DCN: Truax 2 43159 Title: Site Investigation Report ARF Final 26 Sep 1990

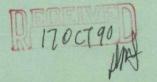
Site Investigation Wisconsin Air National Guard Truax Field Madison, Wisconsin

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> > With

Warzyn Engineering Inc. Madison, Wisconsin



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September 26, 1990

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[v1r-600-05b]

EXECUTIVE SUMMARY

Kapur and Associates, Inc. and Warzyn Engineering Inc. performed a site investigation between December 1989 and May 1990 at the Truax Field Wisconsin Air National Guard Base in Madison, Wisconsin. The purpose of the site investigation was to test selected underground storage tanks at the site and to assess soil and groundwater conditions in the vicinity of the tanks.

Precision tank tightness testing was performed on ten underground storage tanks containing petroleum fuel products, used oil or used oil and solvents. Results of the precision tank tightness testing indicated that 9 of the 10 tested tanks met a tightness criterion of less than 0.1 gal/hr loss. A 3,000 gallon used oil/solvent storage tank (tank 1201-1) failed to meet the tightness criterion, exhibiting a measured loss rate of 0.33 gal/hr. Two 50,000 gallon jet fuel (JP-4) storage tanks (405-3 and 405-4) exhibited anomalously large increases in product volume during the tightness test.

Fourteen soil borings were performed and fourteen groundwater monitoring wells were installed near individual storage tank locations to assess soil conditions, groundwater quality and groundwater flow. Soil samples were field screened for organic vapors with a photoionization detector (PID). Soil affected by petroleum product was encountered in the vicinity of JP-4 storage tank 405-4.

Water levels were measured and groundwater samples were collected from each of the fourteen monitoring wells on March 26, 1990. Each of the samples were analyzed for volatile organic compounds by Warzyn. Analytical results from March 26, 1990, indicated groundwater concentrations of volatile organic compounds at several well locations exceeded State groundwater standards. Local groundwater flow was determined to be to the southeast.

Analytical results and field observations indicated four areas of concern at the site:

- . Groundwater and soil is affected by what appears to be JP-4 jet fuel in the area between buildings 405, 411 and 414;
- . Elevated concentrations of chlorinated hydrocarbon compounds were detected in groundwater beneath the area between buildings 401, 409 and 410;
- . Elevated levels of chlorinated hydrocarbon compounds were detected in groundwater south of building 1201; and
- . Elevated concentrations of chlorinated hydrocarbon compounds were detected in groundwater southeast of building 1000.

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SITE BACKGROUND

SITE DESCRIPTION

The Wisconsin Air National Guard Base is located at Dane County Regional Airport - Truax Field. The site is in the northeast and northwest quarters of Section 28, T.8N., R.10E., approximately five miles northeast of downtown Madison, Wisconsin. The Air National Guard Base (ANGB) occupies approximately 155 acres of the Truax Field complex. The site location and ANGB facility boundaries are shown on Drawings 15073-A1 and 15073-A3.

The base has been in operation since October 1942. Underground storage tanks (USTs) are used to store fuel for operation of aircraft, support vehicles and equipment. Four 50,000 gallon USTs are located next to building 405, the petroleum, oil and lubricant (POL) pump house. The tanks are constructed of steel and have been in active use since 1952. The tanks currently contain JP-4 (jet fuel) used to refuel aircraft on base. Two steel USTs, one 12,000 gallon unleaded gasoline tank and one 6,000 gallon diesel tank, are located southeast of building 1000. These tanks have been in use since their installation in 1975. One 300 gallon coated steel UST containing leaded gasoline is located on the south side of building 1209. This tank was installed in 1985 and is also in use. The locations of the underground tanks are shown on Drawing 15073-2.

Several other USTs ranging from 250 to 3,000 gallons in capacity, are currently used to temporarily store used oil and solvents generated by the operation and maintenance of aircraft and air base equipment.

An abandoned underground fuel pipeline system and fueling/defueling hydrant system are located on the base. The pipeline extends from an abandoned offbase tank farm to the four 50,000 gallon JP-4 tanks. The system was sealed off and abandoned in 1973. As reported in the Installation Restoration Program, Preliminary Assessment (PEER Consultants, P.C., August 1988), the pipeline and hydrant system have never been cleaned or purged. It is not known if there is fuel remaining in the system.

PETROLEUM PRODUCT SPILLS

As reported in the Installation Restoration Program, Preliminary Assessment (PEER Consultants, P.C, August 1988), two spills of JP-4 have occurred at the base since 1980.

On March 6, 1981, approximately 2,000 gallons of JP-4 jet fuel spilled onto the ground west of the POL pump house (building 418) due to a filling overflow. The fuel was reportedly flushed to an existing dammed drainage ditch running east-west next to the spill (between the POL pump island and well Wil, refer to Drawing 15073-2). The fuel was allowed to soak into the ground and the affected soil was excavated to a depth of approximately six feet and removed by April 9, 1981.

On August 3, 1985, approximately 100 gallons of used JP-4 jet fuel spilled onto the ground during transfer to storage tank 1201-1 (refer to Drawing 15073-2). The fuel was contained by diking and removed with absorbent blotters. Three 55 gallon drums of contaminated soil were removed within two days of the incident.

SITE INVESTIGATION WISCONSIN AIR NATIONAL GUARD TRUAX FIELD MADISON, WISCONSIN

INTRODUCTION

This report presents the results of the underground storage tank, soil and groundwater investigation at the Truax Field Wisconsin Air National Guard Base in Madison, Wisconsin. The investigation was performed for the Wisconsin Air National Guard (WANG) by Kapur and Associates, Inc. (Kapur) and Warzyn Engineering Inc. (Warzyn) in accordance with the February 6, 1990 Work Plan prepared by Kapur and Warzyn.

The scope of services performed included:

- . Precision tightness testing of ten underground storage tanks;
- Drilling of fourteen soil borings and installation of fourteen monitoring wells;
- . Surveying of monitoring well locations and elevations;
- . Laboratory analysis of soil samples for total petroleum hydrocarbons;
- . Groundwater level monitoring and sampling for volatile organic compounds; and
- . Preparation of a water table map for the site.

The site background, results of the field investigation and laboratory analyses, conclusions and recommendations are included in the following sections.

GEOLOGIC SETTING

The Truax Field ANGB is situated near the center of the Central Lowlands Physiographic Province of the United States. The province is characterized by generally horizontal to gently dipping strata and widespread topographic effects of glaciation.

In Dane County, Cambrian formations overlie the Precambrian bedrock. The Cambrian strata are mainly sandstone with minor units of shale, siltstone and dolomite. Where they have not been removed by erosion, Ordovician rocks, principally dolomite, overly the Cambrian sandstone. Unconsolidated Quarternary glacial deposits overlie the units of Cambrian and Ordovician age.

As illustrated on Drawing 15073-A4, the ANGB is located on a wedge of glacial drift approximately 300 ft thick, which overlies the Mt. Simon Sandstone. The glacial drift is predominantly sand and silt with some clay and gravel, and is believed to occupy the pre-glacial Yahara River Valley. Glacial deposits cover all but the southwestern quarter of Dane County. The ANGB is about 15 miles east and 15 miles northeast of the terminal moraines marking the southwestern limit of late Wisconsin Stage glaciation and associated surficial deposits.

The uppermost glacial deposits near Truax Field are mostly lacustrine plain silt and clay deposited in former glacial Lake Yahara. Outwash sand and gravel may exist near former glacial lake shorelines and within a few feet of the surface beneath the finer grained lake sediments.

SURFACE WATER DRAINAGE

Surface drainage from Truax Field ANGB ultimately drains west into Starkweather Creek. Starkweather Creek surrounds the ANGB on the north, west and south sides, eventually emptying into Lake Monona to the south. Drainage on the base is provided by man-made ditches and culverts which connect to Starkweather Creek. Lakes Mendota, Monona and Waubesa lie to the west and south. Cherokee Marsh lies to the northwest. Drawing 15073-A2 depicts the surface water drainage of the area.

HYDROGEOLOGY

The aquifer system in Dane County is generally subdivided into the lower sandstone aquifer, composed of the Cambrian age sandstones, and the upper aquifer, composed mostly of Ordovician dolomites and overlying unconsolidated Quarternary deposits. Precambrian crystalline rocks underlie the Madison area at a depth of about 700 to 1,000 feet, forming the lower boundary of the aquifer system.

Madison's municipal water supply is obtained from large capacity wells finished in the sandstone aquifer. Truax Field ANGB receives all of its water from the City of Madison. The nearest groundwater withdrawal is from the sandstone aquifer by municipal wells located approximately one mile to the southeast (Madison City Well No. 15, 3900 E. Washington Avenue) and 1 1/2 miles to the southwest (Madison City Well No. 7, 1709 N. Sherman Avenue). Large capacity Oscar Mayer Plant wells are also located approximately 1 1/2 miles southwest of the base. The Madison Area Technical College - Truax Campus, located south of the ANGB, is supplied by the Madison City Water Utility.

Holt et. al. (1970) and McLeod (1975) report that drawdown from Madison area municipal pumpage has resulted in the interception of upper aquifer groundwater that formerly flowed toward area lakes. Based on projected municipal pumping rates through 1990, a United States Geological Survey computer model predicts upper aquifer drawdowns of 10 feet or more in areas approximately one mile east and one mile west of the base (McLeod, 1975).

Although the model did not predict drawdowns as great as 10 feet in the immediate vicinity of the ANGB, municipal and industrial pumping may have altered shallow groundwater flow from historical patterns in the area.

PRIVATE WATER SUPPLY WELLS

Twenty-two well constructor's reports for private wells in Sections 28 and 29 were obtained from the Wisconsin Geological and Natural History Survey. The logs are included in Appendix E. The reported locations of the wells by quarter section or quarter-quarter section on the constructor's reports have not been confirmed. The dates of well construction range from 1920 to 1984.

Eight of the well reports listed locations in the northeast or southeast quarter section of Section 28. The closest boundaries of these quarter sections are approximately 0.7 to 1.0 miles cross gradient or down and cross gradient from groundwater flow under the ANGB.

Well constructor's reports indicate four wells in the southwest quarter of Section 28, potentially 0.5-1 mile cross gradient or downgradient from the site. Three of the wells were constructed in the 1940's and the other well in 1971. It is not known whether any of these four wells are in use.

Five private well constructor's reports indicate locations in the northwest quarter of Section 28, 0.3 to 0.8 miles east (cross gradient) of the ANGB site. These wells were constructed between 1939 and 1977. The current status and location of these wells has not been confirmed.

Four wells are reported in Section 29, the section occupied by the ANGB facility. All of these wells were constructed between 1920 and 1943. Two of the well constructor's reports are not complete but indicate farm wells located in the southwest quarter of the northwest quarter of Section 29 (under the current Truax Field runway), and in the northeast quarter of the southeast The other two remaining well constructor's reports give quarter section. locations in the northeast and southeast quarters of Section 29. The dates of these well constructor's reports suggest the wells were used on farms before the Department of the Army acquired 2050 acres in the area in 1943. Whether all of the reported wells in Section 29 were destroyed or abandoned during the expansion of the military facility is not known. In light of current development and past activities in the immediate vicinity of the current ANGB, these four wells are believed to be abandoned or not in use, though this has not been confirmed.

SITE INVESTIGATION

TANK TESTING PROGRAM

Ten of the Site USTs, including the four 50,000 gallon JP-4 tanks, were precision tightness tested by Midwest Petroleum Services, Inc. (MPS) under the supervision of Kapur personnel. MPS used the Ainlay Tank Tegrity Tester temperature compensated method, authorized for use in Wisconsin (Corrective Action Plan for the Leaking Underground Storage Tank Management Program, Wisconsin Department of Natural Resources, May 1989).

The lengths of the manometer level tests were five hours for each of the 50,000 gallon tanks and one hour for the remainder of the tanks. The MPS tank test results are summarized in Table 1 and are included in Appendix D. The locations of the underground storage tanks are shown on Drawing 15073-2. With the exception of the 3,000 gallon used oil tank 1201-1, all of the tested tanks met the federal tightness criterion of less than 0.1 gallon/hour measured loss. Tank 1201-1 exhibited a measured loss of 0.33 gallons/hour.

Petroleum, oil and lubricant (POL) house tanks 3 and 4 (405-3 and 405-4), tested in December 1989, exhibited anomalously large increases in volume relative to other tested tanks (+0.38 and +0.45 gal/hr, respectively). According to an MPS representative, the tanks were reportedly topped off with 7,000 gallons from a tanker truck the day before the testing (MPS, personal correspondence, March 20, 1990). Internal thermal stabilization may not have been achieved in the large liquid volume (50,000 gal) overnight, possibly causing the measured volume increase.

GROUNDWATER MONITORING WELLS

Fourteen groundwater monitoring wells (MWl through MWl4) were installed near the USTs of concern at the site between February 7 and February 13, 1990. The locations of the wells are shown on Drawing 15073-2. Pre-site investigation information suggested that that dominant groundwater flow direction in the area was to the southwest. Where possible, the wells were located southwest of the underground storage tank under consideration. The presence of underground utilities, fuel lines, buildings and overhead lines prohibited the placement of some wells to the southwest of individual tanks. In these instances, wells were placed as near as possible to the underground tank as potential drilling hazards would permit.

Drilling and monitoring well installation were performed by Environmental and Foundation Drilling, Inc. Prior to drilling each well, the drilling rig and drilling tools were decontaminated using steam pressure washing to minimize the possibility of cross-contamination. Each monitoring well boring was drilled using a truck-mounted auger rig with 4-1/4 in. inside diameter hollow stem augers. Two-inch diameter split spoon soil samples were collected at 2.5 ft intervals to a depth of 10 ft and at 5 ft intervals below 10 feet.

The borings were terminated at depths ranging from 17 to 27 ft below land surface. The samples were lithologically logged and screened for organic vapors with a photoionization detector (PID) using the field headspace analytical technique. Boring logs with PID readings were prepared for each well and are included in Appendix A. PID screening results are summarized in Table 2.

Monitoring Well Construction

The fourteen monitoring wells (W1-W14) were constructed of threaded, flush joint, 2 in. inside diameter, Schedule 40 PVC. Each well screen had 0.010 in. factory cut slots. A uniform washed coarse sand was installed around and extended 1.5 to 2 ft above the top of the well screen slots to serve as a filter pack. A seal consisting of six inches of bentonite pellets was placedon top of the filter pack sand. The pellets were hydrated with a small amount of water and granular bentonite was then extended to one ft below ground surface as an annular space seal. Except for wells W6 and W8, the wells were completed with two feet of solid PVC stick-up and locking steel protective and ANGB activities necessitated Storage tank location the casings. completion of wells W6 and W8 as flush mount wells with water tight protective steel cover pipes. A variance for construction of the flush mount wells was received from the Wisconsin Department of Natural Resources and is included in Appendix F.

Ten foot long screens were installed where the water table was estimated during drilling to be less than 10 ft below ground surface (wells W6, W7, W9, W10, W11 and W12). The 10 ft screens were set with the top of the slotted portion 3 to 4 ft above the estimated water table. Where the water table was encountered at a depth greater than 10 ft, 15 ft screens were installed (wells W1, W2, W3, W4, W5, W8, W13, W14). The 15 ft screens were set with the top of the slotted portion 5 to 6 ft above the estimated water table. Well construction details are included in Appendix B.

Monitoring Well Development

The fourteen monitoring wells were initially developed between February 7 and February 13, 1990, by Environmental and Foundation Drilling, Inc. (EFD), by surging and purging with a PVC bailer. Free floating petroleum product was present on the groundwater removed from well W8. Approximately 1 to 2 in. of brown, translucent petroleum product floated on the 13 gallons of bailed water retained in three 5 gallon discharge containers. There was a second separate yellowish-green non-aqueous phase present in well W8. Field observations by Warzyn indicated that the two non-aqueous phases appeared immiscible. The yellow/green liquid readily stains PVC bailers and plastic bailing discharge A similar green/yellow liquid and fuel odor was noted in the containers. first bailer volume of water removed from well W10. Observations recorded by EFD personnel indicated petroleum product odor and/or an organic film was also present on water removed from wells W4, W5, and W9 during development. Initial well development information is summarized in Table 4 and included in Appendix B. Purged water was discharged through a Wisconsin Air National Guard oil and water separator into the sanitary sewer.

The monitoring wells were redeveloped in accordance with Chapter NR 141, Wisconsin Administrative Code on March 26, 1990, by surging with a bailer and removing ten well volumes with a centrifugal and/or B-K pump. Development equipment was cleaned with trisodium phosphate detergent followed by a deionized water rinse between wells to minimize cross-contamination. Well W2 was bailed dry and allowed to recharge 5 times. Wells W8 and W10 had approximately one foot and one-half inch, respectively, of free petroleum product on the standing water. These two wells were not re-developed on March 26, 1990. A summary of the well development performed by Warzyn is presented in Table 5. Well development documentation is included in Appendix B.

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ORGANIC VAPOR SCREENING

Strong fuel odor while drilling and headspace PID readings of 100-200 ppm as benzene equivalents were observed in split spoon samples from 3.5 to 10 ft at wells W8 and W10. Saturation with a yellow-green organic liquid was noted at a depth of approximately 9.5 ft in the W8 split spoon sample taken from 8.5 to 10 ft. Elevated PID readings were also detected in samples beneath the water table to the boring bottoms in wells W8 and W10. The split spoon sample from 8.5 to 10 ft in well W9 (west of W8 and W10) had a detectable fuel odor and a PID headspace reading of about 1 ppm above background. Split spoon samples from borings for wells W2, W4, W5, W7 and W14 yielded low level PID readings (1 to 4 ppm above background).

Variation in air temperature and weather conditions precluded rigorous standardization of the PID field screening for the duration of the drilling. As noted in Table 2, the commercial sample bags used for headspace screening gave readings of 0.2 to 0.3 ppm above background when the probe was inserted into an empty bag. Headspace PID values below approximately 1 ppm above background should be considered tenuous.

SOIL ANALYTICAL RESULTS

At least one split spoon sample from each well boring was collected and transported to the Warzyn analytical laboratory using standard preservation techniques and chain of custody documentation. Based on field PID screening results, twelve soil samples were selected for total petroleum hydrocarbon analysis. The analytical results are summarized in Table 3 and included in Appendix C. Soil samples from borings for wells W8 and W10 had elevated concentrations of petroleum hydrocarbons as kerosene and #6 fuel oil (Table 3). Soil samples collected from 5 to 6.5 ft at well W8 had measured concentrations of 494 and 57.0 mg/kg as kerosene and #6 fuel oil, respectively. Soil samples collected from 6 to 7.5 ft at well W10 had measured concentrations of 393 and 102 mg/kg, respectively, as kerosene and #6 fuel oil.

Based on the soil analytical results and field PID screening results, the petroleum product affected soil extends from a depth of 3 ft to the water table (approximately 10 ft) near well W8. Affected soil near well W10 is limited to a depth between approximately 5 and 8 ft. The depth interval of affected soils at well W10 suggests the petroleum product in the soil may have been derived from petroleum product floating on a fluctuating water table. Floating petroleum product was collected from both wells W8 and W10 (see Monitoring Well Development section, above). The present water table may be up to several feet lower than normal, due to drought conditions in 1988 and 1989.

The lateral extent of affected soil north and east of well W8 and to the west of well W10 has not been determined. Petroleum product affected soil apparently does not extend as far south as wells W11 and W12.

SITE STRATIGRAPHY

A surficial layer of silty clay or clayey sand, typically five feet or less in thickness, was encountered in eight of the fourteen borings (W1, W2, W3, W7, W8, W10, W12, W14). Fine grained lacustrine surface deposits were anticipated over the entire site. Construction activities at the base may have removed much of the expected surficial silt and clay at the remainder of the boring locations. Below a depth of approximately five feet, the stratified deposits are generally fine to medium sand with occasional coarse sand and gravel. The coarser sediments occur in apparently discontinuous lenses. Predominantly silty fine sand was present in borings W2, W3 and W4. A layer of clay and clayey sand was present at approximately 22 to 27 ft at boring W2.

GROUNDWATER FLOW

Monitoring well locations and elevations were surveyed by Kapur and Associates, Inc. in April 1990. The water table elevation was determined from measurements made by Warzyn on March 26, 1990. With the exception of wells W2 and W14, the water table was between 8 and 11 ft below ground surface (between 9 and 13 ft below the top of the PVC well casing) on March 26, 1990. The depth to water in both wells W2 and W14 was approximately 13.5 ft below ground surface. A summary of measured groundwater elevations is provided in Table 6.

A water table map prepared from the measured groundwater elevations is shown on Drawing 15073-2. The water table configuration on March 26, 1990 indicates flow to the south-southeast, with a gradient of approximately 0.001 ft/ft across the site. Hydraulic conductivity testing necessary to estimate groundwater flow velocity has not been performed.

GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected from all wells except W8 and W10, which contained free oil product, on March 26, 1990. Samples were collected with a stainless steel bailer and cable after removing three well volumes with the bailer. The stainless steel bailer and cable were cleaned with trisodium phosphate detergent followed by a deionized water rinse between samples to minimize cross-contamination. Field duplicates, a bailer blank and trip blank were collected for quality assurance/quality control. Samples were analyzed for volatile organic compounds (VOCs) at the Warzyn analytical laboratory using SW846 methods 8010 and 8020 with modifications. Samples of floating petroleum product were collected from wells W8 and W10 for product characterization.

GROUNDWATER ANALYTICAL RESULTS

Groundwater analytical results are summarized in Table 7 and included in Appendix C. Various volatile organic compounds (petroleum compounds and chlorinated hydrocarbons) were detected in several of the monitoring wells. The concentrations of VOCs detected in some of the wells exceeded Preventive Action Limits (PAL) or Enforcement Standards (ES) as defined in Chapter NR 140.10, Wisconsin Administrative Code. ESs and PALs are concentrations established as groundwater protection standards by the State of Wisconsin. PALs are intended to serve as a warning that a particular substance has been detected in groundwater and that some regulatory response may be necessary. ESs establish the concentration of a substance at which a violation has occurred. PALs and ESs for the substances detected in Truax Field ANGB groundwater samples are included in Table 7.

Benzene, ethylbenzene, toluene and xylenes (BETX) were detected in well W9. BETX compounds are common constituents of petroleum fuels. The detected level of benzene in well W9 groundwater was approximately 15 times the ES, while the detected level of xylenes was about twice the PAL.

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The petroleum product samples collected from wells W8 and W10 were characterized relative to gasoline, kerosene, #2 fuel oil and #6 fuel oil reference standards. The chromatographic fingerprints of the product samples closely matched the gasoline reference standard. However, the sample chromatograms exhibited more enhanced, heavier, later eluting hydrocarbon fractions than the gasoline reference standard. Due to the proximity of wells W8 and W10 to the four 50,000 gallon JP-4 USTs and associated piping in the transport filling area, the free product is presently assumed to be JP-4 fuel. A reference standard of JP-4 jet fuel for analytical confirmation is not available to Warzyn.

The most likely potential sources of the floating petroleum product in wells W8 and W10 and petroleum product compounds in well W9 include the JP-4 jet fuel tanks (405-1,2,3,4), the piping associated with the JP-4 tanks and fuel unloading system, the reported 2,000 gallon spill (March 6, 1981) of JP-4 at the fuel unloading areas (419-1, Drawing 15073-2) and the abandoned underground fuel pipeline and fueling/defueling hydrant system (Drawing 15073-2).

The 50,000 gallon JP-4 storage tanks met the tightness testing criterion of less than 0.1 gallon/hr loss. Results for tanks 405-3 and 405-4, however, are potentially suspect due to apparent thermal non-equilibrium during the tightness testing process. The integrity of the piping between the JP-4 tanks and the fuel unloading area has not been tested. The amount of residual fuel (if any) remaining in the underground fuel pipeline and fueling/defueling hydrant system is not known. The hydrant and fuel pipeline were reportedly not purged when abandoned in 1973 (Installation Restoration Program, Preliminary Assessment, PEER Consultants, P.C., August 1988).

No BETX compounds were detected in groundwater sampled from wells W11 and W12. The respective locations of wells W11 and W12 are approximately 180 ft and 120 ft downgradient from well W8, and approximately 60 ft and 90 ft, respectively, downgradient from the location reported for the drainage ditch used to contain the product spilled in March 1981. If the product in wells W8 and W10 is associated with the March 1981 spill, then either the groundwater flow velocity is too small to have transported dissolved BETX compounds from the vicinity of the spill to the vicinity of wells Wll and Wl2 in this time interval, or a preferential conduit for groundwater flow and product migration may exist in the vicinity of the JP-4 tanks and fuel unloading system. As hydraulic conductivity testing has not been performed at the site, the rates of groundwater flow and potential contaminant migration from the area of the If groundwater flow rate is sufficient free product has not been determined. to have transported dissolved compounds 100 to 200 ft downgradient from the area of wells W8 and W10 since the floating petroleum product was released, then dispersion may have decreased VOC concentrations to below detection limits in the area of wells Wll and Wl2.

A preferential path for groundwater flow and petroleum product migration may exist along the currently used underground fuel unloading system piping and pipeline of the abandoned fueling/defueling hydrant system in the vicinity of wells W8 and W10 (Drawing 15073-2). Information necessary to initially assess the possibility of preferential groundwater and petroleum product movement has not been obtained.

The Wisconsin Air National Guard contacted the WDNR to report the release of petroleum hydrocarbons and other organic compounds to soil and groundwater in the vicinity of several UST systems at the site. γ

Chlorinated hydrocarbons, common constituents of chemical solvents, were detected in samples from seven wells (W1, W4, W5, W6, W7, W13 and W14). The concentration of cis-1,2-dichloroethene (cis-1,2-DCE) detected in well W1 groundwater (35.9 ug/L) exceeds the PAL by approximately 3.5 times. The source of the cis-1,2-DCE in W1 is ambiguous. The nearest reported USTs to well W1 contained unleaded gasoline and diesel fuel used for the ANGB motor pool. A 250 gallon used oil tank and a 275 gallon used oil/solvent tank are located approximately 250 and 300 ft, respectively, northwest (upgradient) of well W1 (Drawing 15073-2). No VOCs were detected in groundwater samples from monitoring wells W2 and W3 installed within 20 ft of these storage tanks. However, the present water table configuration suggests that wells W2 and W3 are located cross or upgradient from the nearest USTs. If releases from the used oil and solvent storage tanks located near wells W2 or W3 are the sources of the cis-1,2-DCE detected in well W1, groundwater flow may result in migration of solute away from W2 and/or W3.

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Trichloroethene (TCE) concentrations detected in wells W4 and W5 exceeded ES values. TCE detected in well W6 groundwater exceeded the PAL. The vinyl chloride concentration detected in well W6 exceeded the ES. Although monitoring wells W4, W5 and W6 are located generally cross gradient from the respective used oil/solvent tank each is intended to monitor, their proximity to the tanks makes the individual USTs the likely sources of the chlorinated hydrocarbons detected in wells W4, W5 and W6. An appropriate downgradient monitoring network to confirm the sources does not exist. The VOCs may have been introduced to the groundwater by spills during disposal and transfer of used oil and/or solvents to and from the tanks. The ground surface around the used oil/solvent UST fill pipes was stained with black residue.

The tetrachloroethene concentration detected in well W13 (2.0 ug/L) exceeds the ES by a factor of two. Well W13 is located approximately 70 ft down gradient from a 3000 gallon used oil and solvent UST (tank 1201-1). Tank 1201-1 failed the tank tightness test criterion (Table 1). The trace levels of cis-1,2-DCE and vinyl chloride detected in groundwater samples from well W14, are possible breakdown products of tetrachloroethene. Well W14 is located approximately 400 ft south-southwest (downgradient and cross gradient) of well W13 and tank 1201-1. Other than the possibility of surficial spills, the only known potential source of tetrachloroethene, DCE and vinyl chloride in the vicinity of wells W13 and W14 is UST 1201-1. No BETX compounds were detected in well W14, which is located approximately 12 ft crossgradient from a 300 gallon gasoline UST (1209-1).

The vinyl chloride detected in well W14 samples was present at levels below the method quantitation limit (BMQL, Table 7). The quantitation limit is above the PAL and ES for vinyl chloride. In this case, as defined in Chapter NR 140.12, Wisconsin Administrative Code, the PAL or ES is not considered to have been attained or exceeded unless the presence of the substance has been confirmed by a statistically sufficient number of analyses of multiple samples. The nature and extent of a possible contaminant plume of tetrachloroethene and associated compounds potentially emanating from UST 1201-1 cannot be determined with the existing monitoring well network.

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CONCLUSIONS

Based on the results of the Site Investigation at the Truax Field Wisconsin Air National Guard Base, there are four areas of concern with regard to groundwater and soil:

- . Groundwater and soil affected by what appears to be JP-4 jet fuel in the area between buildings 405, 411 and 414;
- Elevated concentrations of chlorinated hydrocarbon compounds in groundwater beneath the area between buildings 401, 409 and 410;
- Elevated concentrations of chlorinated hydrocarbon compounds in groundwater south of building 1201;
- Elevated concentrations of chlorinated hydrocarbon compounds in groundwater southeast of building 1000.

Groundwater and soil conditions in the JP-4 storage tank and fuel unloading area (buildings 405 and 411) are summarized below:

- Soil sample analytical results indicated that the extent of affected soils near individual underground storage tanks was not significant, with the exception of soil borings W8 and W10 southwest of the JP-4 tanks (405-1, 2, 3, 4).
- Field PID screening and laboratory analyses indicated that soil near the 50,000 gallon JP-4 tanks and associated fuel filling piping were affected by petroleum product.
- . Soil near well W8 has been affected by petroleum product from a depth of three feet to the water table (approximately ten feet). Near well W10, soil is affected by petroleum product between depths of approximately five and eight feet. The lateral extent of affected soil to the north and to the east of well W8 and to the west of well W10 has not been determined.
- Free floating petroleum product is present on the water table near the southern end of the JP-4 tanks. The northern, eastern and southern extent of the free product has not been determined.
- Potential source(s) of the petroleum product in the vicinity of wells W8 and W10 include loss from the piping associated with the JP-4 tanks (405-1,2,3,4) and fuel unloading system, small rates of loss from the JP-4 tanks themselves (though the tanks met tightness criterion), the reported 2,000 gallon spill in 1981, or fuel product derived from the abandoned fueling/defueling hydrant system pipeline.

. Compounds common to petroleum fuels have affected groundwater quality in the vicinity of the JP-4 storage tanks. Groundwater analyses indicated that the affected water did not extend as far south as wells W11 and W12. The area of affected groundwater extended at least 75 ft west to well W9. Concentrations of benzene and xylenes exceeded state groundwater standards in well W9. The eastern, northern and southwestern extent of affected groundwater are not known.

Elevated levels of chlorinated hydrocarbon compounds were detected in groundwater beneath the area between buildings 401, 409 and 410 (wells W4, W5 and W6).

- . Concentrations of chlorinated hydrocarbons, common constituents of petrochemical solvents, exceed state groundwater standards in the following individual wells:
 - W4 Trichloroethene (TCE) exceeds Enforcement Standard;
 - W5 Trichloroethene (TCE) exceeds Enforcement Standard;
 - W6 Trichloroethene (TCE) exceeds PAL; and
 - W6 Vinyl chloride exceeds Enforcement Standard.
- Chlorinated hydrocarbon compounds in groundwater at well W6 suggest that the source is tank 409-2, designated as a used oil and solvents storage tank.
- . Storage tanks 401-1 and 401-2 near wells W4 and W5 are designated as used oil tanks. TCE in wells W4 and W5 may have originated from storage tanks 401-1 and 401-2 respectively, if solvents have been disposed of in the tanks along with the used oil or if chlorinated hydrocarbons become mixed with the used oil during handling and cleaning processes. However, wells W4 and W5 are cross gradient from the storage tanks. Downgradient groundwater samples near tanks 401-1 and 401-2 are necessary to confirm the tanks as sources and assess the extent of affected groundwater.

The concentration of tetrachloroethene detected in groundwater south of building 1201 and tank 1201-1 (well W13) exceeded the Enforcement Standard.

- . The 3,000 gallon used oil and solvents storage tank 1201-1, located approximately 70 ft upgradient from well W13, is the probable source of tetrachloroethene detected in well W13 groundwater. UST 1201-1 failed tank tightness testing performed by Midwest Petroleum Services.
- Cis-1,2-DCE and vinyl chloride detected at trace levels in well W14 are possible breakdown products of tetrachloroethene detected in well W13, located approximately 400 ft upgradient and cross gradient from well W14. The possibility of a continuous plume of chlorinated hydrocarbon compound affected groundwater migrating downgradient from well W13 and toward well W14 has not been confirmed.

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The concentration of cis-1,2-dichloroethene detected in groundwater southeast of building 1000 (well W1) exceeded the PAL.

• The potential source of cis-1,2-DCE in W1 is ambiguous. Used oil and solvents storage tanks 100-3 and 1000-5 are located 250-300 ft upgradient of well W1. Groundwater samples from wells W2 and W3, located cross gradient from tanks 1000-3 and 1000-5, contained no detectable chlorinated hydrocarbons. No monitoring well exists between well W1 and storage tanks 1000-3 and 1000-5 to confirm the tanks as the source of well W1 chlorinated hydrocarbons. It is not known if past disposal activities occurred in the immediate vicinity of well W1. The extent of affected water downgradient from well W1 has not been determined.

