18-93 1700	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) <i>[Signature]</i>		Date/Time 5/20/93 1115	

REMARKS
 Shipped on Ice via Dunham to WARZYN
 Analytical Services on 5-19-93 Temp (5) 10°C
 Delivered: intact, on ice via Dunham C.O.C seal #s 9208547, 548
 PROJECT MANAGER:
 Kevin D. Shaver



WARZYN INC.
CHICAGO • COLUMBUS • DETROIT • LOS ANGELES • MADISON • MILWAUKEE • PHILADELPHIA
FOR MORE INFORMATION CALL: 1-800-388-0288