Nine of the ten underground storage tanks tested for tightness met the tightness criterion of less than 0.1 gallon/hour loss, though five of the tanks exhibited loss rates of less than 0.1 gallon/hour. Test results for JP-4 storage tanks 405-3 and 405-4 are suspect due to apparent thermal nonequilibrium during the testing process. Groundwater analytical results suggest the possibility of petroleum fuel product or solvent loss from several of the tanks or from spillage associated with disposal of fluids in the tanks. All of the existing regulated underground storage tanks will require replacement or upgrade to meet Federal corrosion protection and/or spill and overfill protection by December 1998. Approved leak detection measures for tanks and piping must be in place between the present and 1993 dependant upon installation date.

Shallow groundwater flow at the site is toward the south-southeast, rather than to the southwest as suggested by regional hydrogeologic information.

RECOMMENDATIONS

RECOMMENDATIONS TO ADDRESS SOIL AND GROUNDWATER CONTAMINATION The following activities are recommended to address the affected soil and groundwater observed at the site:

- Evaluate the source of free product in the vicinity of buildings 405 and 411. Retest JP-4 storage tanks 405-3 and 405-4, under conditions of thermal equilibrium. Verify the integrity of piping from the current JP-4 fuel unloading system to the JP-4 storage tanks. Examine the abandoned underground fuel transfer line for residual fuel and purge the pipeline if residual fuel is present. Tank testing methods should be given careful consideration due to the large size of the JP-4 tanks.
 - Determine the extent of petroleum product-affected soil and groundwater in the vicinity of the JP-4 storage tanks and assess the possibility of preferential groundwater flow and petroleum product along the abandoned underground fuel transfer pipeline. Perform three additional soil borings and install three monitoring wells located: 1) on the east side of the JP-4 tank 405-1, 2) 80-100 feet north of well W8, and 3) approximately 100 ft southwest of well W8, along the abandoned fuel transfer pipeline. Remedial actions should be considered based on information obtained from the additional borings and sampling of the additional wells.
- Evaluate the lateral and vertical extent of chlorinated hydrocarbonaffected groundwater in the vicinity of buildings 401, 409 and 410. Install two water table wells downgradient of tanks 409-2, 401-1 and 401-2, with one of the wells located approximately 200 feet south of well W6 and the other located approximately 150 feet south of well W5. Install a piezometer nested with one of these wells. One monitoring well should be 100-200 feet upgradient from wells W6 and W5 to determine whether tanks 409-2, 401-1 and 401-2 are potential sources of chlorinated hydrocarbon compounds observed in the area. Removal of the used oil and used oil/solvents tanks should be considered based on information obtained from sampling and monitoring of the additional wells.

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- Evaluate the extent of chlorinated hydrocarbon compound-affected groundwater downgradient from used oil and solvents storage tank 1201-1. Install and sample an additional monitoring well approximately 100-150 ft east of well W13.
- Perform additional sampling of groundwater at well Wl to monitor the level of chlorinated hydrocarbon compounds in groundwater southeast of building 1000.

An additional round of groundwater sampling and analysis should be performed after installation and development of the additional wells. To assist in identifying the potential sources of volatile organic compounds detected in groundwater at the site, consideration should be given to in-situ hydraulic conductivity testing to determine rates of groundwater flow and contaminant migration. Remedial action and potential contaminant source removal should be considered after the additional information has been obtained.

RECOMMENDATIONS FOR UNDERGROUND STORAGE TANK COMPLIANCE

This section provides a summary of regulatory compliance issues and recommendations for each of the facility's underground storage tanks (USTs) addressed during this investigation. The two issues of concern are environmental liability for volatile organic compounds detected in site groundwater at concentrations exceeding State groundwater standards and compliance with Environmental Protection Agency rules promulgated in the Code of Federal Regulations (40 CFR Part 280) for UST systems. A summary of the status and recommended actions outlined below for each tank is included in Table 8 of this report.

As described in the May 1989 Wisconsin Department of Natural Resources "Corrective Action Plan for the Leaking Underground Storage Tank Management Program" (WDNR-CAP), the overriding concern for environmental impacts from leaking UST systems is degradation of groundwater quality. Chapter NR 140, Wisconsin Administrative Code (NR 140) requires that groundwater contamination be defined and remediated by owners and operators responsible for the contamination. As summarized in this report, groundwater has been affected by volatile organic compounds at the Truax Field facility. Recommendations made below for individual tanks in terms of compliance with 40 CFR Part 280 are in addition to, and do not supersede, previous recommendations to address the observed groundwater contamination. Compliance with 40 CFR Part 280 for the UST systems does not eliminate potential environmental liability.

As required by 40 CFR Part 280, several USTs were tightness tested between December 1989 and February 1990. Only one of the tanks (1201-1) failed the tightness criterion, exhibiting greater than 0.1 gal/hr loss. However, as stated in the WDNR-CAP, tightness testing does not provide sufficient evidence to rule out a UST as a potential source of release. The distribution of affected groundwater suggests that several of the USTs of the site are potential release sources, although the existing monitoring well network does not unambiguously define which individual tanks are potential release points.

In addition to the general recommendations for individual tanks outlined below, Warzyn recommends development of a detailed Tank Management Plan for the facility. 40 CFR Part 280 requires replacement or upgrading of the tanks with fiberglass tanks or approved lined and/or cathodically protected steel systems with leak detection and spill/overfill protection by December 22, 1998.

Dependent upon the nature of the stored compounds, the used oil/solvents underground storage tanks may be classified as hazardous waste UST systems as defined in Chapter NR 181, Wisconsin Administration Code (Hazardous Waste Management). If the used oil/solvent UST systems are classified as hazardous waste UST systems, it is likely that a hazardous waste storage license would be required for the facility. The Truax Field facility would benefit from consolidation of the current 10 used oil and used oil/solvent storage tank sites into fewer tank systems, segregation the solvent storage systems or of the underground solvent storage systems. Tank complete removal A appropriate removal, replacement or upgrade design Management Plan detailing and construction of tanks would serve to identify the most cost effective means of meeting compliance with NR 181 and 40 CFR Part 280. An appropriate Tank Management Plan would consider current operations, A compatibility of construction materials with stored substances and required storage capacity to provide a storage tank system which meets the operational needs of the facility, reduces potential future environmental liability and ensures compliance with State and Federal regulations.

The following provides a summary of 40 CFR Part 280 upgrade corrosion protection and leak detection requirements for existing tanks and piping. Temporary or permanent closure of tanks must meet the requirements of 40 CFR Parts 280.70, 280.71 and 280.72, which include assessment for released product where contamination is most likely to occur.

Tank Corrosion Protection - 40 CFR 280.21(b) Steel tanks may be upgraded to new UST performance standards or comply with one of the following by December 22, 1998:

- 1. An approved interior lining may be added;
- 2. An approved cathodic protection system may be added, provided tank integrity is ensured by one of the following:
 - a. Internal inspection for structural soundness and lack of corrosion holes.
 - b. Monthly monitoring may be performed on tanks installed for less than 10 years.
 - c. Two approved tightness tests are performed, one test before and one between three and six months after operation of the cathodic protection system (for tanks installed less than 10 years only); or
- 3. Cathodic corrosion protection combined with internal lining may be added.

Piping Corrosion Protection - 40 CFR 280.21(c) Steel piping must have approved cathodic corrosion protection.

Spill and Overfill Protection - 40 CFR 280.20(c) Spill and overfill protection consisting of catchment basins and automatic shut-off devices or overfill alarms is required. (Note: spill and overfill protection is not required if the UST system is filled by transfers of no more than 25 gallons.)

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Release Detection Schedule - 40 CFR 280.40 Release detection is required for all existing tanks on the following phased-in time schedule:

Tank Installation Date	Release Detection Required by December 22nd of year:				
Unknown or before 1965	1989				
1965-69	1990				
1970-74	1991				
1975–79	1992				
1980–88	1993				
New tanks	Upon installation				

Tank Release Detection - 40 CFR 280.43 Release detection for existing tanks must consist of one of the following:

1. Monthly or more frequent monitoring of:

- a. Soil gas in excavation zone; orb. Groundwater in the excavation zone.
- 2. Monthly inventory control and annual tank tightness testing.
- 3. Monthly inventory control and tank tightness testing every five years for cathodically protected tanks with spill and overfill protection.
- 4. Automatic tank gauging equipment.
- 5. Manual tank gauging may be used for tanks of 550 gallons or less under the following conditions:
 - a. At least 36 hours lapse between beginning and ending measurements;
 - b. Two consecutive stick measurements are made; and
 - c. The level of product can be measured to the nearest 1/8 inch over the full range of the tank's height.

Piping Release Detection - 40 CFR 280.41 & 40 CFR 280.44 Release detection methods are required for all product piping and may consist of:

- 1. Automatic line leak detectors;
- 2. Line tightness testing; or
- 3. Applicable tank methods.

For suction piping, release detection must be in place on the same phased-in time schedule as for existing tanks. Release detection for pressurized piping must be in place by December 22, 1990.

INDIVIDUAL TANK SUMMARIES

A summary of individual storage tank characteristics, potential relation to observed groundwater quality and general recommendations for compliance with 40 CFR Part 280 is given below. Information regarding tank construction, installation dates, capacity and contents was obtained from the Installation Restoration Program, Preliminary Assessment (PEER Consultants, P.C., August 1988) and from information provided by the Wisconsin Air National Guard to Kapur and Associates.

Tank Nos. 405-1, 405-2, 405-3, 405-4 and Associated Piping. Reported Construction: Steel Reported Capacity: 50,000 Gallons Reported Installation Date: 1952 Reported Contents: JP-4 Jet Fuel

Comments. Tanks and/or associated piping are suspected sources of free petroleum product and petroleum product derived compounds detected in groundwater in the vicinity of the tanks (wells W8, W9 and W10) at concentrations above State standards (NR 140). Although the tanks met the tightness criteria of less than 0.1 gal/hour loss, tanks 405-3 and 405-4 exhibited anomolous tightness testing results.

Recommendations. Retest tightness of tanks 405-3 and 405-4, with careful consideration of testing methods due to the large capacity of the tanks. Perform product line tightness testing of the fuel unloading and delivery piping per 40 CFR Section 280.44(b), as soon as possible. Release detection must be in place on pressurized piping systems by December 22, 1990. Tanks and piping require replacement or upgrade with approved lining and/or corrosion protection, leak detection and spill/overfill prevention devices by December 22, 1998. Because the tanks are greater than 10 yrs old, upgrade with approved cathodic protection methods would require internal inspection to verify structural integrity. As of December 22, 1989, leak detection was required. Due to the age of these tank systems and the presence petroleum hydrocarbons on groundwater in the vicinity of the tanks, we recommend that these tanks be replaced as soon as possible.

Tank No. 1201-1. Reported Construction: Steel Reported Capacity: 3,000 Gallons Reported Installation Date: Unknown Reported Contents: Used Oil/Solvents

> Comments. Tank 1201-1 failed the tightness criterion of 0.1 gallon/hour or less loss. Tank 1201-1 is the suspected source of tetrachloroethene detected in groundwater at well W13 at a concentration which exceeded the NR 140 standard.

Recommendation. Tank closure and assessment.

Tank Nos. 401-1, 401-2, 409-2

	401-1	401-2	409-2
Reported Construction:	Coated Steel	Steel	Coated Steel
Reported Capacity:	550 Gal.	250 Gal.	275 Gal.
Reported Installation Date:	1983	Unknown	1981
Reported Contents:	Used Oil	Used Oil	Used Oil/Solvents

Comments. All three tanks met tightness criterion of less than 0.1 gal/hour loss. However, concentrations of chlorinated hydrocarbon compounds in exceedance of NR 140 standards were detected in groundwater at wells W4, W5 and W6, suggesting the possibility of release in the vicinity of these tanks. The soil around the fill pipe at tank 401-2 was heavily stained with apparent oily residue.

Recommendations. Closure of the tanks or internal inspection to confirm that tanks are structurally sound and free of corrosion holes. If structural integrity of the tanks can be confirmed, the tanks need to be upgraded with approved corrosion protection, leak detection and spill/overfill prevention devices, or replaced by December 22, 1998. As of December 22, 1989 for tank 401-2 and December 22, 1993 for tanks 401-1 and 409-2, leak detection monitoring is required until the tanks are upgraded or replaced. The tank filling system of Tank 401-2 should be upgraded to prevent spillage. The soil around the fill pipe may require remediation.

Tank No. 1000-3. Reported Construction: Steel Reported Capacity: 275 Gal. Reported Installation Date: 1975 Reported Contents: Used Oil/Solvents

Comments. Tank No. 1000-3 was not tightness tested. This tank is located approximately 250 ft upgradient of groundwater (sampled from well W1) which had a detected concentration of cis-1,2-dichloroethene in exceedance of the NR 140 standard. The soil around the fill pipe was heavily stained with apparent oily residue.

Recommendations. Leak detection monitoring is required by December 22, 1992. Closure or upgrading with approved corrosion protection, spill/overfill prevention and leak detection methods is required by December 22, 1998. The tank filling system should be upgraded to prevent spillage. The soil around the fill pipe may require remediation.

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Tank No. 1000-5. Reported Construction: Steel Reported Capacity: 250 Gal. Reported Installation Date: Unknown Reported Contents: Used Oil

> Comments. Tank 1000-5 is located approximately 300 ft upgradient from groundwater (sampled from well W1) which had a detected concentration of cis-1,2-dichloroethene in exceedance of the NR 140 standard. Tank 1000-5 met the tightness criterion of less than 0.1 gal/hr loss. Visible staining of the ground surface around the tank fill pipe indicates probable spillage during used oil transfer to the tank.

> Recommendations. Closure or upgrading with approved corrosion protection, spill/overfill prevention and leak detection methods is required by December 22, 1998. As of December 22, 1989, leak detection monitoring was required until the tank is upgraded or replaced. The tank filling system should be upgraded to prevent spillage. The soil around the fill pipe may require remediation.

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Tank Nos. 1000-1, 1000-2.

	1000-1	1000-2
Reported Construction:	Steel	Steel
Reported Capacity:	12,000 Gal.	6,000 Gal.
Reported Installation Date:	1975	1975
Reported Contents:	Unleaded Gasoline	Diesel

Comments. Tanks 1000-1 and 1000-2 have not been tightness tested. A trace level of benzene (0.5 to 1.0 ug/L) detected in well W1 may indicate potential petroleum product release from one or both of these tanks or spillage during filling activities.

Recommendations. Leak detection monitoring is required by December 22, 1992. If the product piping associated with in these tanks is pressurized, piping release detection is required by December 22, 1990. Closure or upgrading with approved corrosion protection, leak detection and spill/overfill prevention devices is required by December 22, 1998.

Tank No. 1209-1. Reported Construction: Coated Steel Reported Capacity: 300 Gal. Reported Installation Date: 1985 Reported Contents: Leaded Gasoline

Comments. Tank 1209-1 was not tightness tested. Compounds consistent with gasoline (benzene, ethyl benzene, toluene and xylenes) were not detected in groundwater at well W14, located within 20 feet, but sidegradient of tank 1209-1.

Recommendations. Leak detection monitoring is required by December 22, 1993. If the product delivery piping associated with the tank is pressurized, piping release detection is required by December 22, 1990. Closure or upgrading with approved corrosion protection, leak detection and spill/overfill prevention devices is required by December 22, 1998.

Tank No. 415-1. Reported Construction: Steel Reported Capacity: 300 Gal. Reported Installation Date: 1982 Reported Contents: Used Oil

> Comments. Tank 415-1 met tightness criterion of less than 0.1 gal/hr loss. Volatile organic compounds were not detected in groundwater sampled within 20 feet sidegradient (well W12) of the tank.

> Recommendations. Closure or upgrading with approved corrosion protection, leak protection and spill/overfill prevention devices is required by December 22, 1998. Leak detection monitoring is required by December 22, 1993 until tank is upgraded or closed.

Tank Nos. 414-1, 414-2, 414-3.

	414-1	414-2	414-3
Reported Construction:	Fiberglass	Fiberglass	Fiberglass
Reported Capacity:	550 Gal.	550 Gal.	550 Gal.
Reported Installation Date:	1982	1982	1982
Reported Contents:	Detergent	Used Solvent	Used Oil

Comments. Tanks have not been tightness tested. Concentrations of benzene and xylenes detected in exceedance of NR 140 standards in well W9 (approximately 40 ft downgradient) are probably associated with petroleum product apparently released from the JP-4 tanks or associated piping.

Recommendations. Examination of codes, as defined in 40 CFR Section 280.32, to assess compatibility of material with substances contained in the tanks. Tanks require appropriate leak detection monitoring by December 22, 1993. Spill and overfill prevention and secondary containment may be required by December 22, 1998 at tank 414-2.

Tank No. 403-2. Reported Construction: Unknown Reported Capacity: 250 gal Reported Installation Date: Unknown Reported Contents: Used Oil

Comments. Tank was not tightness tested. Tetrachloroethene was detected in groundwater at monitoring well W7 at a concentration exceeding the NR 140 standard.

Recommendations. This tank is reportedly out of service and should be closed as soon as possible. The tank closure process should include a closure assessment.

Abandoned POL Transfer Line

We recommend that the abandoned POL Transfer Line be examined to assess the presence of residual fuel. If residual fuel is present, the line should be purged of residual fuel and vapors and properly abandoned or removed. Due to the potential for past releases from the POL Transfer Line and the potential that the POL Transfer Line acts as a conduit for contaminated groundwater and/or free product from the POL tank area, we recommend that soil and groundwater conditions in the vicinity of the POL Transfer Line be investigated by soil borings, monitoring wells, soil vapor survey or other appropriate means.

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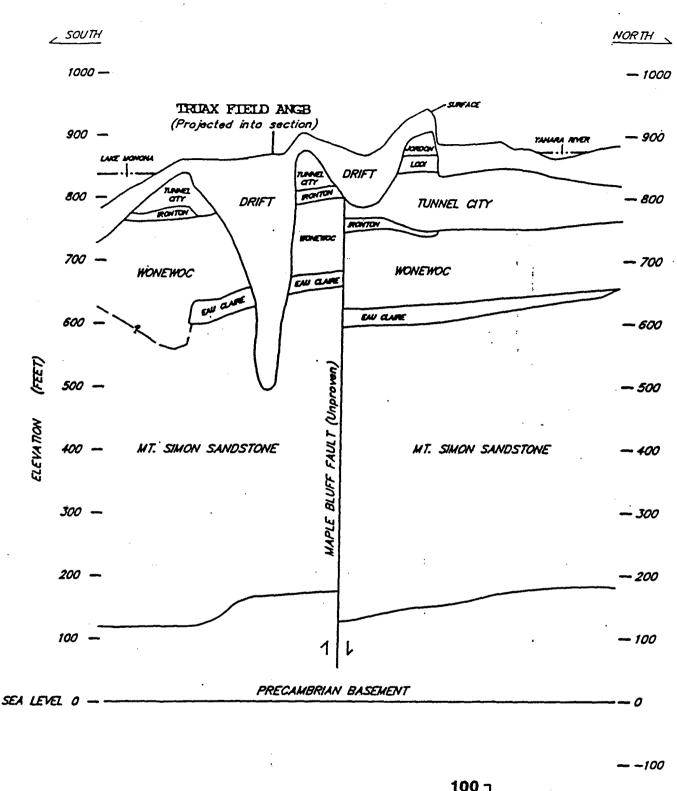
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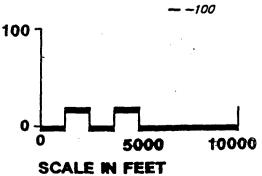
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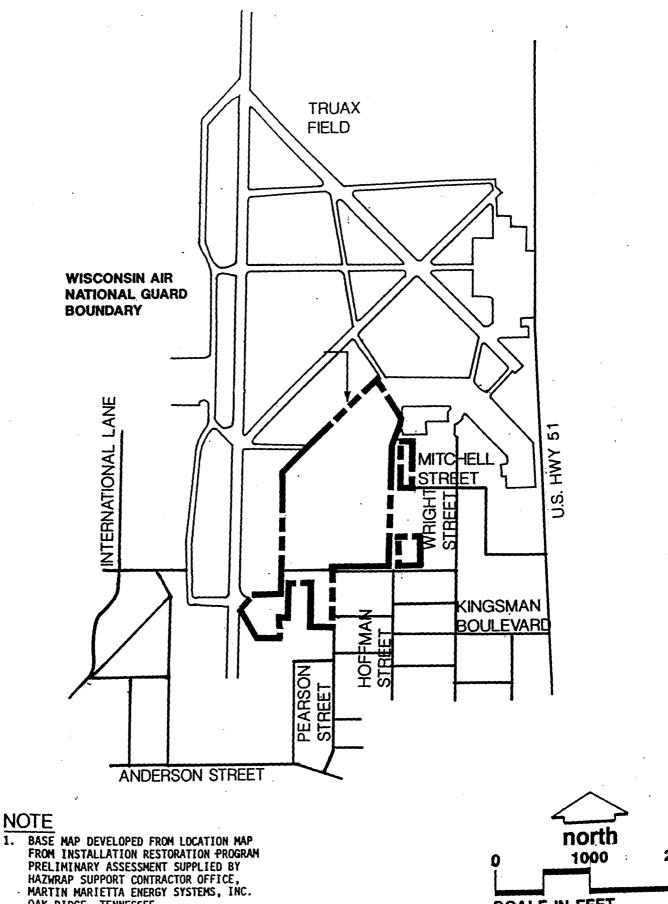
DRAWINGS



NOTE

1. DRAWING DEVELOPED FROM CROSS-SECTION IN INSTALLATION RESTORATION PROGRAM PRELIMINARY ASSESSMENT, 128TH TACTICAL FIGHTER WING, WISCONSIN AIR NATIONAL GUARD-TRUAX FIELD, MADISON. HAZWRAP SUPPORT CONTRACTOR OFFICE, MARTIN MARIETTA ENERGY SYSTEMS, INC., OAK RIDGE, TENNESSEE.





OAK RIDGE, TENNESSEE.

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SCALE IN FEET

TABLES

Table l								
Summary	of	Mi	dwest	: Petroleum	n Services			
Ainlay	7 T.	ΓT	Tank	Tightness	Results			

Tank No.	Product	Capacity (Gallons)	Date Tested	Length of Test	Volume Change (gal/hr)	Meets Tightness Criterion?
401-1	Water	550	1/10/90	l hr.	+0.006	Yes
401-2	Waste Oil/ Water	250	1/11/90	l hr.	-0.013	Yes
415-1	Water	300	1/11/90	l hr.	+0.011	Yes
409-2	Waste Oil/ Water	275	1/18/90	l hr.	-0.011	Yes
1000-5	Water	250	1/18/90	l hr.	-0.004	Yes
405-1	JP4	50,000	1/4/90	5 hrs.	-0.044	Yes
405-2	JP4	50,000	1/4/90	5 hrs.	-0.043	Yes
405-3	JP4	50,000	12/20/89	5 hrs.	+0.38*	Yes
405-4	JP4	50,000	12/20/89	5 hrs.	+0.446*	Yes
1201-1	Waste Oil	3,000	2/1/90	l hr.	-0.33	No

Ainlay TTT = Ainlay Tank Tegrity Tester. Refer to Drawing 15073-2 for locations of tanks. POL-1 = Petroleum, Oil & Lubricant Pump House (Building 405) Tank 1. A negative volume change indicates a decrease (loss) in fluid volume in tank. A positive volume change indicates an increase (gain) in fluid volume in tank. Tightness criterion used is loss equal to or greater than 0.1 gal/hr. *Thermal stabilization may not have been achieved before tank test (see test).

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KS/vbl/TD [vlr-400-53] 15073 Table 2 Field Headspace Photoionization Detector Readings Benzene Equivalents, Parts Per Million Above Background

Split Well No. Spoon Sample Depth W10 W11 W12 W13 W14 No. ft W1 W2 W3 W4 W5 W6 W7 W8 W9 1-2.5 0.2 0.3 0.2 1.0 2.1 0.7* 0.2 0.0 0.7 0.1 0.0 0.0 0.0 1 10 3.5-5 0.5 0.1 0.3 4.0*0.3 0.5 0.1 170 0.3 6.7 0.1 0.5 0.0 0.0 2 5-6.5 0.5 0.5 0.2 3.6 0.9 0.1 1.0*200* 0.6 190* 0.3 0.0 0.0 0.0 3 or 6-7.5 8.5-10 0.2 1.1 0.3*2.1 0.9*0.0 0.2 100 0.9*2.7 0.4 0.1*0.0*3.1 4 13.5-15 0.3*2.7*0.1 1.4 0.5 0.3 0.3 17.7 0.1 0.0 0.0 0.0 5 0.5 18 18.5-20 0.0 1.7 0.3 0.6 0.2 NS NS 10 NS NS NS NS 0.0 0.0 6 7 23.5-25 NS 2.1 NS Interference of 0.2 to 0.3 ppm above background was Notes: detected in analytical plastic bags used for field screening. PID screening values less than approximately 1 ppm above background should be viewed as tenuous.

NS = Not sampled. Sample depth is greater than borehole depth.
* = Samples analyzed for Total Petroleum Hydrocarbons at Warzyn
Analytical Laboratory.

KS/vlr/TD [vlr-400-53a] 15073 Table 3 Summary of Soil Analytical Results Total Petroleum Hydrocarbon Analyses Samples Collected February 7 - February 12, 1990

Total Petroleum Hydrocarbons (mg/kg) As:

Sample I.D.	Gasoline	Kerosene	#2 Fuel Oil	#6 Fuel Oil
W1 (13.5-15 ft)	Х	X	Х	X
W2 (13.5-15 ft)	Х	Х	Х	X
W3 (8.5-10 ft)	X	x	Х	X
W4 (3.5-5 ft)	Х	x	Х	X
W5 (8.5-10ft)	X	X	Х	X
W6 (1-2.5 ft)	Х	x	Х	Х
W7 (5-6.5 ft)	X	Χ.	X	X
W8 (5-6.5 ft)	X	494	Х	57.0
W9 (8.5-10 ft)	X	X	х	X
W10 (6-7.5 ft)	х	393	Х	102
W12 (8.5-10 ft)	х	Х	Х	Х
W13 (8.5-10 ft)	Х	X	X	X
Reportable Detection Limit	5.0	5.0	5.0	20.0

All concentrations in mg/kg.

X - Analyzed, but not detected.

Sample I.D. is well number of boring and depth interval of split spoon sample from which analyzed sediments were taken.

KS/vlr/TD [vlr-400-53c] 15073 ~63

Table 4 Well Development Information Wisconsin Air National Guard, Truax Field

-	pth to (rom top				Volume Clarity Time of of					
	Before			Well	Spent V		Water		Color	
Well	Devel.				-		Before	After	of	
No.					Devel.(Water	Comments
		. ,	. ,							
W1	13.7	13.5	22.4	1.4	l hr.	17	Turb.	Turb.	lt.	No Odor
									Br./	/Film
									Gray	
W2	16.3	25.1	25.7	1.5	30 min.	4.5	Turb.	Turb.	lt.	No Odor
										/Film
W3	13.4	13.5	23.8	1.7	30 min.	17	Turb.	Turb.	lt.	No Odor
									Br.	/Film
W4	13.3	13.1	21.3	1.3	30 min.	17	Turb.	Turb.	lt.	Slight
									Br.	Film
	10.0	10.0	00 F			. ~			Drange	
₩5	13.3	12.9	23.5	1.7	45 min.	17	Turb.	S1.	Br./	Odor/
								Turb.	Orange	Slight
114	0.0	10.0	15 2	0.9	20	17	<i>т</i> ь	The set	1.	Film
W6	9.8	10.0	15.3	0.9	30 min.	14	Turb.	Turb.	lt.	No Odor (Edla
W7	11.7	11.3	17.5	1.0	45 min.	13	Turb.	Turb.	Br. lt.	/Film No Odor
₩ /	11./	11.0	1/•)	1.0	4) min.	13	luro.	lurb.	Br.	No Odor /Film
W8	9.7	9.5	18.4	1.5	l hr.	13	Turb.	Turb.	Br./	Strong
		J•J	10.4	1.5	1 111.	15	IULD.	Iulu.	Green	Odor/
									Green	Green
										Film
W9	10.8	10.8	17.0	1.0	l hr.	15	Turb.	Turb.	lt.	Slight
			2						Br.	Film
W10	11.3	11.3	17.7	1.0	30 min.	16	Turb.	Turb.	lt.	Odor/
									Green	Green
										Film
W11	11.3	11.2	17.8	1.1	45 min.	15	Turb.	Turb.	lt.	No Odor
									Br.	/Film
W12	11.5	11.5	17.3	0.9	30 min.	15	Turb.	Turb.	Br.	No Odor
										/Film
W13	13.3	13.3	22.0	1.4	l hr.	16	Turb.	Turb.	lt.	No Odor
									Br.	/Film
W14	16.3	16.0	25.6	1.6	30 min.	16	S1.	S1.	lt.	No Odor
							Turb.	Turb.	Red-Br	. /Film

Well development performed by Environmental and Foundation Drilling, Inc. between February 7 and February 13, 1990.

Well development method: 1 1/4 in. diameter PVC bailer.

Well volume reported is standing water in PVC pipe.

KS/vlr/TD [vlr-400 ·53b] 15073

Table 5

Well Redevelopment Information Wisconsin Air National Guard, Truax Field

	-	h to Gr om top		er	Time Spent		Turbid: Before	•	c
Well	Before	After	Total	Well	on	Removed	/After	of	
No.	Devel.	Devel.	Depth	Volume	Devel.	(Gals.)	Devel.	Water	Comments
Wl	12.72	12.80	22.0	9.2	35	100	Very/ Slight	Clear	
₩2	15.67	25.23	26.0	9.5	55	15	Very/ Slight	Clear	bailed dry 5x
W3	12.81	12.90	23.5	10.4	45	90	Very/ None	lt. brown	,
W4	12.69	12.71	21.0	8.2	40	75	Very/ None	lt. brown	
W5	12.47	12.83	23.4	10.5	70	100	Very/ None	lt. brown	
W6	9.16	9.49	15.0	5.8	50	55	Very/ None	Clear	
W7	10 .98	11.02	17.0	6.2	40	55	Very/ None	lt. brown	
W8	9.99		18.4	8.0					0.95 ft of product
W9	9.81	9.89	17.0	6.8	55	100	Very/ None	Clear	
W10	10.52		17.7	6.8					0.04 ft of product
W11	10.17	10.23	18.0	7.2	45	100	Very/ None	Clear	-
W12	10.60	10.64	17.0	6.3		100	Very/ None	Clear	
W13	12.52	12.54	21.5	9.0	50	80	Very/ Slight	Clear	
W14	15.54	15.58	25.5	9.6	40	100	Very/ None	Clear	

Redevelopment performed by Warzyn on March 26, 1990. Wells were surged then purged with centrifugal and B-K pump. Well volume is volume of water plus filter pack as defined in Wisconsin Administrative Code s.NR 141.

KS/vlr/TD [jlv-402-62] 15073-MD

Table 6 Summary of Water Table Elevations March 26, 1990

Well No.	Top of PVC Elevation (msl)	Depth to Water	Water Table Elevation
W 1	860.27	12.72	847.55
W2	863.34	15.67	847.67
W3	860.44	12.81	847.63
W4	861.28	12.69	848.59
W5	861.09	12.47	848.62
W6	857.89	9.16	848.73
W7	860.02	10.98	849.04
W8	858.00	9.99*	848.73*
W9	858.73	9.81	848.92
W10	859.34	10.52*	848.85*
W11	858.86	10.17	848.69
W12	859.20	10.60	848.60
W13	861.07	12.52	848.55
W14	863.66	15.54	848.12

msl - feet above mean sea level.

All measurements are reported in feet.

Top of PVC elevations surveyed by Kapur and Associates, Inc. (April, 1990)

Depth to water measured from top of PVC casing.

* - Water table elevation corrected for amount of free floating petroleum product using an approximate product specific gravity of 0.76. Well W8 contained 0.95 ft of free product depressing the water table by 0.72 ft. Well W10 contained 0.04 ft of free product, depressing the water table by 0.03 ft.

KS/vlr/TD [vlr-400-53d] 15073.00

	Su	mmary		atile	e Org		Comp			ults			
	Detect	ion											
Compound	Limit (ug/L)	W1 (1)	W4	W5 W.	5Dup	W6 (1)		W9 (1)	W13	W14	W14Dup	PAL	ES
Benzene	1.00	BMQL (4)	x	x	x	x	x	9.79 (3)	x	x	x	.067	5.0
Carbon Tet:	ra-												
chloride	1.00	BMQL (4)	x	x	x	x	x	x	x	x	x	1	1
Dichloro-													
ethene	1.00	BMQL (4)	x	x	x	x	x	x	x	x	x	.024	.24
Cis-1,2-Di	chloro-												
thene	1.00	35.9 (2)	x	x	x	1.80	x	x	x	BMQI	. BMQL	10	100
Ethyl-													
benzene	1.00	x	x	x	x	x	x	27 .3	3 x	x	x	272	1360
Tetrachlor	-												
oethene	1.00	x	x	x	x	x	BMQL (4)		2.00	Ух	x	0.1	1
Toluene	1.00	x	x	x	x	1.77	x	3.0	7 x	x	x	68.6	343
Trichloro-													
ethene	1.00		•36 (3)	11.8 (3)	9.1 8 (3)			x	x	x	x	.18	1.8
Vinyl													
Chloride	1.00	x	x	x	x	1.96 (3)		x	x	x	BMQL (4)	.0015	.015
Xylenes	1.00	x	x	BMQL	x	6.82	ζx	235 (2)	x	x	x	124	620
No VOCs we W8	re dete	cted	in e	samp1	es fr	om we	115	W2, 1	W3, 1	W11 &	and W12	2. We	11s
w8 and W10 we: All concen x = analyz BMQL - det PAL - Prev. NR 140 ES - Enfor NR 140 This table groundwate is given in	tration ed but m ected, entive cement includ r sampl	s rep not d but b Action Stand es on e. F	orte etec elov n Li ard, ly (ull	ed in cted v met Lmit, Wise chose	micr hod q Wisc consi comp	ogram uanti onsin n Adm ounds	ns pe tati Adm ninis det	er li: on l: inis: trat: ected	ter. imit trat: ive (i in	ive (Code at]	Code Ch Chapte Least o	ers.	
(1) Sample	chroma listed							d VO	C con	npour	ids oth	her th	an

Table 7

- those listed here or in Appendix C.
- (2) Concentration is above PAL but below ES.
- (3) Measured concentration is above ES.
- (4) Compound detected but BMQL with reported detection limit above PAL or ES for the substance. A statistically sufficient number of analyses have not been performed to confirm the presence of the substance as stated in NR140. With a reported detection limit of 1.00 ug/L, a BMQL designation generally signifies that the compound is detected at a concentration between approximately 0.5 and 1.0 ug/L.

KDS/v1r/TD [v1r-400-53e] 15073 TABLE 8 tinuq

Summary of Status and Recommended Actions for Selected UST Systems

FEDERAL REQUIREMENTS

Spill/(2)

Leak(1) Corrosion Overfill

ruction	Detection	Protection	Protection

	Inst	allation	Capacity C	construction De	etection Pro	otection Pro	otection	1	
Tank I.D.		Date	(Gallons)	Material	Ву	Ву	By	Comments	Recommendations
1000-3(4)	Used Oil Solvents	1975	275	Steel (3)	12/92	12/98		Stained soil was present around fill pipe. Dichloroethene was detected in groundwater 250 ft downgradient (Well W1). See Note, 4 below.	Comply with Federal tank requirements. Assess extent of affected groundwater. Assess potentially affected soil near fill pipe Upgrade filling system to prevent spillage.
1000-5	Used Oil	Unknown	250	Steel (3)	12/89	12/98		Stained soil was present around fill pipe. Dichloroethene was detected in groundwater 300 ft downgradient (Well W1).	Comply with Federal tank requirements. Assess extent of affected groundwater. Assess potentially affected soil near fill pipe. Upgrade filling system to prevent spillage.
1000-1	Unleaded Gasoline	1975	12,000	Steel(3)	12/92(1)	12/98		A trace level of benzene was detected in groundwater in the vicinity of the tank (Well W1).	Comply with Federal tank requirements. Assess extent of affected groundwater and source of benzene.
1000-2	Diesel	1975	6,000	Steel(3)	12/92(1)	12/98	12/98	A trace level of benzene was detected in groundwater in the vicinity of the tank (Well W1).	Comply with Federal tank requirements. Assess extent of affected groundwater and source of benzene.
1209-1	Leaded Gasol ine	1985	300	Coated Steel (3)	12/93(1)	12/98	12/98	Tank has not been tightness tested. No compounds consistent with gasoline release were detected in groundwater in the tank vicinity (Well W14).	Comply with Federal tank requirements.
415-1	Used Oil	1982	300	Steel	12/93	12/98	12/98	No volatile organic compounds were detected in groundwater in the tank vicinity (Well W12).	Comply with Federal tank requirements.
414-1	Detergent	1982	550	Fiberglass	12/93	12/98(5)	12/98		No current regulatory constraints for tanks.
414-2(4)	Used Solveni	t 1982	550	Fiberglass	12/93	12/98(5)	12/98	No volatile organic compounds consistent with solvent release were detected in groundwater in the tank vicinity (Well W9).	Comply with Federal tank requirements.

	•				S	•		Recommended Actions JST Systems	
				Construction	Detection	Corrosion			
Tank I.D.	Contents	Date	(Gallons)	Material	Ву	Ву	Ву	Comments	Recommendations
405-1	JP-4	1952	50,000	Steel(3)	12/89	12/98	12/98	Suspected source of released petroleum product in the vicinity of the tank.	Replace ASAP. Assess extent of affected soil and groundwater.
405-2	JP-4	1952	50,000	Steel(3)	12/89	12/98	12/98	Suspected source of released petroleum product in the vicinity of the tank.	Replace ASAP. Assess extent of affected soill and groundwater.
405-3	JP-4	1952	50,000	Steel(3)	12/89	12/98	12/98	Suspected source of released petroleum product in the vicinity of the tank. Anomalous tightness testing results.	Retest tightness. Replace ASAP. Assess extent of affected soil and groundwater.
405-4	JP-4	1952	50,000	Steel(3)	12/89	12/98	12/98	Suspected source of released petroleum product in the vicinity of the tank. Anomalous tightness testing results.	Retest tightness. Replace ASAP. Assess extent of affected soil and groundwater.
419-1 (Fuel unloading piping)		Unknown	NA	Steel(3)	12/90(1)	12/98	12/98	Suspected source of released petroleum product in the vicinity of piping.	Implement leak detection per Federal requirements ASAP. Replace or upgrade ASAP. Assess affected soil and groundwater.
1201-1(4)	Used Oil & Solvents		3,000	Steel(3)	12/89	12/98	12/98	Failed tightness test. Suspected source of tetrachloroethene in Well W13. See Note 4, below.	Perform tank closure and assessment ASAP. Assess extent of affected groundwater.
401-1	Used Oil	1983		Coated Steel(3)	12/93	12/98	12/98	Suspected source of chlorinated hydrocarbons in groundwater in vicinity of the tank (Well W4).	Comply with Federal tank requirements. Assess extent of affected groundwater.
401-2	Used Oil	Unknown	250	Steel (3)	12/89	12/98	12/98	Suspected source of chlorinated hydrocarbons in groundwater in vicinity of the tank (Well W5). Stained soil was present around tank fill pipe.	Comply with Federal tank requirements. Assess extent of affected groundwater. Assess potentially affected soil near fill pipe. Upgrade filling system to prevent spillage.
409-2(4)	Used Oil & Solvents	1981 S		Coated Steel(3)	12/93	12/98	12/98	Suspected source of chlorinated hydrocarbons in groundwater in vicinity of the tank (Well W6). See Note, 4 below.	Comply with Federal tank requirements. Assess extent of affected groundwater.

TABLE 8

*

TABLE 8

(continued)

Summary of Status and Recommended Actions for Selected UST Systems

Tank I.D.	Content		Capacity (Gallons)	Construction Material		Corrosion		Recommendations
403-2	Used Oi	l Unknown	250	Unknown(3)	12/89	12/98	 Tetrachlorcethene was detected in groundwater in the vicinity of the tank (Well W7). This tank is reportedly out of service.	Perform tank closure and assessment ASAP.
Abandoned POL Transfer Line	l Unknow	n Unknown	Unknown	Unknown	NA	NA	Closure status of pipeline is not known. Pipeline may contain residual fuel.	Examine the pipeline to assess the presence of residual fuel. Purge system and properly abandon if residual fuel is present. Assess the potential of the pipeline to serve as a conduit for released product and contaminated groundwater migration from POL tank area

3

TABLE 8 (continued)

Notes

- Leak detection for pressurized product piping must begin by 12/22/90. Leak detection for suction product piping must begin on same schedule as leak detection for tanks.
- 2. Spill and overfill protection is not required by Federal regulations if the UST system is filled by transfers of no more than 25 gallons at one time (40 CFR Part 280(c)(2)(ii)).
- 3. For steel tanks installed ten or more years (from date of upgrade), internal inspection is required before cathodic protection can be selected and installed as corrosion protection.
- 4. Dependent upon the nature of the stored compounds, the used solvents tanks may be classified as hazardous waste systems and be subject to construction requirements and facility licensing requirements in Wisconsin Administrative Code Chapter s.NR 181.
- 5. Fiberglass construction meets Federal corrosion protection requirements.

KDS/vlr/MGC [jkk-400-53] 15073-MD

APPENDIX A

Well Boring Logs

M			YN		LOG OF TEST BORING Project Wisconsin Air National Guard Location Madison, Wisconsin IENCE COURT - P.O. BOX 5385, MADISON, WIS. 53705 - TEL.(608)	Boring N Surface I Job No. Sheet 273-0440 –	Elevati 1 1	on 5073.	857. 00)
\bigcap	SA	MPI	E		VISUAL CLASSIFICATION	SOIL		PEF	RTIE	S
No.	Y Rec P(in.)	Moist	N	Depth	and Remarks	qu (qa) (tsf)	HNu	Explo sive	Field VOC Water	Ionoto
				<u>-</u> .	Gray Clay FILL		 		Water	
1	12	D	7	-	Black Sandy Silty Soil		0.4	 		
2	10	D	6	_	fin Diack bandy birty bon		+			
3	16	D	6	- 5	Tan Brown Fine to Medium SAND (SW)		0.4		<u> </u>	{
				-			0.0	 		
4	14	W	5		Gray Medium to Coarse SAND, Some		<u> </u>			
		**		- - 10	Gravel (SP)		0.7	<u> </u>]
				-						
							<u> </u>	ļ		
5	20	W	6	- 15-	Gray Fine to Medium SAND (SW)		0.4	ļ	ļ	
				20	End Boring at 18' PID background = 0.3 ppm					
		L	WA		LEVEL OBSERVATIONS	SENERA	LNC	TE	5	
Tim Dep Dep	e Afte th to ' th to (er Dril Water Cave i	¥ lling n		Upon Completion of Drilling Start _2/.	7/90 End &F Chie DS Edite	2/7 f G or M(/90 M 1 CB	RigCl 75	

SAMPLE No. $\begin{bmatrix} Rec \\ PE(in.) \end{bmatrix}$ Moist N Depth 1 16 D 10	VISUAL CLASSIFICATION		0							
No. E(in.) Moist N Depth	VISUAL CLASSIFICATION	50	SOIL PROPERTIES							
	and Remarks	qu (qa) (tsf)	HNU		Field VOC Water	ionoto				
	TOPSOIL									
	Brown Silty CLAY (CL)		0.4							
2 16 D 6 5			0.4							
3 D 4	Reddish Brown Fine to Medium Silty SAND with Minor Clay from 5.2-6' (SM)		0.4							
4 18 D 5 10-	Tan Fine SAND (SP)		3.5							
5 16 W 5	Tan Fine SAND (Minor Silt)									
5 16 W 5 15-	Tan Fine to Medium SAND with Minor Coarse Sand (SP)		0.4							
6 18 W 4 20-	Tan Fine to Medium SAND (SP)		0.4							
- 25-	End Boring at 24' PID background = 0.4 ppm									
	LEVEL OBSERVATIONS	GENER			<u></u>	1				
While Drilling ¥ Time After Drilling Depth to Water Depth to Cave in	Upon Completion of Drilling Start 	2/13/90 En E E C r KDS Ec Method 4 1/	nd 2/1. hief G ditor M	3/90 M	Rig <u>C</u> 75	5				

WARZYN	LOG OF TEST BORING Project Wisconsin Air National Guard Location Madison, Wisconsin IENCE COURT · P.O. BOX 5385, MADISON, WIS. 53705 · TEL.(608	
SAMPLE	VISUAL CLASSIFICATION	SOIL PROPERTIES
No. Rec Moist N Depth	and Remarks	qu Explo-Field (qa) HNu sive VOC Monoto (tsf) Gas Water
	Black TOPSOIL	
1 18 D 22	Brown to Tan Medium SAND with Clay, Some Gravel (SC)	0.5
2 18 D 7 3 18 D 10 5-	Tan SAND & GRAVEL, Medium to	0.5
4 17 D 7	Tan Medium to Coarse SAND (SP)	0.5
	Tan Medium to Coarse SAND & GRAVEL (GP)	
5 18 W 6		
		0.5
6 18 W 4 20-	Gray-Tan Fine to Coarse SAND (SW)	0.5
	End Boring at 20'	
	PID background = 0.5 ppm	
WATER	LEVEL OBSERVATIONS	GENERAL NOTES
Time After Drilling Depth to Water Depth to Cave in	Driller ⊥ Driller Logger	7/90 End 2/7/90 E&F Chief GM RigCME KDS Editor MCB 75 nod 4 1/4" HSA

	W	A F		Y N	-ONE S	L	LOG OF TEST BORING roject Wisconsin Air National Gu ocation Madison, Wisconsin E COURT - P.O. BOX 5385, MADISON, WIS. 5370	uard	ı	Boring N Surface F Job No Sheet	Elevati 1	on 5073,	857. 00	3		
		SA	MPL	.E	0.12 0		VISUAL CLASSIFICATIO			SOIL PROPERTIES						
	10. J	Rec (in.)	Moist	N	Depth	1	and Remarks	14		qu (qa)	HNU		VOC	Monoto		
	E	(11.)			-		Black TOPSOIL			<u>(tsf)</u>		Gas	Water			
	1	8	D	7	-		Black-Brown Clayey Silty SAND (SC)			0.5					
	2		D	12	 5-		Tan Gray Fine SAND (SP)				10					
	3		D	11	-		Tan Coarse to Fine SAND (SW)				0.5	i				
					-						Ì					
	4	16	W	6							0.6					
					— 10- 						-					
											}					
	5		W	4	-		Tan Medium to Coarse SAND with Gravel (SP)			··· <u></u> ·····	0.5					
					- 15- -		Glaver (Sr)		*	·· <u>·</u> ····						
					-		End Boring at 16.8'									
					- 20-	$\left\{ \right\ $	PID background = 0.5 ppm									
					-		TID background = 0.5 ppm	1								
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T					 - 25-											
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┣	1	1	l	WA		Z LE	EVEL OBSERVATIONS		G	ENERA		TE	5	L		
	Time	Afte	lling er Dri Water	¥			n Completion of Drilling	Loggei	2/7 E K	7/90 End &F Chie DS Edite	2/7 f G or M(/90 M 1	Rig Cl	ME 5		
	Dept	h to (Cave i			orese				od 4 1/4"			••••	·····		
- \	typ	es and	i the t	ransit	ion ma	y be	nt the approximate boundary between soil gradual.					•••••••••••••••••••••••••••••••••••••••				

W			YN	-		LOG OF TEST BORING roject Wisconsin Air National Gu Docation Madison, Wisconsin E COURT - P.O. BOX 5385, MADISON, WIS. 53705	Surface E Job No. Sheet	Boring No. W1 Surface Elevation 858.3 Job No. 15073.00 Sheet 1 0 273-0440						
	SA	MPL	.E			VISUAL CLASSIFICATIO	N	SOIL PROPERTIES						
No.	Rec (in.)	Moist	N	Depth]	and Remarks		qu (qa) (tsf)	HNU	Explo- sive	Field VOC Water	Monoto		
				 		TOPSOIL				uas	water			
1	18	D	10			Black Sandy Clay FILL/Gravel FILL			0.5					
2	18	D	10	-	Ħ	Black Silty Clay & Sand FILL, Rubbl	le,	<u> </u>						
3	18	D	9	- 5-		Gravel Fill Black Silty Clay			0.8					
				Ē		Tan Coarse SAND & GRAVEL (SP)			0.8					
				<u> </u>		Tan Loose, Medium to Coarse SAND	e l		<u> </u>					
4	10	D	5	- - 10-		GRAVEL	~		0.5					
									·					
	1			-		Tan Silty Fine to Medium SAND (SM	1)							
5	18	w	6	<u> </u>										
				- 15- -		SAND & GRAVEL (GW-SW)			0.6			{		
				E										
		ļ		F					ļ	ļ				
6		W							0.3	<u> </u>				
				-										
				- 25-		End Boring at 23'								
				-		PID background = 0.3 ppm								
						The background = 0.5 ppm								
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l		•	WA	TER	LE	VEL OBSERVATIONS	(GENERA	LNC)TES	S			
Whil	e Dri	lling				n Completion of Drilling	Start 2/	9/90 End	2/9	/90				
Гime	e Afte	er Dri	lling				Driller I	E&F Chie	f <u>G</u>	<u>M</u> I	Rig <u>C</u>	ME		
-		Water Cave i	in			¥	Drill Meth	KDS Edito	n <u>M</u> HSA	<u>, D</u>		5		
The	strat	tificat	ion li	ines re	prese	nt the approximate boundary between soil gradual.					••••••			

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	SA	MPL	E	ONE S	TENC	E COURT · P.O. BOX 5385, MAD ISON, WIS. 5370	<u>508) 2</u>	SOIL PROPERTIES						
No.		Maist		Depth		VISUAL CLASSIFICATIO and Remarks	N	-	qu (qa)	HNu	Explo- sive	Field VOC	Monoto	
	E					Black TOPSOIL			(tsf)		Gas	Water		
1	16	_D	10	-		Sand & Gravel FILL			<u> </u>	0.6				
2	18	D	9	 - 5-		Brown Sandy Silty Clay (CL)				0.4				
3	18	D	10			C				0.8				
				_		Gray Mottled with Brown Sandy Cla (CL)	y							
4	18	D	8			Tan/Light Brown Fine SAND (SP)				1.4	<u> </u>			
	1			10						1.4				
				-										
				 		Tan to Light Brown Fine SAND with	n 🖡		·		<u> </u>			
5	17	D	9	<u>₹</u> 15-		Some Silt		-		3.0	ļ			
				- -										
				-	in	Light Brown Very Fine Silty SAND						 		
6		W	8	 		Light brown very The Shty Skite				2.0	ļ	ļ		
T				-	iiri									
						Light Brown CLAY (CL)		ĺ						
7		w	5	-			ŧ			2.4				
				25 		Silty Clayey SAND with Mixed Grav	rel	-		4_				
				-		End Boring at 27'								
						Life borning at 27								
T						PID background = 0.3 ppm								
				<u> </u>										
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F				_						Ì				
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			WA	TEF	LE	EVEL OBSERVATIONS		ĠΕ	NERA	L NC	DTE	Ś	•	
Wh	ile Dri	lling	<u>¥</u> 1				Start 2	2/12/	90 End	2/12	2/90			
T Tin	ne Afte oth to	er Dri	lling	<u> </u>	-		Driller Logger	E&1	E Chie S Edit	or M	M CB	Rig <u>C</u> 7	ME 5	
Der	oth to	Cave	in		-*		Drill Me					•.•.	.	
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					ENCE COURT - P.O. BOX 5385, MADISON, WIS. 53705 - TEL.(608)			·			
	SA	MPL	.E	ONE SU	VISUAL CLASSIFICATION	SOIL PROPERTIES					
No. P	Rec (in.)	Moist	N	Depth	and Remarks	qu (qa)	HNu	sive		fonoto	
E				-	TOPSOIL	(tsf)		Gas	Water		
1	18	D	9	-	Dark Brown Silty Clay (CL)		0.5				
2	18	D	8	-	Gray Clay (CL)		0.6	[[
3	18	D	11	- 5	Brown/Orange Fine Silty SAND (SM)						
					Tan Fine Silty SAND (SM)		0.5				
4	18	D	10	- - - 10-	Tan Fine Silty SAND		_0.6				
5	18	w									
5	10			- 15- 			0.4				
6	18	w	4	- - - - - -	Siltier and Finer from 19.5-20'		0.6				
				-							
				- 25	End Boring at 23.5'	¢					
				-	PID background = 0.3 ppm						
				-							
				- - 35- -							
				- 40			<u> </u>				
	- 					ENERA	LNC)TE	<u>S</u>		
Time	Afte	er Dri	¥ lling	t	Ipon Completion of Drilling Start 2/9	9/90 End &F Chie	f G	<u>M</u>]	Rig <u>C</u>	ME 5	
Depth	h to (Water Cave i	n		Drill Method	od 4 1/4"	HSA	بر بر			
The	strat	ificat	ion li	nes rep	esent the approximate boundary between soil)	

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			Y N	-	LOG OF TEST BORING Project Wisconsin Air National Guard Location Madison, Wisconsin	Job No. 15073.00 Sheet 1 of 1
	SΔ	MPI	F	ONE SC	ENCE COURT · P.O. BOX 5385, MADISON, WIS. 53705 · TEL.(SOIL PROPERTIES
No.		Moist		Depth	VISUAL CLASSIFICATION and Remarks	qu Explo-Field (qa) HNu sive VOC Monoto
	Ε(11.7				TOPSOIL	(tsf) Gas Water
1	18	D	7	-	FILL: Brown Silty Clay & Sand	1.4
2	18	D	6			
3	18	ļ	5	- 5-		4.4
				-	Tan Fine to Medium SAND (SP)	-4.0
4	18	D/W	8	- ☑ 10-	Tan Fine Silty SAND (SM)	2.5
I				-		
				-	Tan Fine to Medium SAND with Coarse Sand & Gravel (SP)	
5	18	W	5	- 15-		1.8
					Tan Silty Fine SAND with Orange-Brown Stain (SM)	
6	18	W	9	 20	Tan/Brown Fine to Medium SAND with Minor Silt with Occasional Orange/Brown Stain (SW)	
				- 25-	End Boring at 21' PID background = 0.4 ppm	
				- - - - - - - - - -		
				-		
				- 40-		
1					LEVEL OBSERVATIONS	GENERAL NOTES
Tim	le Dri e Afte th to	er Dri	¥9. lling	<u>.8</u>	Driller	2/9/90 End 2/9/90 E&F Chief GM RigCME KDS Editor MCB 75
Dep	th to	Cave i	in ion li		esent the approximate boundary between soil be gradual.	ethod 4 1/4" HSA
ty	pes and	the t	ransit	ion may	be gradual.	

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		R Z Y	YN	•	Lo	LOG OF TEST BORING oject Wisconsin Air National Guard ocation Madison, Wisconsin COURT - P.O. BOX 5385, MADISON, WIS. 53705 - TEL		Boring N Surface E Job No. Sheet	levation 1 1 c	on 5073,	859.2 00			
	SA	MPI	E			VISUAL CLASSIFICATION SOIL PRO				OPERTIES				
No.	↓ ₽ E(in.)	Moist	N	Depth		and Remarks		qu (qa)	HNu	sive	Field VOC Monoto			
	E			-		Black Silty TOPSOIL		(tsf)		Gas	Water			
1	18	D	8		Ħ	Brown Silty Fine SAND with Gravel			2.4_	ļ				
2	15	D	9	Ē	Ħ	(FILL)								
3	14	D	12	- 5-	Ш				0.6	<u> </u>				
		-				Tan Fine SAND (SP)			1.2					
4	18	D	10			Tan Fine SAND Grading to Fine to			<u> </u>					
	10		10	- 10-		Medium Sand with Depth (SW)			1.2	· -				
				-		• · · ·			ļ	ļ				
5	 	W	6	- 15-		Light Brown Fine & Medium SAND (SP)			0.8	ļ				
				-										
6	 	W		20-		Medium SAND & GRAVEL (GW)			0.5					
						Tan Fine SAND (Fining with Depth from 19-20')	ļ!							
				 25-		End Boring at 23'								
		·				PID background = 0.3 ppm								
				-										
				- 30-	$\left\{ \right\}$		1							
				-										
		}												
				- 35-	$\left\{ \right\}$									
				<u>-</u>						1				
				- 40-										
	<u> </u>	L	WA	TER	LE	VEL OBSERVATIONS	6	SENERA	<u>L</u> NC	TE	S			
			¥		Upo	n Completion of Drilling Start		2/90 End	2/12	/90				
Tim		er Dri	lling			Drille	r <u> </u>	&F Chie DS Edite	f <u>G</u> or M(M I CB	Rig <u>CME</u> 75			
Dep	th to (Cave	in			Drill 1	Meth	od 4 1/4"	HSA	т. т.				
Th ty	e strai	tificat d the t	ion li ransii	ines re tion ma	prese v be	nt the approximate boundary between soil gradual.	•••••							

W	WARZYN						uard Surface Elevation 858.2 Job No. 15073.00					2
				0115 64	•	Deation Madison, Wisconsin		Sheet	<u>1</u>	of	.1	
	SA	MPL	.E	-UNE SI		E COURT · P.O. BOX 5385, MAD ISON, WIS. 53705		SOIL PROPERTIES				
No.	Rec (in.)	Moist	N	Depth		and Remarks	-	qu (qa) (tsf)	HNu	Explo- sive Gas	1	Monoto
				-		FILL: Road Gravel						
	18	D	10	-		Brown Silty Fine SAND & GRAVEL t 1.5'	to		1.0	 		
T 2	2	D	7						0.8			
3	18	D	5		Hin				0.4			
				-		Tan to Light Brown Sand (SP)						
4	18	W	6	_		Light Brown Fine Silty SAND (SM)			0.3			
				10 		Light Blown File Sitty SAND (Swi)						
5	18	W	8			Gray Gravelly Fine & Medium SAND			0.6			
				- 20- - 20- - 25- - 30- - 35-		(SW) End Boring at 17' PID background = 0.3 ppm						
┩			14/2	40	Ļ					<u> </u> \		<u> </u>
Time Dept Dept	Afte h to \ h to (ling r Dril Vater Cave i	¥ ling n		Upo	D	tart 2/1 Driller E .ogger K	SENERA 2/90 End &F Chie DS Edit od 4 1/4"	2/12 f G or M	2/90 M1 1 CB	Rig <u>C</u> 7:	5

WARZYN Project Wisconsin Air National Guard Surface Elevation 858.0 Job No. 15073.00 Job No. 15073.00 Location Madison, Wisconsin Sheet 1 ONE SCIENCE COURT · P.O. BOX 5385, MADISON, WIS. 53705 · TEL.(608) 273-0440 SOIL PROPERTIES VISUAL CLASSIFICATION Qu ExptorField							10	G OF	TEST	BORIN	G		Deci= 1	·	14		
Image: Solution Job No. 15073.00 SAMPLE Job No. 1 of 1 Image: Solution Job No. 1 of 1 Image: Solution Solution Solution Image: Solution Property Solution Solution Image: Solution Solution Solution Image: Solution Property Solution Solution Image: Solution Solution Solution Image: Solution Property Solution Solution Image: Solution Solution	W	Α	י 7 ג	ΥN		D						•					
Location Madison, Wisconsin Sheet 1_of out sorting court + P.0, Box 5385, MO100M, VIS, 53705 - TEL, (600) 277-0440 SAMPLE VISUAL CLASSIFICATION and Remarks SOIL PROPERTIES 0:					-	Pro	-			National G	uard						
ONE SCIENCE COURT + P.O., BOX 5335, MO-1504, MIS, 53705 - TEL (600) 273-0440 SAMPLE VISUAL CLASSIFICATION and Remarks SOIL PROPERTIES Gray Silty CLAY Mottled with Fine Sand FILL and Sandy Black Clay 2 12 D 7 3 12 D 7 4 12 W 7 5 W 14 15 Tan Fine to Medium SAND with Minor Gravel (SP) Tan Fine to Medium SAND with Minor Coarse Sand, SP) 0.6 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 2 End Boring at 18' PID background = 0.4 ppm 4 22- Completion of Drilling Coarse Sand (SP) 5 W 14 Tan Fine COMPERTIES 5 W 14 Tan Fine COMPERTIES 5 W 14 Tan Fine SAND with Minor 7 Tan Fine SAND with Very Minor Coarse 8 Coarse Sand (SP) 7 Tan Fine SAND with Very Minor Coarse 6 Coarse Sand, Trace Silt with Depth (SP) 7 Tan Fine SAND 8 Soil 8 Soil 9 Tan Fine SanD 9 Tan Fine Coa						τ				Wisconsin	•••••••						
SAMPLE VISUAL CLASSIFICATION and Remarks SOIL PROPERTIES 1 9 D 0 <t< td=""><td></td><td></td><td></td><td></td><td>- ONE SC</td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td><u> </u></td><td></td><td></td></t<>					- ONE SC							1			<u> </u>		
Inc. Res Notise N Depth and Remarks Quark 1 9 D 8 Black TOPSOIL ToPSOIL Mixed with Fine Sand FILL 0.6 0.6 2 12 D 7 5 Gray Sity CLAY Mottled with Brown 0.5 0.6 4 12 W 7 10 Tan Fine to Medium SAND with Minor Gravel (SP) 0.6 0.6 5 W 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 0.6 0.6 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 6 20 End Boring at 18' 0.4 0.4 7 10 5 0.9 0.9 7 30 20 End Boring at 18' 0.9 9 10 5 0.4 14 15 7 30 14 15 Sand, Trace Silt with Depth (SP) 7 10 14 15 14 7 14 15 5 14 14 8 14 14		SA	MPL	E	-ONE SC	LENCE									PEF	RTIE	S
1 9 D B Black TOPSOIL (IG) Uas bate 2 12 D 7 5 Gray Silty CLAY Mottled with Brown 0.6 0.6 4 12 W 7 0.6 0.6 0.6 4 12 W 7 0.6 0.6 0.6 5 W 14 14 14 14 5 W 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 0.6 0.6 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 6 20 End Boring at 18' PID background = 0.4 ppm 0.4 ppm 6 5	No.	F Rec	Moist	N	Depth		V151				אוכ	F	(qa)	HNU	sive	VOC	Monoto
1 9 D 8 TOPSOIL Mixed with Fine Sand FILL and Sandy Black Clay 0.6 0.6 2 12 D 7 Gray Silty CLAY Mottled with Brown (CL) 0.5 0.5 4 12 W 7 10 Gray Silty CLAY Mottled with Brown Gravel (SP) 0.6 0.6 5 W 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 0.6 0.6 5 W 14 15 Tan Fine to Medium SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 5 W 14 15 End Boring at 18' 0.9 0.9 6 20 End Boring at 18' PID background = 0.4 ppm 0.4 ppm 0.4 ppm 6 5 W 14 5 5 GENERAL NOTES Whie Drilling Upon Completion of Drilling Start 2/12/90 End 2/12/90 2/12/90 6		E					Black TC	IDSOIL					(tst)		Gas	Water	
2 12 D 7 s 0.5 1.4 3 12 D 12 ran Fine to Medium SAND with Minor Grave (SP) 1.4 4 12 W 7 10- 0.6 5 W 14 15- Tan Fine to Medium SAND with Minor Coarse Sand (SP) 5 W 14 15- Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 6 20- End Boring at 18* PID background = 0.4 ppm - 6 - 7 - 7 - 7 - 7 - 8 - 9 - 10- - 10- - 10- - 10- - 10- - 10- - 10- - 10- - 10- - 10- - 10- - 20- - 10- - 10- - 10- - 10- - 10- - 10- - 10- - <td>1</td> <td>9</td> <td>D</td> <td>8</td> <td>-</td> <td></td> <td></td> <td></td> <td>with Fi</td> <td>ne Sand FI</td> <td>LL</td> <td></td> <td>····</td> <td></td> <td></td> <td></td> <td></td>	1	9	D	8	-				with Fi	ne Sand FI	LL		····				
3 12 D 12 4 12 W 7 4 12 W 7 5 W 14 12 W 7 Tan Fine to Medium SAND with Minor Gravel (SP) 7 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 5 W 14 12 5 W 14 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 16 16 17 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 18 PID background = 0.4 ppm 19 20 10 End Boring at 18' PID background = 0.4 ppm 18 9 19 30 19 40 10 Start 2/12/90 End 2/12/90 11 E&F Chief CM. Rig CME. 19 Water 19 Upon Completion of Drilling					-							┢		0.0	╂		
3 12 D 12 4 12 W 7 4 12 W 7 5 W 14 12 W 7 Tan Fine to Medium SAND with Minor Gravel (SP) 7 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 5 W 14 12 5 W 14 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 16 16 17 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 18 PID background = 0.4 ppm 19 20 10 End Boring at 18' PID background = 0.4 ppm 18 9 19 30 19 40 10 Start 2/12/90 End 2/12/90 11 E&F Chief CM. Rig CME. 19 Water 19 Upon Completion of Drilling	2	12	D	7										1			
4 12 W 7 10- Tan Fine to Medium SAND with Minor Gravel (SP) 5 W 14 0.6 0.6 6 0.9 0.6 0.9 0.6 6 0.9 0.9 0.9 0.9 7 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 6 20- End Boring at 18' 0.9 0.9 7 75- PID background = 0.4 ppm 0.4 ppm 0.9 7 30- 35- 35- 35- 35- 7 7 7 7 7 7 9 While Drilling W Upon Completion of Drilling					<u> </u>		-	y CLAY	(Mottled	1 with Bro	wn			1		<u>├</u>	
4 12 W 7 10 Gravel (SP) 5 W 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 0.6 0.9 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 20 End Boring at 18' PID background = 0.4 ppm 0.9 0.9 25 30 5 35 5 Sand, Trace Silt with Depth (SP) 40 25 End Boring at 18' PID background = 0.4 ppm 10 5 30 5 5 5 5 40 Upon Completion of Drilling Start 2/12/90 End 2/12/90 2 While Drilling Upon Completion of Drilling		12			-				<u> </u>		/	ŀ	<u></u>	1.4			
4 12 W 7 10 Gravel (SP) 5 W 14 15 Tan Fine to Medium SAND with Minor Coarse Sand (SP) 0.6 0.9 5 W 14 15 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 0.9 20 End Boring at 18' PID background = 0.4 ppm 0.9 0.9 25 30 5 35 5 Sand, Trace Silt with Depth (SP) 40 25 End Boring at 18' PID background = 0.4 ppm 10 5 30 5 5 5 5 40 Upon Completion of Drilling Start 2/12/90 End 2/12/90 2 While Drilling Upon Completion of Drilling				[E		Tan Fine	to Med	lium SAI	ND with M	linor				1		
5 W 14 15 Tan Fine to Meelum SAND with Minor Coarse Sand (SP) 5 W 14 15 5 W 14 15 7 Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 7 E 7 E 8 20 8 End Boring at 18' 9 PID background = 0.4 ppm 7 30 7 30 7 30 7 30 7 30 8 30 9 30 9 Sant 9		12	W	7	E I		Gravel (S	SP)				┢		<u> </u>		<u> </u>	
5 W 14 5 W 14 15- Tan Fine SAND with Very Minor Coarse Sand, Trace Silt with Depth (SP) 0.9 20- End Boring at 18' PID background = 0.4 ppm 9 30- 5 40- 5 5 5 5 5 6 6 7 7 7 7 <t< td=""><td></td><td>12</td><td></td><td><u> </u></td><td></td><td></td><td></td><td></td><td></td><td>ND with M</td><td>linor 🛛</td><td>F</td><td></td><td>0.6</td><td><u> </u></td><td> </td><td></td></t<>		12		<u> </u>						ND with M	linor 🛛	F		0.6	<u> </u>	 	
Image: Sand, Trace Silt with Depth (SP) 20- End Boring at 18' 20- End Boring at 18' PID background = 0.4 ppm 25- 30- 40- While Drilling ¥ Upon Completion of Drilling * Start 2/12/90 End 2/12/90 Driller £&E Chief GM RigCME Depth to Water Depth to Gave in Drill Method 4.1/4". HSA]	E		Coarse Sa	and (SP)	1					·			
Image: Sand, Trace Silt with Depth (SP) 20- End Boring at 18' 20- End Boring at 18' PID background = 0.4 ppm 25- 30- 40- While Drilling ¥ Upon Completion of Drilling * Start 2/12/90 End 2/12/90 Driller £&E Chief GM RigCME Depth to Water Depth to Gave in Drill Method 4.1/4". HSA					-												
Image: Sand, Trace Silt with Depth (SP) 20- End Boring at 18' 20- End Boring at 18' PID background = 0.4 ppm 25- 30- 40- While Drilling ¥ Upon Completion of Drilling * Start 2/12/90 End 2/12/90 Driller £&E Chief GM RigCME Depth to Water Depth to Gave in Drill Method 4.1/4". HSA			ļ	 	-					•		ŀ			<u> </u>		
Sand, Trace Silt with Depth (SP) End Boring at 18' PID background = 0.4 ppm 25- 30- 33- 33- 35- 40- WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling $_$ Upon Completion of Drilling $_$ Depth to Water $_$ Depth to Water $_$ Depth to Water $_$ Depth to Water $_$	5		W	14			Tan Fine	SAND	with Ve	ry Minor (Coarse			0.9	1		
PID background = 0.4 ppm 25- 30- 30- 33- 35- 40- WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling Y Upon Completion of Drilling Start 2/12/90 End 2/12/90 Driller _ E&F Chief _ GM Rig CME_ Logger_KDS Editor_MICB Drill Method 4.1/4", HSA										•	. I					1	
PID background = 0.4 ppm 25- 30- 30- 30- 30- 30- 30- 30- 30- 30- 33- 35- 40- While Drilling					-]	
PID background = 0.4 ppm 25 30 30 30 35 35 40 WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling					-												
PID background = 0.4 ppm 25 30 30 30 35 35 40 WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling					-			End I	Poring at	1.8'							
$\overline{25}$ $\overline{25}$ $\overline{30}$ $\overline{30}$ $\overline{30}$ $\overline{30}$ $\overline{35}$ $\overline{5}$ $\overline{40}$ $\overline{40}$ While Drilling $\underline{2}$ Upon Completion of Drilling $\underline{2}$ Start $2/12/90$ End $2/12/90$ Driller E&F Chief GM RigCME Depth to Water $\underline{2}$ Depth to Cave in $\underline{2}$					- 20-			Enu i	burnig at	10							
$\overline{25}$ $\overline{25}$ $\overline{30}$ $\overline{30}$ $\overline{30}$ $\overline{30}$ $\overline{35}$ $\overline{5}$ $\overline{40}$ $\overline{5}$ While Drilling $\underline{2}$ Upon Completion of Drilling $\overline{5}$ $\overline{5}$ $\overline{5}$ $\overline{5}$ Start $2/12/90$ End $2/12/90$ Drill refer Drilling $\underline{2}$ Upon Completion of Drilling $\overline{5}$ $\overline{5}$ Depth to Water $\overline{2}$ Depth to Cave in $\overline{5}$ Drill Method 4.1/4" HSA					-		PID back	ground	= 0.4 pp	m						}	
Water Depth to Water Depth to Cave in								0	••							}	[
While Drilling					-										}	l	
I I					- 25-								•				
I_{a} <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ł</td></td<>																	ł
I I																	
I_{a} <td< td=""><td></td><td></td><td>[</td><td></td><td>E</td><td></td><td></td><td></td><td></td><td></td><td>l</td><td></td><td></td><td></td><td></td><td>1</td><td></td></td<>			[E						l					1	
I I			[- 30-										1		1
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ∑ Upon Completion of Drilling Start 2/12/90 End 2/12/90 Depth to Water Depth to Water Depth to Cave in			[{				[1	
I_{40} I_{40} WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling \blacksquare Upon Completion of Drilling $_$ Depth to Water $_$ $_$ $_$ $_$ $_$ $_$ $_$ $_$ $_$ $_$											1]	
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ∑ Upon Completion of Drilling Start 2/12/90 End 2/12/90 Depth to Water Depth to Water Depth to Cave in			ļ		E !						[}	}
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ¥ Upon Completion of Drilling Start 2/12/90 End 2/12/90 Depth to Water Depth to Water Depth to Cave in	ļ																ļ
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ↓ Upon Completion of Drilling ↓ Start 2/12/90 End 2/12/90 Dime After Drilling ↓ Dime After Drilling ↓ Dime After Drilling ↓ Depth to Water ↓ Logger KDS Editor MCB 75 Depth to Cave in ↓ Dime After MCB 75					- 35-											}	
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ↓ Upon Completion of Drilling ↓ Start 2/12/90 End 2/12/90 Dime After Drilling ↓ Dime After Drilling ↓ Dime After Drilling ↓ Depth to Water ↓ Logger KDS Editor MCB 75 Depth to Cave in ↓ Dime After MCB 75					E I												
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ↓ Upon Completion of Drilling ↓ Start 2/12/90 End 2/12/90 Time After Drilling ↓ Depth to Water ↓ Diriller E&F Chief GM RigCME Depth to Water ↓ Logger KDS Editor MCB 75 Depth to Cave in ↓ Dirill Method 4 1/4" HSA			1		<u>-</u>											}	
WATER LEVEL OBSERVATIONS GENERAL NOTES While Drilling ↓ Upon Completion of Drilling ↓ Start 2/12/90 End 2/12/90 Time After Drilling ↓ Depth to Water ↓ Diriller E&F Chief GM RigCME Depth to Water ↓ Logger KDS Editor MCB 75 Depth to Cave in ↓ Dirill Method 4 1/4" HSA																	
While DrillingUpon Completion of DrillingStart $2/12/90$ End $2/12/90$ Time After DrillingDrillerE&FChiefGMRigCMEDepth to WaterImage: Start 2/12/90EditorRigCMEDepth to Cave inImage: Start 2/12/90EditorRigCMEDepth to Cave inImage: Start 2/12/90EditorRigCMEDepth to Cave inImage: Start 2/12/90EditorRigCMEDisplay to Cave inImage: Start 2/12/90EditorRigCMEDisplay to Cave inImage: Start 2/12/90EditorRigCMEDisplay to Cave inImage: Start 2/12/90Image: Start 2/12/90Image: Start 2/12/90Display to Cave inImage: Start 2/12/90Image: Start 2/12/90Image: Start 2/12/90Display to Cave inImage: Start 2/12/90Image: Start 2/12/90Image: Start 2/12/90Display to Cave inImage: Start 2/12/90Image: Start 2/12/90Image: Start 2/12/90Display to Cave inImage: Start 2/12/90Image: Start 2/12/90Image: Start 2/12/90D					- 40-												
While Drilling Upon Completion of Drilling Start 2/12/90 End 2/12/90 Time After Drilling				WA	TER	LE	VEL O	BSER	VATIO	NS		G	ENERA	LNC)TE	S	
Time After Drilling Depth to Water	W6:1	e Dri	lling								Start	2/17	/90 End	2/12	2/90		
Depth to Water Logger KDS Editor MCB 75 Depth to Cave in Drill Method 4 1/4" HSA	Time	e Afte	er Dri	lling							Driller	Eð	kF Chie	f <u>G</u>	<u>M</u>]	R ig Cl	ME
Depth to Cave in Drill Method 4 1/4" HSA	Dept	th to	Water	-					·	Į	Logger	KI	DS Edit	or MC	CB		5
	Dept	th to	Cave	in							Drill M	etho	d <u>4 1/4"</u>	HSA		·····	

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	S	5A	MPL				VISUAL CLASSIFICATION	SOIL PROPERTIES						
No.	↓ P E(i	(ec in.)	Moist	N C	epth		and Remarks			qu (qa) (tsf)	HNu			Ionoto
				-	-		Brown TOPSOIL			by				
1		16	D	18-	-	7775	Brown Clayey Sandy Soil				10.0			
					-		Gray Green Clay (CL)							
2		18	D	9F	- 5		Black Silty Clay (CL)				170.0			
3		12	D	10	-	1-11		/			200.0			
					-	111	Green/Tan Silty Fine SAND (Strong F Smell) (SM)	Fuel						
4		18	D	5₽	10		Tan/Green Fine SAND (Strong Fuel				100.0			
				E	- 10		Smell) (SP)				-			
				Ē	-		Tan Fine & Medium to Coarse SAND	12						
				F-	-		(SP) with Green Liquid Saturation at S	9.5			<u>]</u>			
5		18	W	5	15						18.0			
		T		E			Tan Fine SAND (SP)					ļ		
6		18	W	5	- - - 20		Tan to Tan Gray Fine SAND, Some Si	ilt			10.0			
					• • •		End Boring at 22'			,				
					- 25 - -		PID background = 0.4 ppm							
					- - - 30									
	-				-									
					-						ł			
Т		ļ		Ē	- - 35									
É.		1									1	1		1
F				E	-									
1		1			-							}		
				E	- - 40							}		
							VEL OBSERVATIONS		6	ENERA			S	<u> </u>
								7				-	<u> </u>	
	nile I	Dril Afte	ling r Drii	<u>¥_9.5</u> lling _	<u>. </u>	Upc	n Completion of Drilling S	Start Driller	_2/8 F	3/90 End &F Chie	2/8 f C	<u>/ 90.</u> Nt 1	RigC	ME
			Vater	g _			____	Logger	K	DS Edit	or MO	CB	75	5
De	pth	to C	Cave i	in _			I			od <u>4 1/4"</u>				
	The sitvoes	trat and	ificat	ion lin ransiti	es re	prese	nt the approximate boundary between soil gradual.			•••••		·····		

$\begin{array}{c c c c c c c c c c c c c c c c c c c $	IENCE COURT · P.O. BOX 5385, MADISON, WIS. 53705 · TEL.(600 VISUAL CLASSIFICATION and Remarks Black/Brown TOPSOIL Black Clayey Silt FILL Tan Fine SAND (Uniform) (SW) Yellow/Brown Fine to Medium SAND (SP)		PROPERTIES HNU Sive VOC Monoto Gas Water
No. Image: Rec product of the state	and Remarks Black/Brown TOPSOIL Black Clayey Silt FILL Tan Fine SAND (Uniform) (SW) Yellow/Brown Fine to Medium SAND	qu (qa)	Explo-Field HNu sive VOC Monoto Gas Water
1 12 D 15 2 18 D 8 3 18 D 9 4 18 W 2 5 18 W 6	Black/Brown TOPSOIL Black Clayey Silt FILL Tan Fine SAND (Uniform) (SW) Yellow/Brown Fine to Medium SAND		Gas Water
2 18 D 8 5 3 18 D 9 5 4 18 W 2 10 5 18 W 6	Black Clayey Silt FILL Tan Fine SAND (Uniform) (SW) Yellow/Brown Fine to Medium SAND		
3 18 D 9 4 18 W 2 10 5 18 W 6	Yellow/Brown Fine to Medium SAND		0.3
4 18 W 2 10- 5 18 W 6	1	8	0.6
5 18 W 6			0.9
	Gray Fine to Medium and Coarse SAND		1.2
	with Gravel (Fuel Smell) (SP)		
			0.6
	End Boring at 18.5'		
	PID background = 0.3 ppm	·	
WATER	LEVEL OBSERVATIONS	GENERA	
While Drilling Time After Drilling Depth to Water Depth to Cave in The stratification lines repr types and the transition may		/8/90 End E&F Chie	2/0/00

WARZYN	•	LOG OF TEST BORING Project Wisconsin Air National Guard Location Madison, Wisconsin IENCE COURT · P.O. BOX 5385, MADISON, WIS. 53705 ·		Boring No Surface E Job No. Sheet 273-0440 —	levatio 1 1 0	on 5073,	857. <u>(</u>	5			
SAMPLE		VISUAL CLASSIFICATION						PERTIES			
No. PRec E(in.) Moist N	Depth	and Remarks		qu (qa) (tsf)	HNu	sive	Field VOC Water	lonoto			
	E	TOPSOIL Mixed with Gravel Fill									
1 18 D 5		Dark Brown Silty CLAY (CL) Black Silty CLAY		·····	1.0						
2 18 D 4	- 5_	Gray Silty Fine SAND (Fuel Smell) (SM))		7.0						
3 18 D 6	jĘ į			<u></u>							
		Gray Silty CLAY (CL) Gray Medium SAND (Strong Fuel Smell (SP)))		190.0						
4 W 4	- - 10-	Gray Fine to Medium SAND (Occasiona	1	·	3.0						
Τ		Gravel) (SP)			-						
		Gray Medium SAND, Minor Gravel (Fu	iel	1							
5 W 5	- 15-	Smell) (SP)			18.0						
	E 7		₽								
		End Boring at 17.5' PID background = 0.3 ppm									
_ _/		LEVEL OBSERVATIONS	G	ENERA		TE	S	1			
While Drilling Time After Drilling Depth to Water Depth to Cave in		Upon Completion of Drilling Sta 	iller <u>2/8</u> iller <u>E&</u> gger Kl	/90 End &F Chief DS Edito d 4 1/4"	2/8 G or M(/90 M 1	Rig Ci	ME			

APPENDIX B

Well Construction Details and Well Development Documentation

<u>Note</u>

Wells W8 and W10 were not redeveloped by Warzyn, due to the presence of floating product.

te of Wisconsin partment of Natural Resources		MONITORING WELL CONSTRUCTION Form 4400-113A 8-89
Facility/Project Name	Grid Location	[Well Name
V [±] sconsin Air National Guard	<u>ft.</u> П. N. D.	
i cility License, Permit or Monitoring Number	ft. 🖸 E. 🖸 '	W. Wis. Unique Well Number DNR Well Number
Type of Well Water Table Observation Well 🛛 11	Section Location	Date Well Installed 02 / 09 / 90
Piezometer 12	<u>SW</u> 1/4 of <u>NE</u> 1/4 of Section <u>29</u>	
Listance Well Is From Waste/Source Boundary	$T = N.R = 10$ $\blacksquare E \Box W$	Weil Installed By: (Person's Name and Firm)
) ftlfrom UST potential source() 1 Well A Point of Enforcement Std. Application?	Location of Well Relative to Waste/Source	Kevin_Swanson
	Upgradient 🖾 Sidegradient	Warzyn Engineering Inc.
A. Protective pipe, top elevation860.46. f		nd lock? 🛛 Yes 🗆 No
i Well casing, top elevation -860.27 f		ctive cover pipe: de diameter:3.9 in
C. Land surface elevation -858.3 f	f MSL b. Ler	ngth: _51_ ft.
I Surface seal, bottom _ 857 3 ft. MSL or _	1 0 ft.	terial: Steel 🖸 04
i USCS classification of soil near screen:		ditional protection?
		yes, describe:
SM SM SC ML MH CL CH Bedrock	3. Surfac	ce seal: Bentonite 🗖 30
13. Sieve analysis attached?	No No B	Concrete 🖬 01 Soil Other 🖾 🛁
Drilling method used: Rotary	\ <u>}</u>	ial between well casing and protective pipe:
Hollow Stem Auger	41	Bentonite 🔲 30
Other 🗖		Annular space seal
. Drilling fluid used: Water 🗖 02 Air 🗖		Other 🛛 🔬
Drilling fluid used: Water 🗖 02 Air 🖬 Drilling Mud 🗖 03 None 🖾	99 5. Annu	lar space seal: Granular Bentonite 🖸 3.3 📕
		Lbs/gal mud weight Bentonite-sand slurry 🔲 35 Lbs/gal mud weight Bentonite slurry 🔲 31
. Drilling additives used? 🖸 Yes 🖾 R	ו	_ Cosygar mud weight Bentonite stury _ 51
Describe		1.4 Ft ³ volume added for any of the above
". Source of water (attach analysis):	How i	nstalled: Tremie 🛛 01
······································		Tremie pumped \Box 0 2 Gravity \Box 0 8
E Sentonite seal, top8553 ft. MSL or	30 ft_{s}	nite seal: Bentonite granules 3 3 11/4 in. □3/8 in. □ 1/2 in. Bentonite pellets □ 3 2
-		Other 🛛 🚊
F. Fine sand, top ft. MSL or	3.0 ft. 1	and material: Manufacturer, product name and mesh size
Filter pack, top854_8 ft. MSL cr		ne addedft ³
852.8 5.45		pack material: Manufacturer, product name and mesh size
Well screen, top852 8 ft. MSL or		<u>Claire #20 Flint Sanc</u> ne addet 5.3 ft ³
Well screen, bottom _ 838 0 ft. MSL or _ 2	20 3 ft. 9. Well	
838.0		Flush threaded PVC schedule 80 🔲 24
Filter pack, bottom _ 838 0 ft. MSL or _ 2		n material: <u>Sch 40 PVC</u>
S. Borehole, bottom 835 .3 ft. MSL or		n type: Factory cut 🛛 11
		Continuous slot 🔲 01
. 30rzhole, diameter <u>8.2</u> in.		Other 🛛 🔄
		izetter <u>Northern Air</u> 0.010 in.
V O.D. well casing2_38_ in.	Slot s Slote	d length: 14.8 ft.
N. I.D. well casing 20 in.		ill material (below filter pack): None
		Natural Collapse Other 🛛
sreby certify that the information on this		of my knowledge.
S.Snattre	F≖m Warzyn Engineering In	c. 🗖

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ise complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with 144, Wis Stats., failure to file this form may result in a forfeiture of net less than \$10, nor more than \$5,000 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.

•

cility/Project Name		I Wall Manne		
	10070	Weil Name		
Visconsin Air National Guard	15073	Wis. Unique Well Nu	mber MAIDAU	ill Number
		Wik Onique Weir Nu		
. Can this well be purged dry?	□Yes £0k No		Before Development	After Development
		11. Depth to Water		
Well development method		(from top of	<u>12_72_ft</u>	<u>12.80</u> ft.
surged with bailer and bailed		well casing)		
surged with bailer and pumped	🛛 6 1			
surged with block and bailed	4 2	Date	0 3,2 6,9 0	03,26,90
surged with block and pumped	62	1	mm dd yy	$\frac{0}{m}\frac{3}{m}\frac{2}{d}\frac{6}{d}\frac{9}{y}\frac{0}{y}$
surged with block, bailed and pumped			<u>į</u> .	1
compressed air	20	Time	_ <u>11</u> : <u>05</u> p.m.	<u>11</u> :40p.m.
bailed only				
pumped only	D 51	12. Sediment in well	0.0 inches	$\underline{0}$ $\underline{0}$ inches
pumped slowly	5 0	bottom		
Other		13. Water clarity	Clear 🔲 10	Clear 🖸 20
			Turbid 🔼 15	Turbid 25
Time spent developing well	35 min.		(Describe)	(Describe)
	····· ···· ···· ··· ··· ··· ··· ··· ··	1	very	
. Depth of well (from top of well casisng)	22.0_fL	1		·
. Deput of wen (none up of wen carang)	ALL ALL THE CASE			
. Inside diameter of well	<u>200</u> in.			
	anna aite a mille fann		}	
. Volume of water in filter pack and well				
casing	<u>9</u> . <u>0</u> gal.			
·	<u> </u>	Fill in if drilling fluid	s were used and well is a	at solid waste facility:
. Volume of water removed from well	<u>100 . 0 gal.</u>		1	
		14. Total suspended	mg/l	mg/l
. Volume of water added (if any)	00 gal.	solids		
	<u></u>			
. Source of water added <u>NONE</u>		15. COD	mg/l	mg/l
 Analysis performed on water added? (If yes, attach results) 	□Yes □No		٠	
(1) (0, 1001 (0) (1)				
Additional comments on development:				
•				
Vall developed by: Person's Name and Firm		I hereby certify that t	he above information is	true and correct to the best
Vell developed by: Person's Name and Firm		I hereby certify that t of my knowledge.	he above information is	true and correct to the best
		of my knowledge.	he above information is	true and correct to the best
Well developed by: Person's Name and Firm Name: <u>William Bachus</u>		I hereby certify that to of my knowledge. Signature:	he above information is	true and correct to the best
		of my knowledge.	he above information is	true and correct to the best

NOTE: Shaded areas are for DNR use only. See instructions for more information.

e of Wisconsin artment of Natural Resources			DNITORING WELL CONSTRUCTION m 44(0-113A 8-89
ac:Ety/Project Name	Grid Location		[Well Name
lisconsin Air National Guard		fr. DN. DS.	W2
lity License, Permit or Monitoring Number			Wis. Unique Well Number DNR Well Number
		ft. 🖸 E. 🗆 W.	
ype of Well Water Table Observation Well 🛛 11	Section Location		Date Well Installed
Piezometer [] 12	SW 1/4 of NE 1	/4 of Section <u>29</u> ,	$\frac{O2}{m} / \frac{O9}{v} / \frac{90}{v}$
ance Well Is From Waste/Source Boundary			Well Installed By: (Person's Name and Firm)
<pre>5 ft (from UST potential source)</pre>	T <u>8</u> N. R <u>10</u> Location of Well Relative		Kevin Swanson
: "ell A Point of Enforcement Std. Application?		Sidegradient	
⊠Yes □No	Downgradient	□ Not Known	<u>Warzyn Engineering Inc.</u>
Protective pipe, top elevation	ft. MSL	1. Cap and lo	
Vell casing, top elevation863_34_	ft. MSL	2. Protective	• •
0.01 0		a. Inside di	
. Land surface elevation 861_6	f MSL	b. Length:	
urface seal bottom 860 6 ft. MSL or _	10 n.	c. Materia	
USCS classification of soil near screen:		A Addition	nal protection?
	1 Caster		nal protection?
Bedrock		3. Surface se	al: Soncrete 0 01
3. Sieve analysis attached? 🔲 Yes 🛛 🖾	No V		Soil Other 2
Drilling method used: Rotary	50	4. Material b	etween well casing and protective pipe:
Hollow Stem Auger	Nb 50 41 01 99 No	3. Surface se 4. Material b 5. Annular sp Lu 1.4 How instal	Bentonite 🔲 30
		**	Annular space seal
			Other 🗖
Drilling fluid used: Water 🔲 02 Air 🔲	01	5. Annular s	
Drilling Mud 🔲 03 None 🖾	99	L	bs/gal mud weight Bentonite-sand shurry 🔲 35
		L	bs/gal mud weight Bentonite slurry D 31
Drilling additives used? 🛛 Yes 🖾	No	9	Bentonite Bentonite-cement grout D 50
Describe	× ×	1_4	Ft ³ volume added for any of the above
 Describe 7 Source of water (attach analysis): 		How instal	
Source of water (attach analysis).			Tremie pumped \Box 02
			Gravity 🗉 🛛 🖇
	Real I		seal: Bentonite granules 🗖 33
entonite seal, top _ 855 _1 ft. MSL or	6_5 ft.		in. $\Box 3/8$ in. $\Box 1/2$ in. Bentonite pellets $\bigtriangledown 32$
		× /	Other 🛛 🔬
Fine sand, top ft. MSL or	-6.5 ft. 7.0 ft.	6. Bentonite	material: Manufacturer, product name and mesh size
. ilter pack, top854_6ft. MSL or	fr E	Volume ad	lded ft ³
050 5			c material: Manufacturer, product name and mesh size
. Well screen, top 5 ft. MSL or	^y _1 ft~`[[]		<u>laire #20 Flint Sand</u>
837 8	23.8 .	Volume ac	
Well screen, boutom _ 837 8 ft. MSL or		9. Well casi	-
837 95 Met	23.8.		Flush threaded PVC schedule 80 24
ilter pack, bottom <u>837</u> 8 ft. MSL or			Other D
. Borehole, bottom8346 ft. MSL or	27.0 #		aucrial: <u>Sch 40 PVC</u>
. Borehole, bottom n. MSL of	- <u>-</u> /0 IL	Screen typ	
		£₹	
$_{-8.2}$ in.			rer Northern Air
1D well casing 2 20		Slot size:	0.010 in.
D.D. well casing <u>2.38</u> in.		Sicued les	
ID well casing 2.0 :-		``	naterial (below filter pack): None
. I.D. well casing 2.0 in.			Natural Collapse Other
reby certify that the information on thi	is form is true and or	crect to the best of n	
gradure	Firm		
·2·····-		Engineering Inc.	
i se complete and return both sides of this form as	1	· · · · · · · · · · · · · · · · · · ·	

i se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with 1 144, Wis Stats., failure to file this form may result in a forfetture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance

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MONITORING WELL DEVELOPMENT Form 4400-113B 8-89

		2122 12 27		
icility/Project Name	1 5 4 5 4	Weil Name	20	
lisconsin Air National Guard	15073		2	ll Number
icense, Permit or Monitoring Number		Wis. Unique Well Nur	nder DNR we	11 Aumber
. Can this well be purged dry?	DiYes Di No		Before Development	After Development
. Call dills went de parges aly.		11. Depth to Water		· · · · · · · · · · · · · · · · · · ·
. Well development method		(from top of	<u>15.67</u> ft.	<u>2523ft</u>
surged with bailer and bailed		well casing)		
surged with bailer and pumped			,	
surged with block and bailed		Date	03/26/90	$\frac{0.3}{2.6}$
surged with block and pumped		1	mm dd yy	mm dd yy
surged with block, bailed and pumped	7 0		⊠ a.m.	
compressed air	20	Time	<u>11</u> : <u>05</u> p.m .	_12:00 💭 p.m
bailed only	10			
pumped only	5 1	12. Sediment in well	$\underline{0}$. $\underline{0}$ inches	<u>0.0</u> inches
pumped slowly	<u> </u>	bottom		
Other		13. Water clarity	Clear 🔲 10	Clear 20
			Turbid 🖾 15	Turbid 🖸 25
. Time spent developing well	<u>55</u>		(Describe)	(Describe)
			_very	
4. Depth of well (from top of well casisng)	<u>26.0_ft</u>			[
· · · · ·	2 00 :-			
5. Inside diameter of well	<u>2</u> <u>00</u> in.			[
6. Volume of water in filter pack and well	<u>9.3 gal.</u>		ł	1
casing	<u> </u>	Fill in if drilling fluid	s were used and well is	at solid waste facility:
7. Volume of water removed from well	<u>15</u> . <u>0</u> gal.		1]
7. Volume of water removed from weil		14. Total suspended	mg/	l mg
8. Volume of water added (if any)	<u>0</u> . <u>0</u> gal.	solids		
9. Source of water added None		15. COD	mg/	1mg
10. Analysis performed on water added?	I Yes I No	•	•	
(If yes, attach results)				
Additional comments on development:				
The well dried up after rem	oving 3 gal wi	ith a bailer.	The well was ba	iled dry and
allowed to recharge 5 times	•			
Well developed by: Person's Name and Firm		1 hereby certify that	the above information is	true and correct to the be
Well developed by: Person's Name and Firm		I hereby certify that of my knowledge.	the above information is	true and correct to the be
Villian Dachus		of my knowledge.	the above information is	true and correct to the be
Well developed by: Person's Name and Firm Name: William Bachus		I hereby certify that of my knowledge. Signature:	the above information is	true and correct to the be
Villian Dechue		of my knowledge.	the above information is	true and correct to the be

e of Wisconsin partment of Natural Resources		MON Form	VITORING WELL CONSTRUCTION	
	Location		iell Name	
'sconsin Air National Guard	fr. 🗆 N	1	W3	
ility License, Permit or Monitoring Number	ft. _ E	11	Vis. Unique Well Number DNR Well	Number
pe of Well Water Table Observation Well 🛛 11 Secu	on Location		Date Well Installed	
Piezometer 🗖 12 SW	1/4 of <u>NE</u> _1/4 of Section	29	$\frac{0}{m}\frac{2}{m}\frac{9}{\sqrt{2}}$	<u> </u>
ance Wall Is From Waste/Source Boundary			Well Installed By: (Person's Name and Fin	
/ell A Point of Enforcement Std. Application?	<u>8</u> N. R <u>10</u> ⊠ E ⊡ W tion of Well Relative to Waste/Sourc □ Upgradient ⊠ Sidegradie	ce ient	Kevin Swanson	
X Yes 🗆 No	Downgradient Not Know	the second se	<u>Warzyn Engineering Inc.</u>	<u></u>
Protective pipe, top elevation _ 86065_ ft. MS		. Cap and loci		□ No
Vell casing, top elevation _ <u>860</u> . <u>44</u> ft. MS	2	. Protective co a. Inside dian		<u>3.9 in</u>
Land surface elevation $\frac{858}{5}$ f MS		b. Length:		<u>5</u> .1 fr.
urface seal, bottom857_5 ft. MSL or1_0		c. Material:	Steel	
USCS classification of soil near screen:		1 1 1 1	Other	
	And Market		l protection?	
		·		- □ 30
🗆 Bedrock	×3.	. Surface seal:	Concrete	
5. Sieve analysis attached? 🔲 Yes 🖾 No			SoilOther	
Drilling method used: Rotary 🖸 50	· ∖	. Material bety	ween well casing and protective pipe:	- 22
Hollow Stem Auger 🖾 4 1			Bentonite	D 30
Other 🛛 🧾			Annular space seal	Ø
Drilling fluid used: Water 🗖 0.2 Air 📮 0.1			Other	
Drilling fluid used: Water □ 02 Air □ 01 Drilling Mud □ 03 None ☑ 99	5.	. Annular space		
			gal mud weight Bentonite-sand slurry	
Drilling additives used? 🔲 Yes 🖾 No			gal mud weight Bentonite slurry Bentonite Bentonite-cement grout	
		<u> </u>	Ft ³ volume added for any of the above	L 30
Describe	- 88	How installe		D 01
Source of water (attach analysis):			Tremie pumped	
			Gravity	
		. Bentonite se	al: Bentonite granules	
tentonite seal, top -854.0 ft. MSL or -4.4	5 ft.	□1/4 in	. 3/8 in. 1/2 in. Bentonite pellets	32
Fine sand, top NA ft. MSL or	5 ft. 6.	. Fine sand ma	aterial: Manufacairer, product name and a	
ilter pack, top ft. MSL or	3 ft.	Volume adde	zift ³	
070.0	8.	. Füter pack n	naterial: Manufacturer, product name and	mesh size
/ell screen, top850 9 ft. MSL or 7.6			aire #20 Flint Sand	-
· · · · · · · · · · · · · · · · · · ·		Volume adde		FR 0.2
Vell screen, bottom <u>836</u> ft. MSL or <u>22</u>		. Well casing:	: Flush threaded PVC schedule 40 Flush threaded PVC schedule 80	
ilter pack, bottom836 1 ft. MSL or22 4			- Other	
Borchole, bottom835 .0 ft. MSL or23 .5	- 10.		riai: <u>Sch 40 PVC</u>	87. 1.1
		Screen type:	Factory cut Continuous slot	
Dorchole, diameter 8.2 in.			Other	
	\backslash	Manufactures	Northern Air	
0.D. well casing _ 2 38_ in.	\mathbf{N}	Slot size:	0	. 010 in.
	λ	Slotted lenge	th:	14. · Bñ.
I.D. well casing 2.0 in.	×11.		erial (below filter pack): None atural Collapse Other	
reby certify that the information on this for	m is true and correct to the l	best of my		
nature	Fim			
	Warzyn Engineeri	ng Inc.		

se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with 144, Wis Stats., failure to file this form may result in a forfesture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance

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MONITORING	WELL	DEVEL	OPMENT
Form 4400-113B			8-89

icility/Project Name	······································	Weil Name	·····	······
Wisconsin Air National Guard	15073	4	13	· · · · · · · · · · · · · · · · · · ·
icense, Permit or Monitoring Number		Wis. Unique Well Nur	mber DNR We	il Number
1. Can this well be purged dry?	⊡Yes ⊑iNo	11. Denth to Ways	Before Development	After Development
Well development method surged with bailer and bailed	4 1	11. Depth to Water (from top of well casing)	1281_ft.	<u>12 . 90_</u> ft.
surged with bailer and pumped surged with block and bailed surged with block and pumped	♀ 6 1 □ 4 2 □ 6 2	Date	$\frac{0}{m}\frac{3}{m}/\frac{2}{d}\frac{6}{d}/\frac{9}{y}\frac{0}{y}$	$\frac{0}{m}\frac{3}{m}/\frac{2}{d}\frac{6}{d}/\frac{9}{y}\frac{0}{y}$
surged with block, bailed and pumped compressed air bailed only	□ 7 0 □ 2 0 □ 1 0	Time		11_: <u>55_</u> p.m
pumped only pumped slowly Other	$\begin{array}{c} 5 \\ 5 \\ 5 \\ 0 \\ \end{array}$	12. Sediment in well bottom13. Water clarity		0.0_inches Clear 🛛 20
. Time spent developing well	<u>45</u> min.		Turbid D 15 (Describe) very	Turbid 🔲 25 (Describe)
. Depth of well (from top of well casisng)	<u>23_5_</u> ft.			
. Inside diameter of well	in			
. Volume of water in filter pack and well casing	<u>9</u> . <u>0</u> gal.	Till in if drilling fluid.	s were used and well is a	
. Volume of water removed from well	<u>90</u> . <u>0</u> gal.	14. Total suspended	mg/	
8. Volume of water added (if any)	<u> </u>	solids		
D. Source of water added None		15. COD .	mg/l	mg
10. Analysis performed on water added? (If yes, attach results)	□Yes □No	1	1 ,	İ
Additional comments on development:				
Well developed by: Person's Name and Firm		I hereby certify that d of my knowledge.	he above information is	true and correct to the be
Name: William Bachus		Signature:		

e of Wisconsin partment of Natural Resources		M(Fo	ONITORENG WELL CONSTRUCTION rm 44(0-113). 8-89	
ac:Lity/Project Name G	id Location		[Well Name	
Visconsin Air National Guard		ם א ב .	W4	
ility License, Permit or Monitoring Number		□ E. □ W.	Wis. Unique Well Number DNR Well Nur	mbæ
Vice of Well Water Table Observation Well 🖾 11 S	ection Location		Date Well Installed	Nacil And
Piezometer [] 12	<u>NW</u> 1/4 of <u>NE</u> 1/4 of Section	n <u>29</u> .	$\frac{O^2}{m} \frac{O^2}{d} \frac{O^2}{v} \frac{O^2}{v}$	
biance Well Is From Waste/Source Boundary	<u>8</u> N.R <u>10</u> DE D V		Well Installed By: (Person's Name and Firm)	
) ft (from UST potential sounce)	cation of Well Relative to Waste/S	ource	<u>Kevin Swanson</u>	
	Cation of Well Relative to Waste/S			
	Downgradient Not l		<u>Warzyn Engineering Inc.</u>	
A. Protective pipe, top elevation <u>861.48</u> ft.	MSL	1. Cap and lo		No
Yell casing, top elevation <u>861</u> .28 ft.	MSL	2. Protective a. Inside d	iameter: _3.	_
$2. Land surface elevation _ 859\0 f^{-1}$	MSL	b. Length:		
) urface seal, bottom ft_MSL or _1.	Q n.	c. Materia		04
12 USCS classification of soil near screen:		d Additio	mal protection?	<u></u>
GP GM GC GW SW DSP SM SC GML MH CL GCH		If yes, o	describe:	
Betrock		3. Surface se	al: Bentonite Concrete	30 01
13. Sieve analysis attached? 🔲 Yes 🛛 No			Soil Other 🛛	
1 Drilling method used: Rotary 🛛 5 0		4. Material b	etween well casing and protective pipe:	<u>****</u>
Hollow Stem Auger 🖾 4 1				30
Other 🖬 🚞			Annular space seal 🔯	
			Other 🛛	
1 Drilling fluid used: Water 02 Air 0		- 5. Annular s	pace seal: Granular Bentonite	33
Drilling Mud 🔲 03 None 🖾 99		L	bs/gal mud weight Bentonite-sand slurry 🛛	35
1 Drilling additives used? Yes No			bs/gal mud weight Bentonite slurry	31
			³ Bentonite Bentonite-cement grout □	50
Describe		How instal		
1 Source of water (attach analysis):		HOW LISTA	lled: Tremie 🗌 Tremie pumped 🔲	01
				02 08
		6. Bentonite	•	
entonite seal, top _ 856 _ 0 ft. MSL or _ 3	.Q. ft. 	/	in. $\square 3/8$ in. $\square 1/2$ in. Bentonite pellets \square	33 32
. Fine sand, top ft. MSL or	ft	7. Fine sand	material: Manufacturer, product name and mesh	
i. ilter pack, top _ 855 5 ft. MSL or		Volume ac	A	1
		, 8. Filter pach	k material: Manufacturer, product name and mes	sh size
i. 'ell screen, top _ <u>854</u> 6 ft. MSL or	4_4 ft		Claire #20 Flint Sand	
b 20 b c c c c c c c c c c		Volume ad		
Well screen, bottom 839 8 ft. MSL or 19		-9. Well casi	-	23
ilter pack, bottom _ 839 8 ft. MSL or _ 19	0.2 m		Flush threaded PVC schedule 80 Other Other	24
Borehole, bottom _ 838 .0 ft. MSL or _ 21		_	aterial: <u>Sch 40 PVC</u>	- <u>1</u>
		Screen ty	Continuous slot	11 01
. porchole, diameter <u>8.2</u> in.		, <u></u>	Other	22
1 D.D. well casing _ 2.38 in.	\backslash	Manufactu Slot size: Slotted let	1 /	LO_in. .8_ft.
1. I.D. well casing _ 2.0 _ in.	N,	`	nauerial (below filter pack): None	
acher applify that the information on this	form in true and correct to t	he best of -		
reby certify that the information on this information on this ignature	Icrm is true and correct to t	ne pest of t	ny knowledga.	<u> </u>
1511000	Warzyn Enginee	ering Inc.		

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i se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with h. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,660 for each day of violation. In accordance

MONITORING	WELL	DEVEL	OPMENT
Form 4400-113B			8-89

cility/Project Name		Weil Name		
Wisconsin Air National Gua	ard 15073	W4		·
icense, Permit or Monitoring Number		Wis. Unique Well Nur	nber DNR We	il Number
. Can this well be purged dry?	□Yes ØNo	11. Depth to Water	Before Development	After Development
Well development method surged with bailer and bailed surged with bailer and pumped	□ 41 x□ 61	(from top of well casing)	<u>12.69</u> ft.	<u>_12 . 71</u> _ ft.
surged with block and bailed surged with block and pumped surged with block, bailed and pumped	$\begin{array}{c} \mathbf{\square} & 4 & 2 \\ \mathbf{\square} & 6 & 2 \\ \mathbf{\square} & 7 & 0 \end{array}$	Date	1	$\frac{0.3}{m.m.d.d.y.y}$
compressed air bailed only		Time 12. Sediment in well		$\underline{2:4 0}_{p.m.}$
pumped only pumped slowly Other		12. Seament in weil bottom 13. Water clarity		Clear Z 20
. Time spent developing well	40min_		Turbid [2] 15 (Describe) verv	Turbid 🔲 25 (Describe)
. Depth of well (from top of well casisng)	<u>21</u> 0 ft			
5. Inside diameter of well	<u>2</u> <u>0</u> <u>0</u> in.			
5. Volume of water in filter pack and well casing	<u>7.5</u> gal.	Fill in if drilling fluids	s were used and well is a	at solid waste facility:
7. Volume of water removed from well	7 <u>5</u> . <u>0</u> gal	14. Total suspended	mg/l	
3. Volume of water added (if any)	<u> </u>	solids		
9. Source of water added None		15. COD .	mg/l	mg/l
10. Analysis performed on water added? (If yes, attach results)	UYS No]
Additional comments on development:				

	soped by: Ferson's Name and Firm	of my knowledge.
Name:	William Bachus	Signature:
Firm:	Warzyn Engineering, Inc.	Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information.

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MONITORING WELL DEVELOPMENT Form 4400-113B 8-89

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Facility/Project Name		Weil Name	<u> </u>	
Wisconsin Air National Guar	d	W5		
License, Permit or Monitoring Number		Wis. Unique Well Nu	mber DNR We	eil Number
1. Can this well be purged dry?	□Yes ⊠No	11. Depth to Water	Before Development	After Development
2. Well development method surged with bailer and bailed		(from top of well casing)	<u>12.47</u> ft.	<u>12.83</u> ft.
surged with bailer and pumped surged with block and bailed surged with block and pumped	☑ 6 1 ☑ 4 2 ☑ 6 2 ☑ 6 2	Date		<u>03/26/90</u> mmddyy
surged with block, bailed and pumped compressed air bailed only	□ 7 0 □ 2 0 □ 1 0	Time	_	$\underline{1}: \underline{5} \underbrace{0} \boxtimes p.m.$
pumped only pumped slowly		12. Sediment in well bottom		$\underline{0}$. $\underline{0}$ inches
Other 3. Time spent developing well	_ D	13. Water clarity	Clear ☐ 10 Turbid ☑ 15 (Describe)	Clear 20 Turbid 25 (Describe)
4. Depth of well (from top of well casisng)	<u>23 . 4</u> ft.		<u>very</u>	
5. Inside diameter of well	<u>200</u> in.			
6. Volume of water in filter pack and well casing	<u> </u>		s were used and well is	at colid waste facility
7. Volume of water removed from well	<u>100</u> .0 gal.	14. Total suspended		
8. Volume of water added (if any)	<u> </u>	solids		·
9. Source of water added None	<u></u>	15. COD .	mg/	l mg/l
10. Analysis performed on water added? (If yes, attach results)	Yes No]		
Additional comments on development:		1		
-				
Well developed by: Person's Name and Firm		I hereby certify that to of my knowledge.	he above information is	true and correct to the best

Name:	William Bachus	Signature:
Firm:	Warzyn Engineering Inc.	Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information.

Wisconsin artment of Natural Resources				VITORING WELL CO	DNSTRUCTION 8-89		
	Grid Location	· · · · · · · · · · · · · · · · · · ·	N	Vell Name			
is onsin Air National Guard	Granceauon	fr. 🗆 N.	í	W5			
ity License, Permit or Monitoring Number				Vis. Unique Well Num	DNR Well	Nur	nber
		ft. 🔲 E.	. 🗆 W. 🛛				
Well Water Table Observation Well 🛛 11	Section Location			Date Well Installed		<u></u> >	<u></u>
Piezometer [] 12	<u>NW 1/4 of NE</u>	1/4 of Section	1		$\frac{02}{m} / \frac{12}{d} / \frac{90}{v}$		
Istance Well Is From Waste/Source Boundary				Well Installed By: (Pe		$\frac{y}{m}$	
ft (from UST potential source)	T <u>8</u> N.R <u>10</u>			Kevin Swansor			
A Point of Enforcement Std. Application?	Location of Well Relativ	ve to Waste/Source	e ant		· · · · · · · · · · · · · · · · · · ·		
XIYes INo	Downgradient	□ Not Know	1	Warzyn Engine	ering Inc.		
. Prective pipe, top elevation _ 861.29 f			Cap and loci		🛛 Yes		No
		= 2	Protective c		-		
. 'ell casing, top elevation61 09 f	t. MSL		a. Inside diar	••	_	3.9) in
050 0	+ MSL		b. Length:			5.1	_
		11	c. Material:		Steel	Ø	04
urface seal, bottom_ 858 2 ft MSL or _					Other		
2. USCS classification of soil near screen:			d. Additiona	l protection?	 [] Yes	⊠ .	No
GP G GM G GC G GW M SW M SP			If yes, de	•		_	
SM DSC DML DMH DCL DCH					Bentonite		30
Bedrock			Surface seal:		Concrete		01
3. Seve analysis attached? 🛛 Yes 🖾 1	•6 \ 👹			Soil	Other	_	
· Stilling method used: Rotary	50 \	×4.	Material ber	ween well casing and	protective pipe:		
Hollow Stem Auger	41 \	諁			Bentonite		30
Other 🗆					Annular space seal	X	
	50 41 01 99 No	4.			Other		
Drilling fluid used: Water 02 Air	01	5.	Annular spa	ce seal:	Granular Bentonite	\boxtimes	33
Drilling Mud 🔲 03 None 🖾	99	5		/gal mud weight H	Bentonite-sand slurry		35.
				/gal mud weight		_	3 Ì
Drilling additives used? 🖸 Yes 🖾 1	40 👹			Bentonite Be			50
			0.7	Ft ³ volume added	for any of the above		
escribe	📓	顧	How installe	xd:	Tremie		01
furce of water (attach analysis):					Tremie pumped		02
					Gravity	X	Ū \$
		Kiid .	Bentonite se	al:	Bentonite granules		33
entonite seal, top855 7 ft. MSL or	35 fr. 🕅	6. 7.		n. □3/8 in. □1/2 i			
					Other		
Fi sand, top NA ft. MSL or	ft	₩ / 7.	Fine sand m	aterial: Manufacare			
		圈/ /		NA	., p		
rilter pack, top855 2 ft. MSL or	$\frac{3.5}{4.0} \text{ ft.}$	\mathbb{M}	Volume add	ed	fr ³		
				material: Manufactur	er, product name and	mes	h size
ell screen, top 852 8 ft. MSL or	6.4 fr \		Eau Cl	aire #20 Flin	it Sand	_	
•			Volume add	lect <u>4.2</u>	ft ³		
W screen, bottom _ 838 7 ft. MSL or	20 5 ft.	9.	. Well casing		ed PVC schedule 40		23
				Flush threade	ed PVC schedule 80		24
Iter pack, bottom _ 837 8 ft. MSL or _	21 4 ft.			<u> </u>	Other		<u> 22</u>
		10.	. Screen mat	erial: <u>Sch 40 PV</u>	<u>/C</u>		
rehole, bottom _ 836 2 ft. MSL or	<u>23 0</u> ii.		Screen type		Factory cut		11
					Continuous slot		01
Berchole, diameter <u>8,2</u> in.		and the second s			Other		22
		`\		er Northern Ai	ir		10·
D.D. well casing <u>2.38</u> in.		\backslash	Slot size:		(10 in
· · ·		N,	Sicned len	-			. <u>Q</u> ft
. D. well casing <u>2</u> . <u>0</u> in.		$\sum 11$		iterial (below filter pac			
				Natural Collar	DSE Other	- KI	
reby certify that the information on the	s form is true and	correct to the	best of m	v knowledge.			
grune	Firm	n Engineeri					
recomplete and return both sides of this form as	-	-	•	NP 141 Wie Ad-	Code In accordance	z wi	th
is complete and return both sides of this form as	e recuirea EV CRS, 144, 14	4/ 2110 100, WIS. 3	רט גטונע הייני איני איני איני איני איני איני אינ			1	

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is complete and return both sides of this form as required by chs. 144, 147 and 160, wis. Stats., and ch. WK 141, wis. Adm. Code: in accordance with

MONITORING	WELL	DEVEL	OPMENT
Form 4400-113B			8-89

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| |

	15073			
Facility/Project Name	Weil Name			
Wisconsin Air National Gu	ard		NG	
License, Permit or Monitoring Number		Wis. Unique Well Nur	nber DNR We	ell Number
			·	
1. Can this well be purged dry?	🖸 Yes 🖾 No		Before Development	After Development
		11. Depth to Water	0 16	0 1 0
2. Well development method		(from top of well casing)	<u>9.16</u> ft.	$\underline{} \underline{} \phantom{$
surged with bailer and bailed		wen casing)		
surged with bailer and pumped	A 6 1			
surged with block and bailed	4 2	Date	03/26/90	$\frac{0}{m}\frac{3}{26}/\frac{26}{90}$
surged with block and pumped	62	5	mm dd yy	mm dd yy
surged with block, bailed and pumped	7 0		1 0 0 a.m.	$\underline{1:3} \underbrace{0}{\square} \overset{\square a.m.}{\square}$
compressed air	20	Time	$1 \leq 4 \leq pm$	$-1:3 \cup \square p.m.$
bailed only				
pumped only		12. Sediment in well bottom	<u>0</u> . <u>0</u> inches	<u>0</u> .0_inches
pumped slowly	5 0			
Other		13. Water clarity	Clear 🛛 10	Clear 20
			Turbid 🖸 15	Turbid 🛛 25
3. Time spent developing well	<u> </u>		(Describe)	(Describe)
4. Depth of well (from top of well casisng)	<u>15_0fr.</u>		very	
5. Inside diameter of well	2 00 _{in.}			
]	
6. Volume of water in filter pack and well				
casing	<u>5.2 gal.</u>			1
-		Fill in if drilling fluid	s were used and well is	at solid waste facility:
7. Volume of water removed from well	<u>55. 0 gal.</u>		1	
		14. Total suspended	mg/	1 mg/1
8. Volume of water added (if any)	<u> </u>	solids		
9. Source of water added None		15. COD	mg/	l mg/
10. Analysis performed on water added?	I Yes I No	1	i	I
(If yes, attach results)				

Additional comments on development:

Well devel	oped by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.		
Name:	William Bachus	Signature:		
Firm:	Warzyn Engineering Inc.	Firm:		

NOTE: Shaded areas are for DNR use only. See instructions for more information.

f Wisconsin ment of Natural Resources			ONITORING WELL C rm 4400-113A	ONSTRUCTION 8-89	
acility/Project Name Grid Location			Well Name		
"Tonsin Air National Guard	ft.		W7		
y License, Permit or Monitoring Number		-	Wis. Unique Well Nu	mber DNR Well	Number
	II.	🗆 E. 🗆 W.			
Well Water Table Observation Well 🕅 11 Section Location			Date Well Installed	0211210	
Piezometer 12 NW 1/4 of N	E 1/4 of Sec	tion <u>29</u> .	· · · ·	$\frac{0}{m}\frac{2}{m}/\frac{1}{a}\frac{2}{a}/\frac{9}{v}$	-V
istance Well Is From Waste/Source Boundary T_8_N, R_		w		Person's Name and Fir	.m)
1 t. (from UST potential sounce Location of Well Re	elative to Waste	e/Source	<u>Kevin Swanso</u>	n	
A Point of Enforcement Std. Application?		legradient	Manzun Engin	coning Inc	
Yes D No Downgradi		1. Cap and lo	<u>Warzyn Engin</u>		
Intective pipe, top elevation860.19 ft. MSL		2. Protective		🛛 Yes	
Hell casing, top elevation ft. MSL	$\frac{1}{2}$	a. Inside di			.3.9in
		b. Length:			5.]îL
		c. Materia		Steel	
face seal, bottom_ 857 0 ft. MSL or _1.0 ft.		R		Other	
12. USCS classification of soil near screen:			nal protection?	🛛 Yes	🛛 No
		If yes, d	lescribe:		
	匪 匪 /	3. Surface sea	<u>al:</u>	Bentonite	Ξ
13 Sieve analysis attached? Yes No		\mathbf{N}		Concrete	
rilling method used: Rotary \Box 50		1 Margini h	Soil etween well casing and	Other	
rilling method used: Rotary 0 50 Hollow Stem Auger 2 41		·→. Winterial D	erween wen casing and	Bentonite	□ 30
Other				Annular space seal	
				Other	
Drilling fluid used: Water 🔲 02 Air 🖾 01		- 5. Annular sp	pace seal:	Granular Bentonite	
Drilling Mud 🗆 03 None 🖾 99			s/gal mud weight		
			os/gal mud weight		
hilling additives used? 🛛 Yes 🖾 No			Bentonite Be	entonite-cement grout	
Describe		0.7		i for any of the above	
ource of water (attach analysis):		How instal	led:	Tremie	_
				Tremie pumped	
				Gravity	
		6. Bentonite		Bentonite granules	
Antonite seal, top854.5 ft. MSL or3.5 ft.			in. $\Box 3/8$ in. $\Box 1/2$		
, The sand, top NA ft. MSL or ft.		7 Eine cand		Other	
. The sand, top \underline{NA} ft. MSL or \underline{I} ft.	网圈/		material: Manufacan NA	er, product name and	mesn size
Filter pack, top854 0 ft. MSL or4 0 ft.	日以丶	Volume ad	lded	fr 3	-
			material: Manufacur	rer, product name and	mesh size
ell screen, top852_0 ft. MSL or6_0 ft		· ·	laire #20 Fli	-	_
		Volume ac		ft ³	-
Well screen, bottom 842 7 ft. MSL or 15 3 ft.		9. Well casi	0	ed PVC schedule 40	
042 7			Flush thread	ied PVC schedule 80	
"ilter pack, bottom842_7 ft. MSL or15_3 ft.		<	<u> </u>	Other	·
8 40 0 c Mot - 18 0 ft			aterial: <u>SCh 40 P</u>		. <u>80</u>
prehole, bottom840_0 ft. MSL or18_0 ft.		Screen ty	pe:	Factory cut Continuous slot	
	, Ella			Other	
Borchole, diameter <u>8.2</u> in.		Manufactu	er Northern A	-	- 22
D.D. well casing _ 2 38_ in.	\backslash	Slot size:). <u>010</u> in.
		Sicued les	ngth:		_9.3. řt.
$\{1, 1, 2\}$, well casing $2, 0$ in.		№11. Backfill п	naterial (below filter pa		
			Natural Colla	DSE Other	
areby certify that the information on this form is true an	nd correct to	o the best of r	ny knowledge.		
Firm		eering Inc.			
War	LIYH LIYH	The my me.	·	Code la accordance	

ise complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ... 144, Wis Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance

15073

MONITORING WELL DEVELOPMENT Form 4400-113B 8-89

Facility/Project Name		Weil Name		
Wisconsin Air National Guar	d	W7		
License, Permit or Monitoring Number		Wis. Unique Well Number DNR. Well Number		
1. Can this well be purged dry?	⊡Yes ⊑y No	11. Depth to Water	Before Development	After Development
2. Well development method surged with bailer and bailed surged with bailer and pumped surged with block and bailed surged with block and pumped surged with block, bailed and pumped compressed air bailed only pumped only pumped slowly	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	(from top of well casing) Date Time 12. Sediment in well bottom	$\underline{2:50} = pm.$	$\frac{03}{m m} / \frac{2}{d} \frac{6}{d} / \frac{90}{y y}$ $\underline{3} : 30 \square p.m.$ $\underline{0} . 0 \text{ inches}$
Other3. Time spent developing well		13. Water clarity	Clear 10 Turbid D 15 (Describe)	Clear 🛛 20 Turbid 🗖 25 (Describe)
 4. Depth of well (from top of well casisng) 5. Inside diameter of well 	<u>40</u> min. <u>17</u> .0 ft. <u>200</u> in.			
6. Volume of water in filter pack and well casing	<u>5.4</u> gal.	Fill in if drilling fluid	s were used and well is	at solid waste facility:
7. Volume of water removed from well	<u>55</u> . <u>0</u> gal.	14. Total suspended	mg/	l mg/l
8. Volume of water added (if any)	<u> </u>	solids		
9. Source of water added None		15. COD	mg/	l mg/l
10. Analysis performed on water added? (If yes, attach results)	□Yes □No	l		l

Additional comments on development:

Well deve	loped by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name:	William Bachus	Signature:
Firm:	Warzyn Engineering Inc.	Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information.

f Wisconsin ment of Natural Resources			MONTFORING WELL C Form 4400-113A	ONSTRUCTION 8-89	
ac:lity/Project Name	Grid Location		[Well Name		
higonsin Air National Guard	Shu Locadon	fr. DN. DS	1	Flush Mount)	
v License, Permit or Monitoring Number	i		Win Hainya Wall Ma	moer DNR Well N	umirer
		ft. 🗆 E. 🗆 V	Y.		
yp i Well Water Table Observation Well 🛛 11	Section Location		Date Well Installed		
Piezometer [] 12		4 of Section 29		<u>ઌ</u> ૣૣૣૣૣૣૣૣૣૣ૾૾ઌૢૣૡૢ૾ૺ૾ઌૢૢૡૢ૾ૺ૾ઌૢ)
ance Well Is From Waste/Source Boundary	1			Person's Name and Firm,	
<pre>! ft(from UST potential source)</pre>	T <u>8</u> N. R <u>10</u> Location of Well Relative		<u> </u>	n	
1 A Point of Enforcement Std. Application?		Sidegradient			
X Yes D No	🛛 Downgradient	Not Known	<u>Warzyn Engin</u>	<u>eering Inc.</u>	
. Protective pipe, top elevation85837	it. MSL	1. Cap ar		🛛 Yes 🖸] No
Il casing, top elevation _ <u>858</u> 00 f	ft. MSL		tive cover pipe:	c	o .
			de diameter:		.Q in
. Land surface elevation _ 8584	* MSL	b. Len c. Mat	-		.Qft.
face seal, bottom4 fL MSL or	1.0 11	C. Ma	CI 141.	Steel 🛛 Other 🗆	-
LUSCS classification of soil near screen:		A Add	litional protection?	Uiz [
			es, describe:		1.0
SM DSC DML DMH DCL DCH				Bentonite	1 30
L Bedrock		3. Surfac	e seal:	Concrete	-
.3. Sieve analysis attached? 🖸 Yes 🖾 1	`ю \ 👹 👹	₩		Other 🗆	
rilling method used: Rotary	50 \ 👹	4. Materi	al between well casing and	protective pipe:	
Hollow Stem Auger	41 \ 👹 🕅	89 19		Bentonite	30
Other		ä		Annular space seal 🛛	1
		×		Other 🗆	· · · · · · · · · · · · · · · · · · ·
Drilling fluid used: Water □ 02 Air □ Drilling Mud □ 03 None □		5. Annula		Granular Bentonite	
Drilling Mud 🔲 03 None 🖾		ž	_ Lbs/gal mud weight		• · · ·
rilling additives used? 🔲 Yes 🔯 1	No literation	ä	_ Lbs/gal mud weight		
	50 41 01 99 No		_ % BentoniteBe	÷	1 50
Describe	📓	₩ <u> </u>	nstalled:	l for any of the above Tremie	1 0 1
ource of water (attach analysis):				Tremie pumped	
-				Gravity	
	555 5	×	nita caali	Bentonite granules	
ntonite seal, top855 .4 ft. MSL or	30 fr.		$11/4$ in. $\Box 3/8$ in. $\Box 1/2$	-	
				Other [
Feet sand, top NA ft. MSL or	ft., 🔪 🧖	7. Fine s	and material: Manufactur		
		획∕∕	NA		
ilter pack, top 854 9 ft. MSL or	3.5 ft.	Volum	ne added	ft ³	
		8. Füter	pack material: Manufactur	rer, product name and m	esh size
	<u>4.8</u> ft 1		<u>u Claire #20 Fli</u>	<u>nt Sand</u>	
	10.0		ne added <u>4.2</u>	ft ³	
Well screen, bottom 838 6 ft. MSL or		9. Well o	-	ed PVC schedule 40	
838 6 4 1/51			Flush thread	ed PVC schedule 80	
Inter pack, bottom838 6 ft. MSL or	13.0		- Sch 10 D	Other E	ן <u>אי</u> ין ב
rehole, bottom836 .9 ft. MSL or	21.5 ft.		n material: <u>SCh 40 P</u>	Factory cut	
		Suter	n type:	Continuous slot	
		a l		Other D	
		Manuf	facturer Northern A	ir	
D. well casing _ 2 38 in.		Slot s	ize:	0. ()10 in.
_ •			d length:		. <u>5.0</u> ft.
. D. well casing 20 in.		`11. Backf	fill material (below filter par		
	والمارك والمراجع المراجع والمراجع والمراجع المراجع والمراجع		Natural Colla	pseOther	<u>ମ</u>
reby certify that the information on thi		rrect to the best	of my knowledge.	· · · · · · · · · · · · · · · · · · ·	
sultre	Firm Warzyn	Engineering I	nc		
	-		nc.	Code. In accordance y	vith

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se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with 144, Wis Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance

e of Wisconsin artment of Natural Resources		MC	DNITORING WELL CONSTRUCTION m 4400-113A 8-89
	Grid Location		Well Name
sconsin Air National Guard		fr. IN. IS.	W9
ility License, Permit or Monitoring Number		ft. _ E. _ W.	Wis. Unique Well Number DNR Well Number
e of Well Water Table Observation Well 🖾 11	Section Location	<u></u>	Date Well Installed
Piezometer [] 12	SE 1/4 of NW 1	/4 of Section <u>29</u> ,	$\frac{0}{m}\frac{2}{m}\frac{9}{d}\frac{9}{d}\frac{9}{v}\frac{9}{v}$
istance Well Is From Waste/Source Boundary	T <u>8</u> N.R <u>10</u>		Well Installed By: (Person's Name and Firm)
ft(from UST potential source)	Location of Well Relative		Kevin Swanson
Tell A Point of Enforcement Std. Application?	Upgradient	Sidegradient	
⊠Yes □No	Downgradient	Not Known	<u>Warzyn Engineering Inc.</u>
Protective pipe, top elevation85886_ f	i. MSL	1. Cap and lo	
Vell casing, top elevation _ <u>858</u> 73 f	t. MSL	2. Protective a. Inside di	ameter: <u>3.9</u> in
Land surface elevation _ 856 7 f	MSL	b. Length:	<u>_5</u> . <u>1</u> ft
urface seal, bottom855.7 ft. MSL or	1.0	c. Materia	
			Other 🛛 💆 🗖
12. USCS classification of soil near screen:	1 Lenge		nal protection? 🛛 Yes 🖾 No
$\Box GP \Box GM \Box GC \Box GW \Box SW \Box SP \Box SM \Box SC \Box ML \Box MH \Box CL \Box CH$			lescribe:
Bedrock		3. Surface sea	al: Bentonite 🗖 30
.3. Sieve analysis attached?	√e \ ∅		Soil Concrete C 01
Drilling method used: Rotary	\	4. Material b	etween well casing and protective pipe:
Hollow Stem Auger	41		Bentonite 🖸 30
			Annular space seal 🔀
			Other 🛛 💹
Drilling fluid used: Water 02 Air		5. Annular s	
Drilling Mud 🔲 03 None 🖾	99	闘L	os/gal mud weight Bentonite-sand slurry 🔲 35
	1 669		os/gal mud weight Bentonite slurry 🏼 3 1
Drilling additives used? 🛛 Yes 🖾 1	NO 800		Bentonite Bentonite-cement grout 🛛 50
Describe			Ft ³ volume added for any of the above
Source of water (attach analysis):		How instal	
			Tremie pumped 🔲 0 2
			Gravity 🖾 0.8
052 24 500	лг. ²	6. Bentonite	
entonite seal, top _ 853 _ 2 ft. MSL or	. <u>5</u> .2 fr.		in. $\Box 3/8$ in. $\Box 1/2$ in. Bentonite pellets $\Box 32$
Fine sand, top NA ft. MSL or	. <u>3 5</u> ft.	7. Fine sand	material: Manufacurer, product name and mesh size
. rilter pack, top 852 7 ft. MSL or	4 0 ft.	Volume ad	NA
			material: Manufacturer, product name and mesh size
. 'ell screen, top8508 ft. MSL or	<u>59</u> ft	Eau C	laire #20 Flint Sand
Q11 5	15.2.	Volume ac	
Well screen, bottom ft. MSL or		9. Well casi	-
841 5	15.2 . 15		Flush threaded PVC schedule 80 24
ilter pack, bottom $\frac{841}{5}$ ft. MSL or		10 Screen m	uterial: <u>Sch 40 PVC</u>
"orehole, bottom ft. MSL or	18 5 ft.	Screen typ	
			Continuous slot [] 01
Borchole, diameter <u>8</u> 2 in.		82 <u> </u>	Other 🛛
		Manufactu	rer Northern Air
D.D. well casing <u>238</u> in.	•	Slot size:	0.010 in.
		Sicued les	
I.D. well casing 20 in.		[\] 11. Backfill π	None 🗆
	فالقافية والمتجلة المتكافف ومراجع والمتحد والمتحد		Natural Collapse Other 🖾
reby certify that the information on thi	s form is true and c	crrect to the best of r	ny knowledge.
gnature	Warzyn	Engineering Inc.	
·			h N2 141 Wie Adm Code In accordance with

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se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with

State of Wisconsin Department of Natural Resources

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MONITORING WEL	L DEVELOPMENT
Form 4400-113B	8-89

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acility/Project Name		Weil Name		
Wisconsin Air National Guard	d	1	<i>\</i> 9	
icense, Permit or Monitoring Number		Wis. Unique Well Nur	mber DNR We	il Number
1. Can this well be purged dry?	🗆 Yes 🖾 No	11. Depth to Water	Before Development	After Development
. Well development method surged with bailer and bailed	4 1	(from top of well casing)	<u>9.81</u> ft.	<u> </u>
surged with bailer and pumped surged with block and bailed surged with block and pumped	☑ 61 □ 42 □ 62	Date	$\frac{03}{m m} / \frac{26}{d d} / \frac{90}{y y}$	$\frac{03}{m m} \frac{26}{d d} \frac{90}{y y}$
surged with block, bailed and pumped compressed air bailed only	7 0 2 0 1 0	Time	4:00 a.m.	4 : 55 a.m.
pumped only pumped slowly		12. Sediment in well bottom	<u>00</u> inches	
Cther	<u>55</u> min.	13. Water clarity	Clear 10 Turbid 15 Describe)	Clear 🖸 20 Turbid 🗖 25 (Describe)
. Depth of well (from top of well casisng)	$- 17 \cdot 0 \text{ ft.}$			
5. Inside diameter of well	<u>2 00</u> in.			· · · · · · · · · · · · · · · · · · ·
5. Volume of water in filter pack and well casing	<u>6.5_gal.</u>	Fill in if drilling fluid.	s were used and well is a	
7. Volume of water removed from well	<u>100. 0</u> gal.	14. Total suspended		
8. Volume of water added (if any)	<u> 0 . 0</u> gal.	solids		
9. Source of water added None		15. COD .	mg/l	mg/l
10. Analysis performed on water added? (If yes, attach results)	CIYes CINo	1		1
Additional comments on development:		, <u>, , , , , , , , , , , , , , , , </u>		
			-	
Well developed by: Person's Name and Firm		I hereby certify that the of my knowledge.	he above information is	true and correct to the best
Name:		Signature:		

e of Wisconsin partment of Natural Resources		MC	NITORING WELL CONSTRUCTIO m 4400-1132. 8-8	
				7
	Location		Well Name	
sconsin Air National Guard			W10 Wis. Unique Well Number DNR	
ility License, Permit or Monitoring Number		_ ft. 🗆 E. 🗆 W.	MR. Onique Weil Number Divik	Well Number
	tion Location	·	Date Well Installed	
			Date well installed $\frac{02}{m}$ / $\frac{08}{d}$	<u> / 9 0</u>
Piezometer 12 S Jistance Well Is From Waste/Source Boundary	E 1/4 of <u>NW</u> 1/4 c	f Section 29 .	m m d d Well Installed By: (Person's Name a	V V
	<u>8</u> N. R <u>10</u> B	ΕŪW	Kevin Swanson	nd rum)
ft(from piping potential source Loc Vell A Point of Enforcement Std. Application?	ation of Well Relative to	Waste/Source		
Yes □ No		Sidegradient Not Known	<u>Warzyn Engineering In</u>	<u>c.</u>
A. Protective pipe, top elevation	SL	1. Cap and lo		Yes 🛛 No
: Vell casing, top elevation _ 859 . 34 ft. M	SL	2. Protective a Inside di		2 0 .
	171	/		<u>_3.9</u> in. _ <u>5.1</u> ft.
Land surface elevation _ <u>857</u> 5 F M	SL _	b. Length:		
Surface seal, bottom856 .5 ft. MSL or 1.0	n. 75	C. Materia		Steel 🖾 04 Other 🗖 🖄
12. USCS classification of soil near screen:		d Addition		Yes 🖾 No
	A South I	\		
			D	tonite 🛛 30
C Bedrock		3. Surface sea	447	$\frac{1}{10000000000000000000000000000000000$
13. Sieve analysis attached? 🔲 Yes 🛛 No		\backslash	A 13	ncretz Li VI Other 52 ∭ ∎
Drilling method used: Rotary D 50		1 Material b	tween well casing and protective pipe	
Hollow Stem Auger 🖾 4 1				tonite 🛛 30
Other D			Annular space	
			-	Other 🛛 🚿
1 Drilling fluid used: Water □ 02 Air □ 01		5. Annular sy	······································	
Drilling Mud 03 None 299			s/gal mud weight Bentonite-sand	
			cs/gal mud weight Bentonite s	
1 Drilling additives used? 🖸 Yes 🖾 No			Bentonite Bentonite-cement	
		0.7	Ft ³ volume added for any of the a	
Describe	_	How instal		remie 🔲 01 🛙
1 Source of water (attach analysis):		••••	Tremie pur	
			•	ravity 🖾 0.2
	 _			
854 0 ·		6. Bentonite		
E lentonite seal, top 854.0 ft. MSL or 3.2			in. $\Box 3/8$ in. $\Box 1/2$ in. Bentonite p	
NA SAGE			(
Fine sand, top NA ft. MSL or	$\frac{5}{2} ft.$	7. Fine sand	material: Manufacturer, product nam NA	e and mesh size
i. rilter pack, top853 5 ft. MSL or4		Volume ad	dedft ³	
		8. Füter pack	material: Manufacturer, product nam	ie and mesh size 📕
i Vell screen, top $\frac{851}{4}$ ft. MSL or $\frac{6}{2}$		Eau C	laire #20 Flint Sand	
-		Volume ad		
Well screen, bottom9 ft. MSL or		9. Well casi	ng: Flush threaded PVC schedul	le 40 🖾 23 _
			Flush threaded PVC schedul	le 80 🔲 24
"ilter pack, bottom _ 841 9 ft. MSL or _ 15	6 ft.	<u> </u>	(Other 🖬 📴 🖡
		10. Screen ma	ucrial: <u>Sch 40 PVC</u>	
Borchole, bottom _ <u>840</u> 0 ft. MSL or _ <u>17</u> .	5 il.	Screen ty	-	ry cut 🖾 11
			Continuou	us slot 🔲 01
Borehole, diameter _ 8,2 in.		`		Other 🛛 🔯
		Manufactu	rer Northern Air	
O.D. well casing _ 2 38 in.		Slot size:		0.010 in.
معند من <i>ابن</i> ے _م یک سے عن ²		Sicated les	ngth:	_ <u>9</u> .5 ft. =
I. D. well casing 2.0 in.		∖11. Backfill π	aterial (below filter pack):	None
			Natural Collapse	Other 🖾
preby certify that the information on this fo	rm is true and corre	ect to the best of r		
ignature	Firm			
-	Warzyn Er	ngineering Inc.	· · · · · · · · · · · · · · · · · · ·	

se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with in: 144, Wis Stats., failure to file this form may result in a forfeinere of net less than \$10, nor more than \$5,000 for each day of violation. In accordance

e Wisconsin 2 arunent of Natural Resources		Mi Fo	ONITORING WELL CON rm 4400-113A	ISTRUCTION 8-89	
acility/Project Name	Grid Location		[Well Name		
Vis onsin Air National Guard		ft. 🗆 N. 🗆 S.			
hty License, Permit or Monitoring Number			W11 Wis: Unique Well Number	DNP Well Mumi	
hty Elecide, I child of Moldaring I called		ft. 🗖 E. 🗖 W.	THE OUNDER THE THE	I DIAK WELL NUME	व्यः
Well Water Table Observation Well X 11	Section Location		Date Well Installed		
			Dale Wen Installed	<u>02 / 0 8 / 9 0</u>	
Piezometer 12.	<u>SE</u> 1/4 of <u>NW</u> 1/4	of Section 29 ,			
	T <u>8</u> N.R <u>10</u>	X E 🗆 W	Well Installed By: (Pers	on s Name and Firm)	
5 t(from piping potential sour	Abcation of Well Relative to	o Waste/Source	<u>Kevin Swanson</u>		_
A Point of Enforcement Std. Application?	Upgradient Upgradient	Sidegradient	Hanaya Daginas	udua Tas	
Yes No	🖸 Downgradient	□ Not Known	<u>Warzyn Enginee</u>		
. Pletective pipe, top elevation859_05_f	L MSL	1. Cap and lo		🛛 Yes 🖸 No	io i
858 86 f	t. MSL	2. Protective	- •	• •	
	·····	a. Inside di		_ <u>3. 9</u> i	
Lass surface elevation $\frac{857 0}{100}$ f	- MSL	b. Length:		_ <u>5</u> . <u>1</u> i	fL
) mace seal, bottom 856 _ 0 ft. MSL or _ 1		c. Materia	4:	Steel 🖾 0	04
				Other 🛛 🚊	
12. USCS classification of soil near screen:		d. Additio	nal protection?	🛛 Yes 🖾 No	6
GP GM GC GW W SW SP	$\langle \langle \chi \rangle$	If yes, o	describe:		
SM DSC DML DMH DCL DCH		3. Surface se	.].	Bentonite 🗖 3	30
Bedrock				Concrete 🛛 0	01
13. 💼 ve analysis attached? 🔲 Yes 🖾 M			Soil	Other 🛛 🛞	
a Illing method used: Rotary	50 \ 👹 👹	4. Material b	etween well casing and pro		
Hollow Stern Auger	¥1 \ 👹 🛱			Bentonite 🛛 3	30
	41 01 99 %0	4	فر	mular space seal	
					872 1
1 Drilling fluid used: Water 🔲 02 Air 🔲	01 👹 👹	5. Annular s	Cace seal: G		33
Drilling Mud 🔲 03 None 🖾	99 🛛 🖾 🛱		bs/gal mud weight Ben		35.
		Li	bs/gal mud weight		3 i
🕡 🖬 illing additives used? 🔲 Yes 🗔 Y	40 🚟 🚟	Ľ	6 Bentonite Bento		50
		0.7			50
scribe	📓 🛱	How instal		· · · ·	01
urce of water (attach analysis):			101.		
_					02
		1		, _ 0	C 3
052 7	2	6. Bentonite			33
entonite seal, top853 7 ft. MSL or	2.2 ft. 🛛 🖾		in. $\Box 3/8$ in. $\Box 1/2$ in.	Bentonite pellets 🖾 3	32
-			۰ •	Other 🛛 💆	
Fi sand, top ft. MSL or	<u>3.3</u> ft.	7. Fine sand	material: Manufacturer, J NA	product name and mesh si	ize
	3.8 ft.	Volume ad	lded	ft ³	
			k material: Manufacturer,	product name and mesh :	size
I screen, top850_8 ft. MSL or	6 2 ft_		laire #20 Flint	-	
		Volume ac		<u>500,10</u>	
Wesscreen, bottom 841 5 ft. MSL or	15 5 ñ.	9. Well casi		VC schedule 40 🖾 2	23
			-		24
lter pack, bottom841 5 ft. MSL or	15.5 年 、 100				24
lter pack, coulom in Mob of			Sch 10 DVC		일 <u>수</u> : 중 52
Behole, bottom839 .0 ft. MSL or	18.0 %		aterial: <u>Sch 40 PVC</u>		<u> </u>
2^{-3} chole, bottom -339.0 ft. MSL or -2	·••·•	Screen ty	pe:	• •	11
		1		Continuous slot	
$b_{archole, diameter} = 8.2$ in.		\	Noutton A.	-	×
			rer Northern Air	0.010	1:-
		Slot size:		0.010	
		Sicted les	-		≝ II.
. 10. well casing <u>20</u> in.		`11. Backfill n	naterial (below filter pack):		
	محتجب از دار با البران استانی روی می از این از ا	· · · · · · · · · · · · · · · · · · ·	Natural Collapse	e Other 🖾	
I reby certify that the information on this		rect to the best of r	ny knowledge.		
grune	Firm	Inginganin- Tr-			
		Ingineering Inc.			
it e complete and return both sides of this form as	required by chs. 144, 147 a	nd 160, Wis. Stats., and o	ch. NR 141, Wis. Adm. Co	de. In accordance with	

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44. Wis Stars, failure to file this form may result in a forfeiture of not less than 510, nor more than \$5,660 for each day of violation. In accordance

State of Wisconsin Department of Natural Resources

MONITORING WELL DEVELOPMENT Form 4400-113B 8-89

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Facility/Project Name	·····	Weil Name		······	
Wisconsin Air National Guar	`d		W11		
License, Permit or Monitoring Number		Wis. Unique Well Number DNR. Weil Number			
1. Can this well be purged dry?	□Yes ᅜ №	11. Depth to Water	Before Development	After Development	
2. Well development method surged with bailer and bailed surged with bailer and pumped surged with block and bailed surged with block, and pumped surged with block, bailed and pumped compressed air bailed only pumped only pumped slowly Other	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	 11. Depin to water (from top of well casing) Date 12. Sediment in well bottom 13. Water clarity 	$\frac{03}{m m} / \frac{26}{d d} / \frac{90}{y y}$ - 2:50 $\square a.m.$	$-10 \cdot 23 \text{ ft.}$ $\frac{03}{m} \frac{26}{d} \frac{90}{y} \frac{90}{y}$ $-3 : 35 \implies \text{a.m.}$ $-0 \cdot 0 \text{ inches}$	
3. Time spent developing well	$\underline{-45}_{min.}$		Turbid 121 15 (Describe) Very	Clear 🛛 20 Turbid 🔲 25 (Describe)	
4. Depth of well (from top of well casisng)	<u>18</u> .0_ft.				
5. Inside diameter of well	<u>2_00_</u> in.				
6. Volume of water in filter pack and well casing	<u>7.2_gal.</u>	Fill in if drilling fluid	s were used and well is	at solid waste facility:	
7. Volume of water removed from well	<u>100. 0 gal.</u>]	1	
8. Volume of water added (if any)	<u> </u>	14. Total suspended solids	mg/	l mg/l	
9. Source of water added None		15. COD	mg//	l mg/l	
10. Analysis performed on water added? (If yes, attach results)	Yes No	1		I	
Additional comments on development:	- <u></u>				

 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:
 William Bachus

 Firm:
 Warzyn Engineering Inc.

NOTE: Shaded areas are for DNR use only. See instructions for more information.

Wisconsin Timent of Natural Resources		MONTTORING WELL CONSTRUCTION Form 4400-113A. 8-89
scility/Project Name Grid La		01:-11 X(
	_	Well Name
pnsin Air National Guard	fr. о N. о s.	
i ity License, Permit or Monitoring Number	ft. □ E. □ W	Wis, Unique Well Number DNR Well Number
- Well Water Table Observation Well 🖾 11 Section	n Location	Date Well Installed
Piezometer 🛛 12 SF	_ 1/4 of 1/4 of Section 29	$\frac{02}{mm} \frac{07}{9} \frac{9}{9} \frac{0}{9}$
isteres Wall Is From Waste/Source Boundary		Well Installed By: (Person's Name and Firm)
f from UST potential source)	<u>N.R. 10 DECIW</u>	Kevin Swanson
Location Location	on of Well Relative to Waste/Source	KEVIII SWAIISUII
	Upgradient 🖸 Sidegradient	
🖾 Yes 🗖 No 🛛	Downgradient 🔲 Not Known	Warzyn Engineering Inc.
Prective pipe, top elevation _ 859 . 42 ft. MSL	1. Cap and	d lock? 🛛 Yes 🗆 No
		ive cover pipe:
ell casing, top elevation _ 859 20 ft. MSL		e diameter: <u>3.9in</u>
•••		
La surface elevation _ <u>857</u> . 3 f MSL		
956.2 c xor 1.0 c	c. Mate	rial: Steel 🖾 04
urace seal bottom856 .3 ft MSL or1.0 ft		Other 🗖 🖄
2. USCS classification of soil near screen:	d Add	itional protection?
		s, describe:
	3. Surface	seal: Bentonite 🔲 30
\		Concrete 🛛 01
3. Eve analysis attached? 🗆 Yes 🖾 No		Soil Other 🛛
s alling method used: Rotary 50	4. Materia	l between well casing and protective pipe:
Hollow Stem Auger 🖾 41		Bentonite \Box 30
Other		Armular space seal 🕅
		-
		Other 🛛 🔛
5 Trilling fluid used: Water 02 Air 01	5. Amula	r space seal: Granular Bentonite 🛛 33
Drilling Mud 🗖 03 None 🖾 99		Lbs/gal mud weight Bentonite-sand shurry 🔲 35
		Lbs/gal mud weight Bentonite slurry 🛛 31
5 willing additives used? 🖸 Yes 🖾 No		% Bentonite Bentonite-cement grout [] 50
scribe		
7 urce of water (attach analysis):	How in	stalled: Tremie 🖸 01
/ murce of water (attach analysis):		Tremie pumped 🔲 02
		Gravity 🖾 08
	6. Benton	
ntonite seal, top _ 8538 ft. MSL or 3.5		1/4 in. \Box 3/8 in. \Box 1/2 in. Bentonite pellets \bigtriangledown 3.2
_		Other 🛛 💆
Fi sand, top NA ft. MSL or	ft., 7. Fine sa	nd material: Manufacarer, product name and mesh size
	ft. 6. Benton	NA
ruter pack, top8533 ft. MSL or4_0	ft. Volume	e added ft ³
	8. Filter p	ack material: Manufacturer, product name and mesh size
screen, top _ <u>851 _ 7</u> ft. MSL or _ <u>5 6</u>	fi Eau	Claire #20 Flint Sand
		e added 2.7 ft ³
We screen, bottom 842 3 ft. MSL or 15 0		
We screen, bottom		-
		Flush threaded PVC schedule 80 🔲 24
ter pack, bottom _ 842_ 3 ft. MSL or _ 15.0		Other 🗖 🖉
	10 Screen	material: <u>Sch 40 PVC</u>
Γ chole, bottom8418 ft. MSL or155	ft. Screen	
Barzhole, diameter <u>8.2</u> in.	· · · · · · · · · · · · · · · · · · ·	Other 🛛 🗾
	🔪 Малиfa	carer <u>Northern Air</u>
.D. well casing _ 2.38 in.	Slot siz	ze: 0.010 in.
	Sicued	llength: <u>9</u> .4ñ.
	``	ll material (below filter pack): Nore
I well casing 2.0 in.		
1eby certify that the information on this form		t my knowledge.
in ne	Firm	
	Warzyn Engineering In	IC.
······································	11 14 144 147 11(0)	A - L MO 141 MI - A 1 - Code la appondence with

: complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with Ad Wis Stats failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,660 for each day of violation. In accordance State of Wisconsin Department of Natural Resources

MONITORING '	WELL	DEVEL	OPMENT
Form 4400-113B			8-89

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1507	3			
Facility/Project Name		Weil Name		
Wisconsin Air National Guar	d		w12	
License, Permit or Monitoring Number		Wis. Unique Well Nur	mber DNR We	eil Number
· · · · · · · · · · · · · · · · · · ·			I	<u>г</u>
1. Can this well be purged dry?	CiYes KiNo		Before Development	After Development
		11. Depth to Water (from top of	10 00 0	10
2. Well development method		well casing)	-10.60 ft.	-10.64 ft.
surged with bailer and bailed		wen casing)		
surged with bailer and pumped	☑ 6 1		00 00 00	
surged with block and bailed	4 2	Date	03/26/90	$\frac{0}{m}\frac{3}{m}\frac{26}{d}\frac{90}{y}$
surged with block and pumped	62	1	mm dd yy	mm dd yy
surged with block, bailed and pumped compressed air	□ 70 □ 20	Time	3. 40 a.m.	$\underline{4}: \underline{10} \ \underline{\square} \ \underline{a.m.}$
bailed only	\square 10			
pumped only		12. Sediment in well	0.0 inches	0.0 inches
pumped slowly		bottom		
Cther		13. Water clarity	Clear 🔲 10	Clear Z 20
			Turbid D 15	Turbid 🔲 25
3. Time spent developing well	<u>30 min.</u>		(Describe)	(Describe)
4. Depth of well (from top of well casisng)	<u>17.0_ft</u>		very	
5. Inside diameter of well	2 <u>00_</u> in_			
6. Volume of water in filter pack and well	5 0			1
casing	<u>5.8 gal.</u>			
	100 0 gal.	Fill in it drilling fluid	s were used and well is	at solid waste facility:
7. Volume of water removed from well	gal.			
	0.0	14. Total suspended	mg/	1 mg/l
8. Volume of water added (if any)	0_0 gal.	solids		
9. Source of water added Nor	ie	15. COD	mg/	1 mg/1
			1	
 Analysis performed on water added? (If yes, attach results) 	🛛 Yes 🔲 No			
(II yes, auach results)				
Additional comments on development				

,

Additional comments on development:

		I hereby certify that the above information is true and correct to the best of my knowledge.
Name:	William Bachus	Signature:
Firm:	Warzyn Engineering Inc.	Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information.

f Wisconsin partment of Natural Resources				ITORING WELL CON 4400-113A	ISTRUCTION 8-89		
¹ 2c: y/Project Name , Onsin Air National Guard	Grid Location			ell Name W13			
Ility License, Permit or Monitoring Number		$ \underbrace{ft. \Box N.}_{ft. \Box E.} $	W	is. Unique Well Numbe	r DNR Wel	l Nur	mber
TWell Water Table Observation Well 🛛 11 Piezometer	Section Location <u>SE</u> 1/4 of <u>NW</u> 1/	4 of Section	1	ate Weil Installed	$\frac{02}{m} \frac{0}{m} \frac{1}{2} 1$		1999 - 1977
Jistance Well Is From Waste/Source Boundary 5 :(from UST potential source)	T 8 N. R 10 Location of Well Relative	E W to Waste/Source	w	ell Installed By: (Pers Kevin Swanson			
A Point of Enforcement Std. Application?	 Upgradient Downgradient 	Sidegradie		<u>Warzyn Enginee</u>	ring Inc.		
A. F tective pipe, top elevation861.29_ ft	MSL		Cap and lock?		🛛 Yes		No
? Well casing, top elevation 861_07_ft	. MSL	342× /	Protective cov a. Inside diama	••		3 9	9_ in.
Led surface elevation <u>859 1</u> f	MSL	i	b. Length:		-	5_1	l_ ft.
; urface seal, bottom_ 858 1 ft. MSL or	1_0 ft.		c. Material:		Steel Other	_	04
12. LISCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CL CH Bedrock			d. Additional If yes, desc Surface seal:	•	Bentonite	Ø	
13. eve analysis attached?	6 \ 🖉			Soil	Concrete Other		01
: Enilling method used: Rotary 5	0 \	∰ <u>\</u> 4.1	Material betw	een well casing and pro			
Hollow Stem Auger 🛛 4 Other 🗖					Bentonite		30
**************************************					Other		
1 Drilling fluid used: Water □ 02 Air □ 0 Drilling Mud □ 03 None ⊠ 9		5	Annular space		ranular Bentonite		33
				al mud weight Ben al mud weight			35 [°] 31
1 Drilling additives used? 🔲 Yes 🖾 N				entoniteBento	nite-cement grout		50
escribe	📓		0.7 How installed:	_Ft ³ volume added for	any of the above Tremie	-	01
! burce of water (attach analysis):	b	3. 4.1 5.					02
				_	Gravity	—	08
entonite seal, top8556 ft. MSL or		61 61	Bentonite seal	l: B □3/8 in. □1/2 in.	Bentonite pellets	₽	32
. Fersand, top NA ft. MSL or	3 5 ft. ft. ft. ft. 5.5 ft.	7.1	Fine sand man	terial: Manufacairer, j NA	proviuct name and p		
<u>ilt</u> er pack, top855_1 ft. MSL or	4 0 ft.	SX /	Volume added	ـــــــــــــــــــــــــــــــــــــ	ft ³	-	
ell screen, top853_6 ft. MSL or	<u>5 5</u> ft		<u>Eau Cla</u>	aterial: Manufacturer, ire #20 Flint	Sand	mest -	h size
W screen, bottom839 1 ft. MSL or	20 0 ft.		Volume added Well casing:	Flush threaded P	ft ³ PVC schedule 40 PVC schedule 80		23 24
ilter pack, bottom839 1 ft. MSL or2	20 0 fr.			••	Other		22
chole, bottom ft. MSL or	23_0 ft.		Screen materi Screen type:	iai: <u>Sch 40 PVC</u>	Factory cut Continuous slot		<u> </u>
Benehole, diameter <u>82</u> in.		a			Other		
0.D. well casing238 in.		\mathbf{X}	Manufacturer Slot size: Slotted length	<u>Northern Air</u>	0		0_ in. 15ft.
. Well casing 2.0 in.		``	Backfill mater	rial (below filter pack): tural Collapse	None		
reby certify that the information on this	form is true and co	rrect to the b	pest of my	knowledga.			
igi we	1	Engineerir	-	NP 141 W:- Ad- Co	de la accordance	- 11-1 <i>1</i>	

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i se complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with

State of Wisconsin Department of Natural Resources

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Facility/Project Name		Weil Name		
Wisconsin Air National Gua	rd	WI	.3	
License, Permit or Monitoring Number		Wis. Unique Weil Number DNR Weil Number		il Number
1. Can this well be purged dry?	⊡Yes ⊠ No	11. Depth to Water	Before Development	After Development
2. Well development method surged with bailer and bailed	4 1	(from top of well casing)	<u>12.52</u> _ft.	<u>12</u> . <u>54</u> ft.
surged with bailer and pumped surged with block and bailed surged with block and pumped	☑ 6 1 □ 4 2 □ 6 2	Date	$\frac{03}{m m} / \frac{26}{d d} / \frac{90}{y y}$	$\frac{03}{m m} / \frac{26}{d} / \frac{90}{y y}$
surged with block, bailed and pumped compressed air bailed only	□ 70 □ 20 □ 10	Time	<u>10</u> :00p.m.	<u>10 : 50 </u>
pumped only pumped slowly		12. Sediment in well bottom	<u>0</u> .0 inches	
Other 3. Time spent developing well	_ 🗆 🛄	13. Water clarity	Clear 🖸 10 Turbid 🖸 15 (Describe)	Clear 20 Turbid 25 (Describe)
4. Depth of well (from top of well casisng)				slight
5. Inside diameter of well	200 in.			
6. Volume of water in filter pack and well casing	<u>8.0</u> gal.	Fill in if drilling fluids	were used and well is	at solid waste facility:
7. Volume of water removed from well	<u>80</u> . <u>0</u> gal.			
8. Volume of water added (if any)	<u> </u>	14. Total suspended solids	mg/	mg/l
9. Source of water added None		15. COD	mg/	mg/l
10. Analysis performed on water added? (If yes, attach results)	QY⇔ DN₀		I .	1
Additional comments on development:				·

Well develo	ped by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name:	William Bachus	Signature:
Firm:	Warzyn Engineering Inc.	Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information.

f Wisconsin artment of Natural Resources			ONITORING WELL CONSTRUCTION
acility/Project Name	Grid Location		[Well Name
Consin Air National Guard			
ity License, Permit or Monitoring Number	<u> </u>	fr.	W14
my License, Fernar of Monubring Number		fr. 🗆 E. 🗆 W.	Wis. Unique Well Number DNR Well Number
·- of Well Water Table Observation Well 🛛 11	Section Location		Date Well Installed 02 /1 3 /9 0
Piezometer		4 of Section 29,	
istance Well Is From Waste/Source Boundary			Well Installed By: (Person's Name and Firm)
f (source)	T <u>8</u> N.R <u>10</u>		Kevin Swanson
A Point of Enforcement Std. Application?	Location of Well Relative	to Waste/Source	
X Yes D No	Downgradient	□ Not Known	Warzyn Engineering Inc.
	and the second		
Fitzective pipe, top elevation863,87_ f	t. MSL	1. Cap and lo	
863 66 g	t. MSL	2. Protective	•••
	1	a. Inside d	iameter: <u> </u>
. Land surface elevation 861 7 f	· MSL	b. Length:	<u>5,1</u> fr.
		c. Materia	l: Steel 🖾 04
urface seal, bottom <u>860</u> ft. MSL or <u>1</u>	<u> </u>		Other 🗖 就
2. USCS classification of soil near screen:		d Additio	nal protection?
		14 \	describe:
SM DSC DML DMH DCL DCH			
		3. Surface se	al: Bentonite 🛛 30
	. \ 🕅		Concrete 0 01
	° \ 🖼	× · · · · · · · · · · · · · · · · · · ·	Soil Other 🛛
illing method used: Rotary		4. Material b	etween well casing and protective pipe:
Hollow Stem Auger 🖾 4			Bentonite 🔲 30
Other 🖸 :			Annular space seal 🕅
			Other 🗆 🔛
Drilling fluid used: Water 🔲 02 Air 🔲	01	5. Annular s	
Drilling Mud 🔲 03 None 🖾	99 🖾		
		<u></u>	
🕴 🖬 rilling additives used? 🔲 Yes 🗔 Y	5	쪐 L	bs/gal mud weight Bentonite slurry 🛛 3 1
	~ 👹	× 9	6 Bentonite Bentonite-cement grout D 50
escribe		<u></u>	Ft ⁵ volume added for any of the above
		4. Material b 5. Armular sp Li <u>1.1</u> How instal	lled: Tremie 🗖 01
burce of water (attach analysis):		œ	Tremie pumped 🔲 02
			Gravity 🖾 08
		6. Bentonite	. .
			55
entonite seal, top -855.7 ft. MSL or $-$			in. $\Box 3/8$ in. $\Box 1/2$ in. Bentonite pellets $\Box 32$
Fee sand, top ft. MSL or	ft \	6. Bentonite	material: Manufacturer, product name and mesh size
	6.0 ft.		6
rilter pack, top855 2 ft. MSL or	<u>6</u> ,5 ft. \	Volume ac	ided ft ³
		8. Füter pacl	k material: Manufacturer, product name and mesh size
11 screen, top853_3 ft. MSL or	8.4 ft_ \	🗄 🖊 Eau (laire #20 Flint Sand
·		Volume a	
We screen, bouom _ 839 1 ft. MSL or	22 6 ft.	9. Well casi	ng: Flush threaded PVC schedule 40 🛛 23
	\ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!		Flush threaded PVC schedule 80 [24]
Iter pack, bollom838 2 ft. MSL or	23 5 fr 、入管		Other 🛛 🦉
rehole, bottom ft. MSL or	24 0 6		aterial: <u>Sch 40 PVC</u>
rehole, bottom n. MSL or	<u></u>	Screen ty	
			Continuous slot 🔲 01
Borchole, diameter _ 8,2 in.			Other 🛛 🔛
		Manufact.	rer Northern Air
D. well casing _ 2 38 in.		Slot size:	0. Q10 in.
		Sicued le	ngth: <u>14.2</u> ft.
D. well casing 2.0 in.		11. Backfill n	naterial (below filter pack): None
		· · ·	Natural Collapse Other 🖾
ireby certify that the information on this	form is true and co	rrect to the best of r	
	Firm		
3. ure		Engineering Inc.	
a complete and return both sides of this form as			ch. NR 141, Wis. Adm. Code. In accordance with

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e complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with (44 Wis Stats failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance State of Wisconsin Department of Natural Resources

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Facility/Project Name		Weil Name	· · · · · · · · · · · · · · · · · · ·		
Wisconsin Air National Guard		W14			
License, Permit or Monitoring Number		Wis. Unique Well Nur	nber DNR We	il Number	
1. Can this well be purged dry?	⊡Yes ⊠iNo	11. Depth to Water	Before Development	After Development	
2. Well development method surged with bailer and bailed surged with bailer and pumped surged with block and bailed surged with block, and pumped surged with block, bailed and pumped compressed air bailed only pumped only pumped slowly Cther	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	(from top of well casing) Date Time 12. Sediment in well bottom 13. Water clarity		$\frac{03}{m m} \frac{26}{d d} \frac{90}{y y}$ $\underline{10} : \underline{40} \square p.m.$	
3. Time spent developing well	<u>40</u> min.		(Describe)	(Describe)	
4. Depth of well (from top of well casisng)	<u>255 ft</u> .		very turbid	no_turbidity	
5. Inside diameter of well	<u>_2.00</u> in.				
6. Volume of water in filter pack and well casing	<u> </u>	Fill in if drilling fluid.	s were used and well is	at solid waste facility:	
7. Volume of water removed from well	<u>100</u> . <u>0</u> gal.		{		
8. Volume of water added (if any)	<u> 0 . 0 gal.</u>	14. Total suspended solids	mg/	mg/l	
9. Source of water added None		15. COD	mg/l	mg/l	
10. Analysis performed on water added? (If yes, attach results)	Yes No	1		1	

Additional comments on development:

Weil devel	oped by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name:	William Bachus	Signature:
Firm:	Warzyn Engineering Inc.	Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information.

		Environ Founda Drilling,	mental & tion Inc.						πιε 15 F2	073
5	A		Madison, WI 53704	W	ELL DEVELO	PMENT				
	ROJEC LOCATI	CT: Trai	ux Air	National	Guard		JOI DAI	8 # [#] 0350 TE: Z-7-9	0,z-	13-70
	ELL #	D T W PRE-DEV	D T W POST-DEV	D T B PRE-DEV	DTB POST-DEV	VOL TAKEN	COLOR	TURBIDITY	ODOR-	
)	3	13'3"	13'4"	zz'0"	Z1 10"	16 gal.	Lt. Br. Lt. Br	Turbid Turbid	None	į Hr.
	z	11'6"	11' 6'2"	17'4"	ידו 4"	15.3g.	Brown	Turb.d	None	1/2 Hr.
		11'3	11'2"	י"סו רו	די 8"	15gal	Lt. Br. Lt. Br.	Turbid	None	3/4 Hr.
-	lo	11'4"	11`4"	17`8"	וח`6"	1652l	Lt. Gran Lt. Gran	Turbid	Green Film ordor	12 Hr.
	٩				"ا `عا	1	1.4. Erow	Turbick	slight film. No der	1 thr.
	4	四方	13 1	213	212	17 sul	Lt. Br/Orage	Turbid Turbid	SI.sl+ Film No Orde	½ ₩r
	3	135	13.6"	23'9"	2362	175ª1	L.t. Brown	Turbial	None	∕- thr.
		13 8	はっちた	22'5"	22'3'	1754	Lt. Br/Gray	Turbick	None	1 #~

ALL measurements taken from the top of the well casing. D T W = Depth to Water D T B = Depth to Bottom (indicates amount of sediment at well bottom) TURBIDITY = Clarity before/after development

All water was disposed of in City of Madium Souitary Scorer

Environmental & Foundation Drilling, Inc.

3802 Packers Ave. Madison, WI 53704

WELL DEVELOPMENT

PROJECT: Tranx Air National Guard. LOCATION:

JOB # 03 50 DATE: こっ-50, 2-13-90

WELL #	D T W PRE-DEV	D T W POST-DEV	DTB PRE-DEV	D T B POST-DEV	VOL TAKEN	COLOR	TURBIDITY	ODOR- FILM?	TIME
6	9'10"	"م'סו	15'4"	15 3%"	14GN.	Lt.Br	turb.d Turbid	Nice	12 =-
5	13'3'	12' 11"	23'6"	23'5"	17Gal		SI. Turbisk	Si sht Lilm Olds	15 Min
7	11'8"	u` 4 ``	ט`רו "	17`4'z'	1-361.	Lt. Br.	Turbid	None	45 Mil.
14	16'4''	16'0"	25'7"	25'5'	16621	Lt. Br (Reddish)	St. Turbid	None	1/2 th:
2	16'3"	z ^{ِς`} ۱ ^{°°}	75'8"	25'7"	45 521	Li. Br.	Turbid	None	12 HV.
B	9'8"	9`6'	18'5"	וק'וו"	:=G_1.	Brown/Green		strange	ι Η.
					-				

ALL measurements taken from the top of the well casing. D T W = Depth to Water D T B = Depth to Bottom (indicates amount of sediment at well bottom) TURBIDITY = Clarity before/after development

All water was disposed of in city of Madism Sanitar, Sever

APPENDIX C

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Soil and Groundwater Analytical Results



VOLATILE ORGANIC COMPOUND RESULTS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARD LOCATION: MADISON, WISCONSIN C#: 15073.00 PAGE 7.0F7 CK'D:BIC APP'D:DATE ISSUED:4/14/90

 BMQL - DETECTED, VALUE BELOW METHOD QUANTITATION LIMIT. X = ANALYZED, BUT NOT DETECTED.

(1) SAMPLE CHROMATOGRAM CONTAINS UNIDENTIFIED COMPOUNDS.

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTE", SEPTEMBER, 1986. METHODS 8010 AND 8020 WITH MODIFICATIONS.



ANALYTICAL LABORATORY RESULTS WI LAB CERTIFICATION ID#: 113138300

PROJECT: WISCONSIN AIR NATIONAL GUARD

LOCATION: MADISON, WISCONSIN

PROJECT #: 15073.00 DATE SAMPLED: 3/26/90 CK'D:B1C APP'D: 5/5 DATE ISSUED: 4/1/90

LAB NO. SAMPLE DESCRIPTION HYDROCARBON

HYDROCARBON IDENTIFICATION

785-017 W-8 PRODUCT

PRODUCT FINGERPRINT MATCHES GASOLINE REFERENCE STANDARD.

785-018 W-10 PRODUCT

PRODUCT FINGERPRINT MATCHES GASOLINE REFERENCE STANDARD.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS IS A SCREENING PROCEDURE. ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE. THE VALUE REPORTED IS TENTATIVELY IDENTIFIED.



PAGE 40F4 CK'D: BJCAPP'D: MJC DATE ISSUED: 3/5/40

TOTAL PETROLEUM HYDROCARBONS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARD LOCATION: MADISON, WISCONSIN C#: 15073.00

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTES", SEPTEMBER, 1986. METHOD 3550.

> ASTM, "ANNUAL BOOK OF ASTM STANDARDS", 1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS IS A SCREENING PROCEDURE. ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE. THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED WITH ESTIMATED CONCENTRATIONS.

BMQL = DETECTED, BUT BELOW METHOD QUANTITATION LIMIT. X = ANALYZED, BUT NOT DETECTED.

COMPOUND	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D)	608-010 W6 1-2.5' 2/12/90	608-011 W5 8.5-10' 2/12/90	608-012 W7 5-6.5' 2/12/90
TOTAL HYDROCARBON AS:				
GASOLINE	5.00	X	X	X
KEROSENE	5.00	X	X	Х
#2 FUEL OIL	5.00	X	Х	X
#6 FUEL OIL	20.0	Х	X	Х



TOTAL PETROLEUM HYDROCARBONS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARD LOCATION: MADISON, WISCONSIN C#: 15073.00 PAGE 30F 4 CK'D: BJCAPP'D: MJL DATE ISSUED: 2/5/40

METHOD

REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTES", SEPTEMBER, 1986. METHOD 3550.

> ASTM, "ANNUAL BOOK OF ASTM STANDARDS", 1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS IS A SCREENING PROCEDURE. ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE. THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED WITH ESTIMATED CONCENTRATIONS.

BMQL = DETECTED, BUT BELOW METHOD QUANTITATION LIMIT. X = ANALYZED, BUT NOT DETECTED.

COMPOUND	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D)	608-007 W3 8.5-10' 2/9/90 =======	608-008 W1 13.5-15' 2/9/90 =======	608-009 W2 13.5-15' 2/12/90
TOTAL HYDROCARBON AS:				
GASOLINE	5.00	Х	Х	Х
KEROSENE	5.00	Х	- X	Х
#2 FUEL OIL	5.00	Х	X	X
#6 FUEL OIL	20.0	Х	X	X



METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTES", SEPTEMBER, 1986. METHOD 3550.

> ASTM, "ANNUAL BOOK OF ASTM STANDARDS", 1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS IS A SCREENING PROCEDURE. ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE. THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED WITH ESTIMATED CONCENTRATIONS.

BMQL = DETECTED, BUT BELOW METHOD QUANTITATION LIMIT. X = ANALYZED, BUT NOT DETECTED.

COMPOUND	REPORTABLE DETECTION LIMIT (MG/KG AS REC'D)	608-001 W13 8.5-10' 2/7/90	608-002 W12 8.5-10' 2/7/90	608-003 W10 6-7.5' 2/8/90
TOTAL HYDROCARBON AS:				
GASOLINE	5.00	x	X	Х
KEROSENE	5.00	Χ.	Х	393
#2 FUEL OIL	5.00	Х	X	X
#6 FUEL OIL	20.0	X	Х	102
	•			



TOTAL PETROLEUM HYDROCARBONS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARD LOCATION: MADISON, WISCONSIN C#: 15073.00 PAGE 20F4 CK'D:B3CAPP'D:MJL DATE ISSUED: 3/5/40 DATE ISSUED: 3/5/40 DATE ISSUED: 3/5/40

METHOD REFERENCE: SW846, "TEST METHODS FOR EVALUATING SOLID WASTES", SEPTEMBER, 1986. METHOD 3550.

> ASTM, "ANNUAL BOOK OF ASTM STANDARDS", 1983. METHOD D-3328 WITH MODIFICATIONS.

NOTE: THE ANALYSIS OF SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS IS A SCREENING PROCEDURE. ANALYTICAL RESULTS ARE COMPARED AND QUANTIFIED AGAINST KNOWN REFERENCE STANDARD MIXTURES. DUE TO VARIABLES SUCH AS DIFFERENCES IN PETROLEUM PRODUCT FORMULATIONS, WEATHERING AND OTHER ENVIRONMENTAL FACTORS, POSITIVE IDENTIFICATION AS ONE OF THE TARGET HYDROCARBON MIXTURES MAY NOT BE POSSIBLE. THE VALUES REPORTED ARE TENTATIVELY IDENTIFIED WITH ESTIMATED CONCENTRATIONS.

BMQL = DETECTED, BUT BELOW METHOD QUANTITATION LIMIT. X = ANALYZED, BUT NOT DETECTED.

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VOLATILE ORGANIC COMPOUND RESULTS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARD LOCATION: MADISON, WISCONSIN C#: 15073.00

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PAGE 50F7 CK'D:B3CAPP'D:PAF DATE ISSUED: M/1/10

COMPOUND	REPORTABLE DETECTION LIMIT (UG/L)	785-013 785-014 W-11 W-12 3/26/90 3/26/90
1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,1-DICHLOROETHANE 1,2-DICHLOROETHANE 1,1-DICHLOROETHENE CIS-1,2-DICHLOROETHENE	$ \begin{array}{c} 1.00\\ 1.00$	X X



VOLATILE ORGANIC COMPOUND RESULTS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUAF LOCATION: MADISON, WISCONSIN C#: 15073.00	PAGE 6 OF 7 CK'D:BJCAPP'E RD DATE ISSUED: 1/);	
COMPOUND	REPORTABLE DETECTION LIMIT (UG/L)	785-015 BAILER BLANK 3/26/90	TRIP BLANK 3/26/90
BENZENE BROMOCHLOROMETHANE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLORODIBROMOMETHANE CHLORODIBROMOMETHANE CHLOROETHANE 2-CHLOROETHYLVINYL ETHER CHLOROFORM CHLOROMETHANE 1,2-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,1-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE CIS-1,2-DICHLOROETHENE TRANS-1,2-DICHLOROETHENE 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPENE TRANS-1,3-DICHLOROPENE TRANS-1,3-DICHLOROPENE ETHYL BENZENE METHYLENE CHLORIDE 1,1,1,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TETRACHLOROETHENE TOLUENE 1,1,1-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROFLUOROMETHANE VINYL CHLORIDE XYLENES	$ \begin{array}{r} 1.00\\ $	*****	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx



VOLATILE ORGANIC COMPOUND RESULTS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARI LOCATION: MADISON, WISCONSIN C#: 15073.00	PAGE 20F7 CK'D:BJCAPP'D D DATE ISSUED:1//			
COMPOUND	REPORTABLE DETECTION LIMIT (UG/L)	W-2 3/26/90	785-005(1) W-1 3/26/90	W-3
BENZENE BROMOCHLOROMETHANE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLORODIBROMOMETHANE CHLOROETHANE 2-CHLOROETHYLVINYL ETHER CHLOROFORM CHLOROMETHANE 1,2-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,1-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,1-DICHLOROFTHENE CIS-1,2-DICHLOROETHENE 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPTHENE 1,1,2-TETRACHLOROETHANE 1,1,2-TETRACHLOROETHANE 1,1,2-TETRACHLOROETHANE 1,1,2-TRICHLOROETHANE	$ \begin{array}{c} 1.00\\ 1.00$	*****	BMQL X X BMQL X X X X X X X X X X X X X X X X X X X	*****



VOLATILE ORGANIC COMPOUND RESULTS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARE LOCATION: MADISON, WISCONSIN C#: 15073.00	PAGE JOF 7 CK'D: BICAPP'D DATE ISSUED: 1/1	104F		
COMPOUND	REPORTABLE DETECTION LIMIT (UG/L)	W-14 3/26/90	785-002 W-14 DUP 3/26/90	W-13
BENZENE BROMOCHLOROMETHANE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLORODIBROMOMETHANE CHLOROETHANE 2-CHLOROETHYLVINYL ETHER CHLOROETHANE 1,2-DIBROMO-3-CHLOROPROPANE 1,2-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,1-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE CIS-1,2-DICHLOROETHENE TRANS-1,2-DICHLOROETHENE TRANS-1,3-DICHLOROPENE TRANS-1,3-DICHLOROPENE ETHYL BENZENE METHYLENE CHLORIDE 1,1,1,2-TETRACHLOROETHANE 1,2,2-TETRACHLOROETHANE 1,1,2-TRICHLOROETHANE	$ \begin{array}{r} 1.00 \\ $	X X X X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X X X X



WARZYN ENGINEERING INC. • ONE SCIENCE COURT • UN	VIVERSITY RESEARCH PARK . P.O	BOX 5385 • MAI	DISON, WISCONS	IN 53705 • (608) 273-0440
VOLATILE ORGANIC COMPOUND RESULTS WI LAB CERTIFICATION ID#: 113138300 PROJECT: WISCONSIN AIR NATIONAL GUARD LOCATION: MADISON, WISCONSIN C#: 15073.00	PAGE 4 OF 7 CK'D:BICAPP'D DATE ISSUED:#//	: P4 F 10		
COMPOUND	REPORTABLE DETECTION LIMIT (UG/L)	785-010 W-4 3/26/90	785-011 W-7 3/26/90	785-012(1) W-9 3/26/90 =========
BENZENE BROMOCHLOROMETHANE BROMODICHLOROMETHANE BROMODICHLOROMETHANE BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLORODIBROMOMETHANE CHLORODIBROMOMETHANE CHLOROETHANE 2-CHLOROETHYLVINYL ETHER CHLOROFORM CHLOROMETHANE 1,2-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE CIS-1,2-DICHLOROETHENE TRANS-1,2-DICHLOROETHENE 1,2-DICHLOROPAPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE TOLUENE 1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROFLUOROMETHANE VINYL CHLORIDE XYLENES	1.00 1.00	X X X X X X X X X X X X X X X X X X X	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	9.79 X X X X X X X X X X X X X X X X X X X



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APPENDIX D

Midwest Petroleum Services, Inc. Reports of Tank Tightness Testing

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MIDWEST PETROLEUM SERVICE, INC.

REPORT OF AINLAY ITT TANK VEST

Company: Wisconsin Air National Guard Address: Truax Field City: Madison State: WI Brand Name: Grade of Froduct: Water

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Note: NFPA Publication # 329, 4-3.10.1 does not call for a precision test to show a loss of more than .05 gallons (189 ml) per hour.

Therefore, since tested tank had a $\frac{1}{2}$ gain of (Line 13): +.006 gallons per hour it Does: X Does Not: meet the NFPA criterion for tank tightness.

Additional Remarks: 4" opening to test from.

<u>.</u>

This certifies that the tanks described were tested by the undersigned (a) U_{00} the stated results represent the true state of the tanks on this date to U_{00} best of my knowledge.

Midwist Petrol / Servic / Inc. fester 10 Month: 01 Day: 10 Y ar: Q, ::.:

<u> </u>	. 1 - 1					
# 40	21-2		MIDWEST PE	TROFIEUM SERV	HEE, INC	•
		ſ	REPORT OF A	INLAY TIT TH	NNK TEST	
Addres	y: Wiscon s: Truax Madison			Grade	of	te Oil & Watan
60 Min	ute Tempe	rature Checl	k		Time: 10: clion Time	
	Α	: В	; C	; D	: E	: F
		;	Temperalu	 res 	:	
Pr	obes	:Start of : Test :	:End of : Test :	:Temp. Shi :(B from C : + or -	ft: Multi C) : Colum : D by	ply : Add up fo n : Weight E : Shift
Тор		: 32.83	: 32.36	;47	: × .25	:1175
Middle	•					:12
Bottom	I		; 34.32		: x .25	:0075
4. Exa		e Check of liquid .	Completi	me: 10:15 on Time: 11: placed (-)	:15	-
or res 5. API	ct amount gained an tore orig Gravity	of liquid d removed (inal level of tested l	Completi lost and re +) in fill iquid in or	on Time: 11: placed (-) pipe to aduate	014 31	
or res 5. API 6. Tem 7. Sub 7. Sub (8. Mul	ct amount gained an tore orig Gravity perature tract Lin Result is tiply Lin	of liquid d removed (inal level of tested l of tested l e 6 from 60 ; + or -). e 7 x .1 (+	Completi lost and re +) in fill iquid in gr iquid in gr degræes. x - = -/+	on Time: 11: placed (-) pipe to aduate : aduate : x + = +). :	014 31 37.5 N/A	
or res 5. API 6. Tem 7. Sub (8. Mul 9. Lin	ct amount gained an tore orig Gravity perature tract Lin Result is tiply Lin e 5 + or	of liquid in removed (- inal level of tested l of tested l e & from &O = + or -). = 7 x .1 (+ - Line & (Af	Completi lost and re +) in fill iquid in gr iquid in gr degræes. x - = -/+	on Time: 11: placed (-) pipe to aduate : aduate : x + = +). : adjusted	014 31 37.5 N/A N/A	
or res 5. API 5. Tem 7. Sub (8. Mul 3. Lin 10. Wi 11. Mu	ct amount gained an tore orig Gravity perature tract Lin Result is tiply Lin tiply Lin for tempe th Line 9 of Expans ltiply Li	of liquid d removed (- inal level of tested l of tested l e & from 60 + or -). e 7 x .1 (+ - Line 8 (Af reature). enter Table ion. ne 10 by Lin	Completi lost and re +) in fill iquid in gr degrees. x - = -/+ PI gravity e C, Read C ne 2 (Gallo	on Time: 11: placed (-) pipe to aduate : aduate : x + = +). : adjusted oefficient : ns)	014 31 37.5 N/A	2
or res 5. API 5. Tem 7. Sub (8. Mul 9. Lin 10. Wi 11. Mu	ct amount gained an tore orig Gravity perature tract Lin Result is tiply Lin to tempe th Line 9 of Expans ltiply Li (Volume c temperatu	of liquid d removed (- inal level of tested 1 of tested 1 e 6 from 60 + or -). e 7 x .1 (+ - Line 8 (Al erature). Penter Table ion. ne 10 by Lin hange for ea are change.	Completi lost and re +) in fill iquid in gr degræes. x - = -/+ PI gravity e C, Read C ne 2 (Gallo ach degræe	on Time: 11: placed (-) pipe to aduate aduate x + = +). adjusted oefficient ns) of	:014 31 : 37.5 : N/A : N/A : 32.6	2
or res 5. API 5. Tem 7. Sub (8. Mul 3. Lin 10. Wi 11. Mu 11. Mu	ct amount gained an tore orig Gravity tract Lin Result is tiply Lin to 5 + or for tempe th Line 9 of Expans (Volume c temperatu ltiply Li (Volume c	of liquid d removed (- inal level of tested 1 of tested 1 e & from 60 i+ or -). e 7 x .1 (+ - Line 8 (Af - Line 8 (Af))))))))))))))))))))))))))))))))))))	Completi lost and re +) in fill iquid in gr degrees. x - = -/+ PI gravity e C, Read C ne 2 (Gallo ach degree ne 1 o temperatu	on Time: 11: placed (-) pipe to aduate : aduate : x + = +). : adjusted : oefficient : ns) of : re). :	:014 31 : 37.5 : N/A : N/A : 32.6 : .0004535	
or res 5. API 5. Tem 7. Sub (8. Mul 3. Lin 10. Wi 11. Mu 12. Mu 13. Ch	ct amount gained an tore orig Gravity perature tract Lin Result is tiply Lin e 5 + or for tempe th Line 9 of Expans (Volume c temperatu ltiply Li (Volume c ange sign add to li in gallon	of liquid d removed (inal level of tested l of tested l e & from 60 (+ or -). e 7 x .1 (+ - Line 8 (Af rature). enter Table ion. ne 10 by Lin hange for ea ire change. ne 11 by Lin hange due to of Line 12 ne 4 mathem s), + or - heck sign(Completi lost and re +) in fill iquid in gr degræes. x - = -/+ PI gravity e C, Read C ne 2 (Gallo ach degree ne 1 o temperatu (See Sec. atically (n	on Time: 11: placed (-) pipe to aduate aduate x + = +). adjusted oefficient ns) of re). 9.4) and et change ost	:014 31 37.5 N/A 32.6 : .0004535 : .05669	
or res 5. API 5. Tem 7. Sub (8. Mul 9. Lin 10. Wi 11. Mu 12. Mu 13. Ch	ct amount gained an itore orig Gravity perature itract Lin Result is tiply Lin be 5 + or for tempe th Line 9 of Expans ltiply Li (Volume c temperatu ltiply Li (Volume c ange sign add to li in gallon Double C	of liquid d removed (inal level of tested 1 of tested 1 e & from 60 it or -). e 7 x .1 (+ - Line 8 (Al erature). Penter Table ion. ne 10 by Lin hange for ea ire change. ne 11 by Lin hange due to of Line 12 ne 4 matheme s), + or - heck sign().	Completi lost and re +) in fill iquid in gr degrees. x - = -/+ PI gravity e C, Read C ne 2 (Gallo ach degree ne 1 o temperatu (See Sec. atically (n - Product L + Product G 329, 4-3.10	on Time: 11: placed (-) pipe to aduate aduate x + = +). adjusted coefficient ns) of re). 9.4) and et change ost ained	:014 31 37.5 N/A 32.6 : .0004535 : .05669 : .0.010067 : -0.01299 call for	33 a precision test

This certifies that the tanks described were tested by the undersigned and that the stated results represent the true state of the tanks on this date to the best of my knowledge.

Remarks: Tank has 17" of water in for test purpose - a one inch piece of conduit for the vent and a 2" fill.

Midwest Potr Jeum Sartice, I.c. Tester let 1 Month: 01 Day: 11 Year

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MIDWEST PETROLEUM SI	ERVICE,	INC.
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REPORT OF AINLAY TTT TANK TEST

Company: Wiscons Address: Truax F City: Madison	ield		Grade	of	- 4 Tank	# 2
60 Minute Temper	ature Check		Start Comple	Time: 11 etion Tim	:15 e: 4:15	
A	: B	: C	: D	:	E :	F
	:	Temperatur	es	:	:	~~~~~~~~~~~~~
Probes	Chamb of	. Red of	Mono Chi	66. Mis14	1010	44 E
Top	: 32.37	: 32.40	: +.03	: x .2	5 : +	.0075
Middle						
Bottom						
 Add the three Tank dia. and Exact Water L 	results in loth: 10'	Column F () Gallos bottom.	Weighted Av	ve. Temp. 50,000		
60 Minute Volume	Check	Start Time Completion	e: 11:15 n Time: 4:1	15		
temperatur 12. Multiply Lin (Volume ch 13. Change sign	f tested liq f tested liq 6 from 60 d + or ~). 7 x .1 (+ x Line 8 (API ature). enter Table on. e 10 by Line ange for eac e change. e 11 by Line ange due to of Line 12 (e 4 mathemat	egrees. - = -/+ x gravity ac C, Read Co 2 (Gallon: h degree of 1 temperature See Sec. 9	<pre>duate : duate : + = +). : djusted efficient s) f e). : .4) and t change</pre>	N/A 53.4 000648 32.405 +1.053	15	26
Double Ch	eck sign: - +	Product Los Product Ga				
Therefore	loss of mor , since test er hour it D	e than .05 ed tank had	gallons (] d a loss/ga	189 ml) p win.of (L	er hour. ine 13): ·	
Additional Remarks: Tested July of which h	1987. Foun as nipple so ed or sooner hat the tank	pening in n d leak in rewed into	tank on Wes it. Shoul d were test	at end at ld be rep ted by th	a fittin baired whe he undersi	g on the tank n tanks are gned and that

the stated results represent the true state of the tanks on this date to the best of my knowledge. Midwest Petroleum Service, Inc. Month: 01 Day: 04 Year: 90

REPORT OF AINLAY TTT TANK TEST

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Address: Truax	nsin Air National Guard Field State: Wisconsin	Grade of
0 Minute Tempo	erature Check	Start Time: 10:00 Completion Time: 3:00
A	: B : C	: D : E : F
	: Temperatur	es : :
Probes	:Start of :End of : Test : Test : : :	:Temp. Shift: Multiply : Add up for :(B from C) : Column : Weight : + or - : D by E : Shift
Cop	: 39.20 : 39.17	:03 : x .25 :0075
	•	:14 :x.50 :07
		:11 : x .25 :0275
	st Start: -0- me Check Start Tim Completio	
 5. Temperature 6. Temperature 7. Subtract Line 8. Multiply Line 9. Line 5 + or for temperature of Expanse 10. With Line 9 of Expanse (Volume of temperature (Volume of temperature 12. Multiply Line (Volume of temperature (Volume of temperature 13. Change sign add to line in gallon 	of tested liquid in gra of tested liquid in gra ne 6 from 60 degrees. s + or -). ne 7 x .1 (+ x - = -/+ x - Line 8 (API gravity a erature). 9 enter Table C, Read Co	<pre>duate : 30" : N/A : N/A djusted : 53.4 efficient : .00064815 s) f : 32.405 e). : 3.40 .4) and t change : 1.92 ÷ 5 = .38 st</pre>
to show	a loss of more than .05	l does not call for a precision test gallons (189 ml) per hour.
Therefor gallons tightnes	per hour it Does: X Doe	d a loss /gain of (Line 13): +.38 s Not: meet the NFPA criterion for tank
Test vents	ank through 8" opening	unted in tank. Has 4" fill with drop tube in pit on top of manhole cover. Has 6" ed 1987 July, tanks installed 1952.
	ilts represent the true	d were tested by the undersigned and that state of the tanks on this date to the
COC OI MY KHO		Petroleum Service, Inc.

Midwest Petroleum Service, Inc. Habert. The Tester Month: 12 Day: 20 Year: 89

			ETROLEUM SERV		
			AINLAY TTT TA		
Company: W Address: T City: Madi	isconsin Air Na ruax Field son Stat	ctional Guard e: WI	d Brand Grade Fro	Name: of duct: Water	-
	Temperature Che	ck	Start	Time: 12:10	.10
			Comple		· · · ·
	: Bi			۰ ک مربعہ میں	·
Probac	: :Start of	'End of	Tamp Shi	ft: Multiply	- Arid are for
r robes	: Test :	: Test :	:(8 from C ; + or -	:) : Column : D by E	: Weight : Shift
Тор	: 40.74	: 40.58	:16	; × .25	:04
	: 40.62				
Bottom	: 40.65	: 40.65	: 0	: × .25	: 0
Tank di 3. Exact W	a. and lgth: 42 ater Level in t Test Start: F	ank bottom.	lon Capacity: Test End:		
					•
	Volume Check	Complet	ion Time: 1:1	0	·
4. Exact a or gain restore 5. API Gra 6. Tempera 7. Subtrac (Resu 8. Multipl:	Volume Check mount of liquid ed and removed original level vity of tested ture of tested ture of tested t Line 6 from 6 lt is + or -). y Line 7 × .1 (+ or - Line 8 (Complet: lost and re (+) in fill liquid in gr liquid in gr 0 degrees. + x - = -/+	ion Time:):) placed (-) pipe to raduate raduate : x + = +).	~.011 NZA 40 NZA	
4. Exact a or gain restore 5. API Gra 6. Tempera 7. Subtrac (Resu 8. Multipl 9. Line S	mount of liquid ed and removed original level vity of tested ture of tested t Line 6 from 6 lt is + or -), y Line 7 × .1 (Complet: lost and re (+) in fill liquid in gr liquid in gr 0 degrees. + x - = -/+	ion Time:):) placed (-) pipe to raduate raduate : x + = +). adjusted	~.011 NZA 40 NZA	
4. Exact a or gain restore 5. API Gra 5. Tempera 7. Subtrac (Resu 8. Multipl 9. Line 5 for 10. With L of E:	mount of liquid ed and removed original level vity of tested ture of tested t Line 6 from 6 lt is + or -). y Line 7 × .1 (+ or - Line 8 (temperature). ine 9 enter Tat xpansion.	Complet: lost and re (+) in fill liquid in gr liquid in gr 0 degrees. + x - = -/+ AFI gravity le C, Read (ion Time: 1:1 placed (-) pipe to raduate x + = +). adjusted Coefficient	~.011 NZA 40 NZA NZA	
4. Exact a or gain restore 5. API Gra 6. Tempera 7. Subtrac (Resu 8. Multipl 9. Line 5 10. With 1 of 2: 11. Multip (Volu	mount of liquid ed and removed original level vity of tested ture of tested t Line 6 from 6 lt is + or -). y Line 7 × .1 (+ or - Line 8 (temperature). ine 9 enter Tat xpansion. ly Line 10 by L ume change for erature change.	Complet: lost and re (+) in fill liquid in gr liquid in gr o degrees. + x - = -/+ AFI gravity le C, Read (ine 2 (Galle each degree	<pre>ion Time: 1:1 aplaced (-) pipe to aduate : aduate : x + = +). : adjusted Coefficient ions) of</pre>	011 N/A 40 N/A N/A N/A	
4. Exact a or gain restore 5. API Gra 6. Tempera 7. Subtrac (Resu 8. Multipl 9. Line 5 10. With 1. of E: 11. Multip (Volu temp 12. Multip (Volu 13. Change	mount of liquid ed and removed original level vity of tested t Line 6 from 6 lt is + or -). y Line 7 × .1 (+ or - Line 8 (temperature). ine 9 enter Tab xpansion. ly Line 10 by L ume change for erature change. ly Line 11 by L ume change due sign of Line 1	Complet: lost and re (+) in fill liquid in gr liquid in gr 0 degrees. + x - = -/+ AFI gravity le C, Read (degree line 2 (Gall(each degree line 1 to temperato 2 (See Sec.	<pre>ion Time:):) aplaced (-) pipe to aduate : aduate : x + = +). adjusted Coefficient ions) of</pre>	~.011 N/A 40 N/A N/A N/A .00000407	
4. Exact a or gain restore 5. API Gra 5. Tempera 7. Subtrac (Resu 8. Multipl 9. Line S 10. With L of E: 11. Multip (Volu temper 12. Multipl (Volu temper 13. Change add in g	mount of liquid ed and removed original level vity of tested t Line 6 from 6 It is + or -). y Line 7 × .1 (+ or - Line 8 (temperature). ine 9 enter Tab xpansion. ly Line 10 by L ume change for erature change. ly Line 11 by L	Complet: lost and re (+) in fill liquid in gr liquid in gr 0 degrees. + x - = -/+ AFI gravity le C, Read (ine 2 (Gallo each degree ine 1 to temperato 2 (See Sec. ematically (n	<pre>ion Time: 1:1 eplaced (-) pipe to raduate : raduate : x + = +). : adjusted Coefficient cons) of</pre>	011 NZA 40 NZA NZA .00000407 .0012	
 Exact a or gain restore API Graving Tempera Subtrac (Resu Multipl Line S for With 1 of E: Multiplication (Volution) (Volution) Change adding Dout 	mount of liquid ed and removed original level vity of tested ture of tested t Line 6 from 6 lt is + or -). y Line 7 × .1 (+ or - Line 8 (temperature). ine 9 enter Tab xpansion. ly Line 10 by L ume change for erature change. ly Line 11 by L ume change due sign of Line 1 to line 4 mathe allons), + or -	Complet: lost and re (+) in fill liquid in gr liquid in gr o degrees. + x - = -/+ AFI gravity le C, Read (ine 2 (Galle each degree ine 1 to temperate 2 (See Sec. matically (1 - Product 1 + Product (329, 4-3.1)	<pre>ion Time:):) aplaced (-) pipe to aduate : aduate : x + = +). : adjusted : Coefficient : ons) of : 9.4) and net change : Lost Gained 0.1 does not</pre>	011 N/A 40 N/A N/A .00000407 .0012 00006 +.01106 call for a p	recision-te-l

Remarks: 5 year old tank.

This certifies that the tanks described were tested by the undersigned and that the stated results represent the true state of the tanks on this date to the best of my knowledge.

Midwest Fetrol fm Service, Inc. . Tester Month: 01 Day: Year: 30

#1000-5	- ' M:	IDWEST PETR	OLEUM SER	/ICE, INC.	
	R	EPORT OF AI	NLAY TTT	TANK TEST	
Address: Truax	onsin Air Natio Field State:		Grade	l Name: N/A e of roduct: Water	
60 Minute Temp	perature Check		Star Comp	Time: 11:15 Letion Time: 12	2:15
A	: B	: C	: D	: E	: F
	:	Temperatur	es	:	:
Probes	:Start of : Test :	:End of : Test :	:Temp. S :(B from : + or -	nift: Multiply C) : Column : D by E	: Add up for : Weight : Shift
Тор	: 34.85	: 34.64	:21	: x .25	:05
					:115
Bottom	: 39.05	: 38.96	:09	: x .25	:0225
Те	: Level in tan est Start: Ful ume Check	1			
5. API Gravity 6. Temperature 7. Subtract Li (Result is 8. Multiply Li 9. Line 5 + or for temp 10. With Line of Expar 11. Multiply I (Volume temperat 12. Multiply I (Volume 13. Change sid add to I in galld Double Note: NFPA Pu to show Therefo	Line 10 by Lin change for ea ture change. Line 11 by Lin change due to on of Line 12 Line 4 mathema ons), + or - Check sign: - + bblication # 3 v a loss of mo ore, since tes s per hour it	degrees. x - = -/+ x I gravity a C, Read Co e 2 (Gallon ch degree o e 1 temperatur (See Sec. 9 tically (ne Product Lo Product Lo Product Lo 29, 4-3.10. re than .05 ted tank ha	<pre>+ = +). djusted efficient s) f e)4) and t change st ined l does no gallons d a loss/</pre>	: N/A : N/A : N/A : .00000084 : .0002 :00003 :0039 t call for a pr (189 ml) per ho gain of (Line 1	our.
				off. Level in ximately 30 min	
This certifies the stated res best of my know	ults represen	ks describe t the true	d were te state of	sted by the und the tanks on th	dersigned and that his date to the

Midwest Petroleum/Service, Inc. Month: 1 Day: 18 Year: 90 💭 Tester

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MIDWEST PETROLEUM SERVICE, INC.

REPORT OF AINLAY TTT TANK TEST

Company: Wisconsin Air National Guard Brand Name: Address: Truax Field Grade of City: Madison State: Wisconsin Product: JP 4 Tank #4 60 Minute Temperature Check Start Time: 10:00 Completion Time: 3:00 _____ A : B : C : D : E : F : Temperatures : : Probes :Start of :End of :Temp. Shift: Multiply : Add up for : Test : Test :(B from C) : Column : Weight : : : : + or - : D by E : Shift : 37.11 : 37.03 : -.08 : x .25 : -.02 TOP Middle : 37.09 : 37.00 : -.09 : x.50 : -.045 Middle Bottom : 36.78 : 36.70 : -.08 : x.25 : -.02 _____ ________ 1. Add the three results in Column F (Weighted Ave. Temp. Shift: -.085 Tank dia. and lgth: 120" Gallon Capacity: 50,000 3. Exact Water Level in tank bottom. Test Start: -0-Test End: -0-60 Minute Volume Check Start Time: 10:00 Completion Time: 3:00 4. Exact amount of liquid lost and replaced (-) or gained and removed (+) in fill pipe to restore original level : .52 - 5 = (-.104)5. API Gravity of tested liquid in graduate 6. Temperature of tested liquid in graduate : 50 : 30 7. Subtract Line 6 from 60 degrees. (Result is + or -). : N/A 8. Multiply Line 7 x .1 (+ x - = -/+ x + = +). : N/A 9. Line 5 + or - Line 8 (API gravity adjusted for temperature). : 53.4 10. With Line 9 enter Table C, Read Coefficient of Expansion. : .00064815 11. Multiply Line 10 by Line 2 (Gallons) (Volume change for each degree of : 32.405 temperature change. 12. Multiply Line 11 by Line 1 : 2.75 ÷ 5 = (-.55) (Volume change due to temperature). 13. Change sign of Line 12 (See Sec. 9.4) and add to line 4 mathematically (net change in gallons), + or -: +.446 Double Check sign: - Product Lost + Product Gained Note: NFPA Publication # 329, 4-3.10.1 does not call for a precision test to show a loss of more than .05 gallons (189 ml) per hour. Therefore, since tested tank had a boss/gain of (Line 13): +.446 gallons per hour it Does: X Does Not: meet the NFPA criterion for tank tightness. Additional Remarks: Turbine pump in pump house mounted in tank. Has 4" fill with drop tube Test tank through 8" opening in pit on top of manhole cover. Has 6" vents, tank cleaned & inspected 1987 July, tanks installed 1952. 5 hour test. This certifies that the tanks described were tested by the undersigned and that the stated results represent the true state of the tanks on this date to the best of my knowledge. Midwest Petroleum Service, Inc.

__, Tester Month: 12 Day: 20 Year: 89

Ħ1	201-1 BCE J	Trage . M	IDWEST PET	ROLEUM SER	VICE, IN	0/5% c.	- M. COLLENT ML FILE 15073	
		0	EPORT OF A					
Address	s: Truax F	Natnl Guar Tield State:		Grade		Waste Oi	.1	
		ature Check		Comp		ime: 11:		
	A	: В	: C	: D	:	Ε	: F	
		:	Temperatu	res	:		:	
Pro	obes	:Start of : Test :	:End of : Test :	:Temp. SI :(B from : + or -	hift: Mu C) : Co : D	ltiply lumn by E	: Add up for : Weight : Shift	
Тор		: 34.93					: +.01	
							: +.005	
Bottom		: 40.33	: 40.26	;07	· : x	.25	:0175	
 Exact Exact Fest API Temp 	Test ute Volume t amount gained and tore origi Gravity o berature o	evel in tan 5 Start: 19" 6 Check 1 removed (+ 1 nal level 1 tested li 2 f tested li 2 f from 60	Start Ti Completi ost and re) in fill quid in gr quid in gr	on Time: } placed (-) pipe to aduate	1:55 :335 : 38.2			·
۲) 8. Mult	Result is tiply Line	+ or -). 27 x .1 (+ - Line 8 (AP	x - = -/+	x + = +).	: N/A : N/A			
9. Line	≘ 5 + or ·	- Line 8 (AP	I gravity	adjusted	A Dias Providence	Million and an and a	STORE STATE	اف ش اعات
10. Wit c 11. Mul (12. Mul (13. Cha	of Expansi ltiply Lir Volume ch temperatur ltiply Lir Volume ch ange sign add to lir in gallons	enter Table on. ange for ea e change. ne 11 by Lin hange due to of Line 12 ne 4 mathema s), + or - neck sign: -	e 2 (Gallo ch degree e 1 temperatu (See Sec. tically (n	ns) of re). 9.4) and et change ost	: 39.4 : .0004 : 1.448 :003 :331	962	·	
Note:		lication # 3 Loss of mo					ecision test ur.	
		e, since tes ber hour it 5.					3);33 riterion for	tank

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Additional Remarks: Added 10 gallons of water to top off tank. 1 1/2" vent pipe hit and bent. Product would not stop dropping in fill pipe so I dropped level to top of tank to test.

This certifies that the tanks described were tested by the undersigned and that the stated results represent the true state of the tanks on this date to the best of my knowledge.

Midwest / Petroleum Service, Inc. b , Tester ---Month: 02 Day: 01 Year: 90

APPENDIX E

Well Constructors Reports For Nearby Private Supply Wells

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

		الال	10 1946
1. County Dake	Town Village Burke	~	
2. Location M/2 SH/4 SEC 28	(Gity TEN RIA		
3. Owner or Agent			
		· //	
4. Address E. Washing Ton A		•	
5. From well to nearest: Building1ft; sew dry well or filter bed6_9ft; abandoned well		tic tank_	<i>D_Q_ft;</i>
6. Well is intended to supply water for:			
7. DRILLHOLE OR EXCAVATION: Dia. (in.) From (it.) To (it.)	10. FORMATIONS:		
Dia. (in.) From (ft.) To (ft.) Ø I I	Kind	Thick- ness (ft.)	Total Depth (ft.)
5 10 60	GRAVE/	0	10
	Sando Tone. BROKEN	3.30	HO
	LandsTone (Firm)		60
8. CASING AND LINER PIPE OR CURBING: Dia. Kind From To (in) (it.) (it.) 5. STandard kleidh Waydht Iron Pipe 0 58 9. GROUT: From To Kind (it.) (it.) DRIII Culling 0 10			
11. MISCELLANEOUS DATA: Yield test: Hrs. at GPM. Depth from surface to water: ft. Water-level when pumping: 2.2 ft. Water sample sent to laboratory at Madison, Wiston 8 19.4.6	The well is terminated (above) (below) the permanent Was the well disinfected upon Yes Was the well sealed watertigh	t upon co	19_4/6 inches ion?
Signature Suring Minchell Registered Well Driller 16 C 4 8 S Apo T 5 184	EAVINE Win Complete Mail A Madison, 1	C A	

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side.

. . OCP Town Dane Surke 1947 Village 1. County ___ City 2. Location S.W. 14 SEC. 28, T.8, T. 10E 3. Owner or Agent Sunnyside School TE.F.D. Madison 4 Wis. (E. Washington Are, 4. Address ____ 5. From well to nearest: Building 20ft; sewer 20 ft; drain_____ft; septic tank 60 it; dry well or filter bed 100 ft; abandoned well_____ft. 6. Well is intended to supply water for: School____ 7. DRILLHOLE OR EXCAVATION: 10. FORMATIONS: To ((L) Total Depth (ft.) Thickness (ft.) Kind 6 Yel andstone 8. CASING AND LINER PIPE OR CURBING: From (IL) Dia. (in.) To ([L) Kind Pipe ·10 107 WH PI -10 1526M 6,5 5 1253 2 858 Sister & i. 32 3. 2. 623223 26 レシノ 1.11 5 3 han viels 137.11 aij/n Sugar Bry 12 2 S. 9. GROUTA STORY To (ít.) From (ft.) 1320 00010. 21 51200 31:00 و أربه いてい 1.1.0 22 53 41114 SU inier -1.3 2111131 17 11.60 2.170000 Sint 1 ireit init WISCELLANEOUS DATA: GPM. Re-Construction of the well was completed on Yield test: _____ Hrs. a 19_1 -Depth from surface to water: inches The well is terminated 21264 (above) (below) the permanent grade. pump roo ____ ft. Water-level when pumping: _ Was the well disinfected upon completion? Water sample sent to laboratory at Yes____ No____ adison on Sept. 22 1947 Was the well sealed watertight upon completion? Yes V No. auton Signature The Complete Mail Address Registered Well Driller ムエル・ adison ,

INSTRUCTIONS

ALL INFORMATION INDICATED ON THE FACE OF THIS FORM MUST BE GIVEN

PLEASE BE GUIDED BY THE FOLLOWING:

Numbers below correspond to numbers of items of the form on the opposite side.

- 1. Name of the County and the name of the Town, Village or City. Indicate which is
- 3. Name of the Owner. If the name of the owner cannot be given, give instead the name of the Agent. Indicate which is given.
- 4. Name of the Street and the number of the Premise or the number of the Mail Route, the name of the Post Office and the name of the State.
- 5. Distance, in feet, from the well to the nearest building and to each source of pollution shown.

- 6. Indicate: Home, farm, school, tavern, creamery, community, industry, etc.
- Secthe diameter and depth of the initial drillhole or excavation and each reduction in size to bottom. If well was reconstructed, show diameter and depth of original well on first line.
- er pipe or curbing and actual position in the well, he measured from the surface.
 - 9. Show kind of material (mud or cement) used in 'scaling the annular space, from, and to what depths from the surface. If neither was used indicate "none".
 - 10. Show thickness of each formation and the total depth at the base thereof.

11. Provide the data indicated.

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface, pumprooms, connecting pits, etc., may be given here:

This well was reconstructed ained access to it through underground channels. ohecking the existing casing for de broken joint was n recommendation of depTh. ner pipe having welded joints ment grout to a depth of Mus sei Well was reduced somewhat, eplacement of the a deep well piston 22/12% ر کړ. -If more space is needed another sheet may be attached. by Lin. Aladisen, 3, 11.3

		OR'S REI	PORT			NOTE	•				VISCONSIN TURAL RESO	
JAM 3300-	-15				GREEN CO	NOTE PY - DIVISI PY - DRILL OPY - OWN	_ER'S (COPY		Box 4		
OUNTY	n				IECK ONE	— <u></u>			NAME			
	Nar	<u> </u>		Tow		Village		City	Burk	<u></u>		
			- - - -	ownship 2 - N	Range 10-E	3. OWNER		ME OF DE	RILLING			
R – Grid or	street no.	Stre	eet name			ADDRE	ss Z	3 //	N, I	Taun	lt.	Rd.
) –If avai	ilable subdivis	ion name, lot		». 7		POST O	FFICE 51	N)	Madis	n ü	lin 5	3704
. Distance	in feet from	well to nea	rest:		NITARY SEWER				NDATION DRAI	N PENDENT	WASTE WAT	ER DRAIN TILE
(Reco	ord answer in a	appropriate bl	ock)	10	-1-						-	
LEAR WAT	ER DRAIN	SEPTIC TAN	K PRIVY	SEEPAGE PIT	ABSORPTION	FIELD	ARN	SILO	ABANDONED	WELL	NK HOLE	
		56		60	-	-				/		
THER POL	LUTION SOU	IRCES (Give d	lescription	such as dump, o	quarry, drainage	well, stream,	pond,	lake, etc.)				
Well is in	itended to si	upply water	for:	ome								
. DRILLH	IOLE					9. FORM	MATIC	NS			· · ·	
<u>ia. (in.)</u>	From (ft.)	To (ft.)	Dia. (in.) From (ft.)	To (ft.)	//	;	Kind		-	From (ft.)	To (ft.)
8	Surface	45			ļ	Ja	s el	y to	woil		Surface	20
E	4.5	102				L	il	Ro	- ki		20	65
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<u>ia. (in.)</u>		(ind and Weigl	ht	From (ft.)		sa	لمجيهد	-p.e	th		(0)	10.2
6	Std	Plk	Pipe	Surface	45	<u> </u>						
<u></u>	18.9	7 The	Ste	ie			·					
	Pla	in E	ind									
	W	lded	Jon	it								
			<i>V</i>						-			P
GROUT		RSEALING	MATERI	1	1	10. TYP	EOF	DRILLIN	IG MACHINE	USED		
	Kii			From (ft.)	To (ft.)	Cable	Tool		Direct R	-		e Rotary
Bent	mitor	Culte	néja	Surface	25		y — air Iling mu		Rotary - with drilling		Jetting	with
Mesi	t Cem	int "		15	45	Well cons	structio	on compl	eted on 7	w.	if above	19 7/
. MISCE ald test:	LLANEOUS	3	Hrs. a	t 27	GPM	Well is te	rminat	ed	8 inche	s 🚩	below	final grad
<u>pth from</u>	surface to i	normal wate	r level	<u></u>	49 ft.	Well disi	nfected	l upon co	mpletion		Ye	s 🔲 Na
Jepth to w	ater level wh	nen pumping	I	68	ft	Well seal	ed wat	ertight u	pon completio	n	Ye	s 🔲
iter samp	le sent to					Ma	dis	مر lab	oratory on:	No	j. 5	19 7
ype of casi	ng joints, m	ethod of fini	ution haz ishing the	ards, informative well, amount	tion concernin of cement use	g difficultie ed in grouti	es enco ng, bla	untered, sting, sub	and data relat p-surface pump	ing to nea prooms, a	arby wells, so cœss pits, et	c., should
GIVEN ON	reverse side.	I. A.A.				COMPLE			- BOX 67			
LIAN.	man	nxpalie	n.h.	Registered W	ell Driller ease do not wri	ite in creat		17.44 M M 19.2 	·		<u>.</u>	
COLIFORM	TEST RESUL	.T	-{{	GAS – 24 HR		- 48 HRS.	Delow	CONFIRM	MED	REMAR	KS	

JAN

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					J	UN 29 19
WELL	CONSTRUCT	OR'S REPOR		CONSIN STATE BOARD	OF HEALTH	
1. County	Da	ne	(. (Hlage Bur	Ken	<i>C</i>
2. Locatio	on <i>SW</i> .	sr. 14 .	Sec. 2	** T8, R10	2 E	use by the
				Onsgard		
		•		am St.		
5. Sewer	ft; drai	.nft;, _c se	ptic tan	cft; disposal un nerft. Explain	,	
	OLE OR EXC	AVATION	-II CAS	ING PIPE, LINER PIL		
Dia. (in.)	From (ft.)	To (ft.)	Dia. (in)	Kind	From (ft.)	To (ft.)
5	0	/3.3	5	Std. Wt. Pipe	0	THE
		<u> </u>				133
		<u> </u> .				Santa Santa
		1				
	FORMA Kind nd	From (ft) 0	To (ft.) /33	Kind <i>none</i>	From (ft,)	To (ft.)
<u> </u>					-	
a a a construction de la construcción de la const	·····					
		<u> </u>	· · · · · · · · · · · · · · · ·	Yield test: -341 To static water-		
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				Water sample was		
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	_		(To	ONSIN STATE BOARD O		
1. County_	Da	ne:	(∀i	llage Surh	er	
2. Locatio	on_SW.	SW. 14 Se	ec. 28	* T8, R10	Eim	use by
		•		Onsgard		
		•		im St.		
			•	ft; disposal uni	,	harn-Er
	· · · · · · · · · · · · · · · · · · ·			erft. Explain o		
DRILLHO	DLE OR EXC.	AVATION	L CASI	NG PIPE, LINER PIPE	OR CURB	ING PALL
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n and an and an and an and an					+	
	<u>}</u>	<u> </u>	· · · ·	1	}	
	FORMA	TIONS		GROU	T	-
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<u>_</u>	(ind	(ft.)	(ft.)	Kind none	(ft,)	<u>(ft.)</u>
<u></u>)a.	<u>n 0</u>		1.5	TIONE		
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				•		
				Yield test: -34 Hr	·	
				To static water-le	vel 12	_ft
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			i 	State Laboratory .a		
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				pleted on Dec		
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				completion?		
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			 	upon completion?-	- Yes 🖌	<u>_No</u>
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				Venor Y. Mrs	ifech	R
	می می در می این این می می این این این این این این این این این ای			Registered We	11_Drill	er
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County	_ Twp.7	11.6 .(0	ffice Record-	-Do not fill in)	- W
					4 T. T. T. T
TO THE	WIS DR			TE' BOARD OF HE	
on How off in Am	-11. Le To -	aog- par	envitront svit	est, privy, sewer, etc., at their respect	geson des sites t
WELL LOG	r"Pr		ISES"	DIAGR'AM," and " cord of the Board ^{II, II, II, II, II, II, II, II, II, II}	REPORT
4 11	10)		-	HAT PURPOSE ONLY	11:1 C
Owner - Our and A Company of Transport	Qui	unko	at and ladivides	Driller <u>GANCH Acc</u>	ernere
Address Burke	Ð	ane.		Address Madwow	wince.
(Citr. village.)	p T	maty) 1#F		Date of Report 1-25-29	19 39
Give below the location of the		ty on whi	ch well is dri	illed.	
If incorporated village or city If unincorporated hamlet	/:	Name	1 at 9	Dane Burke.	Berest and No.
If Lake Shore Plat	of Plat	···· Name	Labe	n ly 1997 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2007 - 2 Lat Blk	Street
If FarmCounty If School			Twp.	let.	Bichway
If other public building	Kind		Twp. County	See. Trap.	District Sec.
Miscellaneous	Kind		County	Twp.	Jot.
	XX/E	TT	IOC	and REPORT	
Kind of casing and liner in feet. Kind of shoe. Indicate grout, screen, seal, etc.	Vert	WELL DI ical Lines ontal Lines	agram is, Dis. ft, Depth	Give depth of formations in feet. State if dry or water bearing.	Record of FINAL Pumping Test
			10 12 14 14 18 24		Duration of test.
Speet youngstown				of Clay	Hours _4
Caring					Pumping Rate.
				- they sand Mock.	G. P. M
Kopperud Shoe.					Depth of pump in well. Ft6
Moppenus Xmee.	4 ~ []			⋗ <mark>╽╺╋┉╡┉╡┈╡┈╡┈╡┉╡</mark> ╍╏ <mark>┉┑</mark> ╍┡╴╴╴╴╴╴	
			11111 ₀		Standing and the st
HIL +	-30	<u><u></u> </u>	59		Standing water-level (from surface.)
Good Grout.	- 50			Water beauf rock.	1 -
Good Grout.			50 50 50 50 50 50 50 50 50 50 50 50 50 5	Water beauf rock	(from surface.) FL _26 Water level when pumping
Good Grout			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 - Water beauf rock.	(from surface.) FL <u>26</u> Water level when pumping FL <u>24</u>
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Good Grout.			1000 1000 1000 1000 1000 1000 1000 100	1 - Water beauf rock	(from surface.) Ft. <u>26</u> Water level when pumpin Ft. <u>24</u> Water. End of test. Check
Good Grout	_73			1 - Water beauf rock	(from surface.) Ft. <u>2.6</u> Water level when pumping Ft. <u>2.4</u> Water. End of test. Check Clear <u> </u>
Good Grout.	_73			1 - Water beauf rock	(from surface.) Ft. <u>26</u> Water level when pumping Ft. <u>24</u> Water. End of test. Check Clear <u> </u>
Good Grout.	_73			1 - Water beauf rock	(from surface.) FL Water level when pumpin FL Water. End of test. Check Clear Cloudy Turbid Was well sterilized befor test?
Good Grout				1 - Water beauf rock	(from surface.) Ft. <u>2.6</u> Water level when pumping Ft. <u>2.4</u> Water. End of test. Check Clear <u></u> Cloudy <u></u> Turbid <u></u> Was well sterilized befor test? Yes <u></u> No <u></u> Date <u>1-24-37</u> To which Laboratory wa
Good Grout.	-73			1 - Water beauf rock	(from surface.) FL <u>26</u> Water level when pumping FL <u>24</u> Water. End of test. Check Clear <u>Cloudy</u> Turbid <u>Clear</u> Was well sterilized befor test? Yes <u>No</u> Date <u>1-14-37</u> To which Laboratory wa sample sent? <u>Macharry</u>
Good Grout.				1 - Water beauf rock	(irom surface.) Ft <u>26</u> Water level when pumping Ft <u>24</u> Water. End of test. Check Clear <u>K</u> Cloudy <u>Clear</u> Turbid <u>Clear</u> Was well sterilized befor test? Yes <u>No</u> Date <u>1-24-37</u> To which Laboratory was sample sent? <u>Maddarro</u> Date <u>1-25-39</u>
Good Grout.	-73			1 - Water beauf rock	(from surface.) FL <u>26</u> Water level when pumping FL <u>24</u> Water. End of test. Check Clear <u>V</u> Cloudy <u>Turbid</u> Was well sterilized befor test? Yes <u>No</u> Date <u>1-24-37</u> To which Laboratory was sample sent? <u>Macharrow</u> Date <u>1-25-39</u> Was the well sealed o completion?
Good Grout.	-73			1 - Water beauf rock.	(from surface.) Ft 2.6 Water level when pumping Ft 2.4 Water. End of test. Check Clear Cloudy Turbid Was well sterilized befor test? Yes No Date $1-24-37$ To which Laboratory was sample sent? Date $1-25-39$ Was the well sealed o completion? Yes No
Good Grout.	-73			1 - Water beauf rock.	(from surface.) Ft 2.6 Water level when pumping Ft 2.4 Water. End of test. Check Clear Cloudy Turbid Was well sterilized befor test? Yes No Date $1-24-37$ To which Laboratory was sample sent? Date $1-25-39$ Was the well sealed o completion? Yes No
Good Grout	-73			1 - Water beauf rock.	(from surface.) FL <u>26</u> Water level when pumping FL <u>24</u> Water. End of test. Check Clear <u>V</u> Cloudy <u>Turbid</u> Was well sterilized befor test? Yes <u>No</u> Date <u>1-24-37</u> To which Laboratory was sample sent? <u>Madarno</u> Date <u>1-25-39</u> Was the well sealed o completion? Yes <u>No</u> How high did you leav casing above grade? <u>12"</u>
Good Grout.	-73			1 Sin a sinves in within the entropy	(from surface.) FL Water level when pumping FL Water. End of test. Check Clear Cloudy Turbid Was well sterilized before test? Yes No Date To which Laboratory was sample sent? Date Date Macharry Date Mas the well sealed on completion? Yes No How high did you teax
Good Grout.	-73			s string on estigary transition of sectors	(from surface.) FL

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State of Wisconsin Department of Natural Resources	NOT White Copy -	TE: Division's Copy	WELL CONSTR Form 3300-15	UCTOR'S REPO	RT
Box 450 Madison, Wisconsin 53701	Green Copy -	Driller's Copy Owner's Copy	Rev. 10-75		
1 7 . (ECK (1) ONE:	Nam	"BURK-	~:	
% Section Section Town	nship Range 3		GENT AT TIME OF		(I ONE
LOCATION 1111 28 8	Re IUE	ADDRESS	UIGANO	WSK/	
		ADDRESS			
AND – If available subdivision name, lot & block	No. WRKE RA	POST OFFICE	RAIRe, 1.		
. Distance in feet from well Building Sanitary	Bldg. Drain Sanitary B	lidg. Sewer Floor Dra Connected	in To: Storm Blo	lg. Drain Storm	Bidg. Sew
to nearest: (Record 20 C.I.	Other C.I.	Other C.I. Sewer Oth	her Sewer C.I.	Other C.I.	Other
block) Street Sewer Other Sewers Foundation Drain C	onnected to Sewage Sum vage C.I. Othe		olding Sewage Absor	ption Unit	
In. Storm C.I. Other Sewer Sur Clearwater Cle	arwater ;	57	Seepage Bed	79	
Privy Pet Pit: Nonconforming Existing Subst	urface Pumproom Ba	arn Animal Animal Silo	Glass Lined Silo	Earthen Silage	
Waste Well Nonc	conforming Existing	tter Barn Yard With F Pen	Pit Storage w/o Facility Pit	Storage Trench O Pit	
Tank emporary Watertight Solid Manure Subsu		d Other (Give Description)	1 1		
Manure Liquid Manure Storage Gasoli Stack Tank Structure Oil Ta	ine or Disposal Unit ink (Specify Type)				
Well is intended to supply water for:	Me.	9. FORMATIONS			
DRILLHOLE 4/0	ME	Kind		From (ft.)	<u>To (ft.)</u>
• • • •	n (ft.) To (ft.)	Clay		Surface	8
E Surface 52		Clay t	SANI	7	50
6 52 103		Clay + SANJ 1	Roull	50,00	10
CASING, LINER, CURBING AND SCREEN Material, Weight, Specification ia. (in.) & Method of Assembly From	1 (ft.) To (ft.)				
$\frac{\text{ia. (in.)}}{\mathcal{L}} \stackrel{\& \text{Method of Assembly}}{\mathcal{L}} \stackrel{\text{From}}{\mathcal{S}} $	52				
.280 wall					
18.97 WT.					
Jule 12 JTS					
USP A-57		10. TYPE OF DRILLING M	Rotary-hammer	1	
. GROUT OR OTHER SEALING MATERIAL		Cable Tool	W/etriting	Jetting	·
Kind From	n (ft.) To (ft.)	Rotary-air w/drilling mud	Rotary-hammer & air		Air Wa
Mud Lottings sur	face <u>52</u>	Rotary-w/drilling mud	Reverse Rotary		
<i>v</i>		Well construction completed	on10	- 2/	19
1. MISCELLANEOUS DATA Yield Test: Hrs. at	GPM	Well is terminated	- <u>-</u>	above final grad below	
Depth from surface to normal water level	13	Well disinfected upon comple		Yes 🗆 No	
Depth of water level / <		Well sealed watertight upon c		Yes D No	
Water sample sent to 17 A	nison	laborator	yon/C) - 8	
Your opinion concerning other pollution bazards inf	formation concerning diffi	culties encountered, and data	relating to nearby we	lls, screens, seals, m	tho
Friching the well, amount of cement used in grouting	z, diasting, etc., should be	given on reverse side.	SAWS ROTARY	DRILLERS.	
	(Complete Mail Address	ROUTE 1 .		

	partmen	e of Wisc t of Natu Box 792 1, Wiscon	iral Reso 21				Green	: Copy n Copy w Copy	- 0	Division's Driller's C Dwner's C	opy	SEP		977 _ CONST 3300-15	RUCTO		EPORT ev. 12-76
01	WTAL	it as .				CHECK (V)	ONE:			ſ		Narr	1e AS	, cho			
	and the second s	1/2 Se	ction	Section	T	G Town ownship	Ran		illage 3. N	IAME (AGENT A	T TIME O	FDRIL		HECK () ONÉ
	CATION	<u> </u>	$\frac{1}{\omega}$	28	-	_8		10	<u> </u>	DDRESS	Ma	zy_	<u>Zii</u>	<u>n</u>		<u></u>	
TOR	- 0	rid or Sti	reet NO.	Street Nar		y 51				NUDRES:							
IN.	D – If	available	e subdivis	sion name, l	/				P	POST OF	FICE	7.1	1	,,,)			
Dist	ance in	feet from	n well	Building	Sanita	ry Bldg. Dr	ain	Sanita	y Bldg	. Sewer		loor Dra nnected	lin To:	Storm B	ldg. Drai	in S	torm Bldg, Sewe
nsv		(Reco opropriat		1.	C.1.	Ot	her	C.I.		Other			her Sewer	C.I.	Othe	ar C	C.I. Other
street	:k) t Sewer	Othe	r Sewers	Foundatio		Connecter				l Clearw T Sum		ptic H ank T		wage Abso	prption L	Jnit	í
San.	Storm	C.I.	Other	Sewer Clearwate	er	Sewage Sump Clearwater	i	c.i. (Other			40	Se	epage Pit epage Bed			76.
	Pet	Pit: N	onconfor	<u>I Dr</u> ming Existi		Samp bsurface Pr	umpro	om	Barn	Animal	Animal	Silo	Glass L		Earth	hen Silag	je
	Waste Pit	Well Pump			No	onconformi	ing Exi	isting	Gutter	Barn Pen	Yard	with	Facility	e w/o / Pit	Pit	age Tren	
	prary	Tank Watertie		Solid Manu	re Sul			Pond or	Land	Other (0	Give Des	 cription)	,		<u> </u>		<u> </u>
stack	e	Liquid I Tank	Manure	Storage Structure	Ga	soline or Tank		ial Unit Ty Type		<u> </u>							
Vel	l is inter	nded to s	upply wa	ter for:					9.	FORMA	TIONS				····.	<u> </u>	
	·····			,	Fa.	Lorj						Kind			From	(ft.)	To (ft.)
-	ILLHO	LE om (tt.)	To (ft.)) Dia. (in) Fr	om (ft.)	· To	o (ft.)		6	cla	,	*		Surfac	:e	11
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		urface	172	-			1				<u>ar</u>	2				<u> </u>	4/
6	- /	172-	205	•				· · · · · · · · · · · · · · · · · · ·			<u>le</u>	Ly .	· · · ·		4	7	122
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<u>a. (</u> 1	in.)		$\frac{1}{2}$			om (ft.)				 ,/			,				170
	Z	td /2	4 p	<u> </u>	8	Surface	ĮΖ	72		and the state of t	X	ena	(,		60	170
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			11:	H.			1	1						•			
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		<i>Ħ</i>	-5	<u> </u>			/										
						/	1		10	. TYPE	of drii	LING N	IACHINE Rota	ry-hamme	r	••	
GR	OUTO			NG MATEI		A. C.	1 -				ble Tool		1	& air		L J	etting with
		Ki	nd	1 (rom (ft.)		<u>o (ŕt.)</u>			otary-air drilling r		air & air	ry-hamme	er (Ĺ	Water
4	ЦU,	ĽĽ	utt	non		Surface		172			otary-w/o ud	drilling		rse Rotar	y		
-/	•			/					w.	ell constru	iction co	mpleted	lon	8-	ンし	-	1922
1.	MISC	ELLAN	EOUS I	DATA									<u></u>	Ø	above	fina	l grade
	_Yield	Test:		2	<u> </u>	. at 4	0	<u> </u>	<u>vi We</u>	ell is term	inated -		<u> </u>	ies 🛄	below		
	Depth	from sur	face to n	ormal wate	r level		6	Ft.	We	ll disinfec	ted upor	n comple	etion	<u> </u>	Yes L		
	-	of water n pumpin		60 F	it. Si	abilized	Q-Y	és 🗖	NolWe	il sealed v	watertigh	t upon (completion	n (Lyes [🗆 No	
	wnei	a pumpu	-5	<u> </u>		11								0			
		sample s					2.	Cerning (7	ties encor		aborato		o nearby v	wells. scr	eens. se	als, method of
20ur finish	opinior	well, amo	ount of c	ement used	in grou	ting, blasti	ng, etc	., should	be give	en on rev	erse side.						
gnat	lure	1	./	1 01	21_	1			Co	omplete N	lail Addı	ress		SAM'S ROUTE	ROTAR	Y DRIL	LERS,
	/	Aml	/	, Tel	jon	Registere	d Well	1 Driller							LPH, W	ISCON	ISIN 53956

WELL CONSTRUCTOR'S REPORT TO W See Instructions	
$\overline{\mathcal{A}}$	(Town 🕅 1/2 1)
1. County	Village Deurhe M.B. 17 17 17 17 17 17 17 17 17 17 17 17 17
2. Location Zty-51 NU	1/4 Sec 28 78N RIOE
ρ 10	a a construction of the second se
//Name of individual,	partnership or firm
4. Mail Address K-(Madunin Complete add	ress required
_	ft; drainft; septic tank_4ft;
dry well or filter bed_6_fft; abandoned well	ft
6. Well is intended to supply water for:	
7. DRILLHOLE:	10. FORMATIONS:
Dia. (in.) From (IL) To (IL) Dia. (in.) From (IL) To (IL)	· Kind From To (it.)
10 0 18	Tom Sil Handley 0 18
6 1/3	200 po to reactification of the
	-Sandt gravet 18 56
8. CASING AND LINER PIPE OR CURBING: Dia. (in.) Kind and Weight From (ft.) To (ft.)	- Sand Stone 56 113
6 1943 0 56	
9. GROUT:	
Kind From (fL) To (fL)	
<u>Clay</u> 0 18	
	Construction of the well was completed on:
11. MISCELLANEOUS DATA:	5-28 1960
Yield test: Hrs. at GPM.	The well is terminatedS inches
Yield test: $__$ \mathcal{L} \square \square \mathcal{L} \square	The well is terminated inches \square above, below \square the permanent ground surface.
Depth from surface to water-level: -40 ft.	
Water-level when pumping:40ft.	Was the well disinfected upon completion?
	Yes No
Water sample was sent to the state laboratory at:	Was the well sealed watertight upon completion?
Maderin on 5-28 19 60	Yes_1 No
Signature	<u><i>R-1 Machiner</i></u> 4 lu sai Complete Mail Address
	10 ml 10 ml 10 ml 10 ml 10 ml
Rec'd No	
Ans'd	Gas-24 hrs
Interpretation	48 hrs
	Confirm
	B. Coli

Examiner_____

		1/-7 c
WELL CONSTRUCTOR'S REPORT TO W See Instructions		
1. County Dane		M.R.17 34
2. Location 24 4 Way 51 1	$V \ U' \ Y \ Sec. 28 \ T8N \ L10$	E The way
3. Owner \sqcap or Agent \sqcap des Zien	partnership or firm	<u>/</u>
4. Mail AddressR/ Madeson	ress required	
5. From well to nearest: Building_ $Z_{}$ ft; sewer	ft; drainft; septic tank_(2	Øft;
dry well or filter bedft; abandoned well	ft	
6. Well is intended to supply water for:	e	
7. DRILLHOLE:	10. FORMATIONS:	rom i To
Dis. (in.) From (ft.) To (ft.) Dis. (in.) From (ft.) To (ft.)		
	- Top Sort . C	2 20
6 708	Sand + Thavel	20 57
8. CASING AND LINER PIPE OR CURBING:	- Sand Stone :	52 108
Dia. (in.) Kind and Weight From (it.) To (it.)	· · · · ·	
6 1943 0 51		
	· · · · · · · · · · · · · · · · · · ·	
9. GROUT: Kind From (ft.) To (ft.)		
		<u> </u>
<u> </u>	Construction of the well was comple	ted on:
11. MISCELLANEOUS DATA:	12-19	,
Yield test: Hrs. at GPM.	The well is terminatedR	
	\boxtimes above, below \square the permanent g	
Depth from surface to water-level: $-\frac{42}{2}$ ft.	Was the well disinfected upon com	aletion?
Water-level when pumping:42ft.		No
Water sample was sent to the state laboratory at:		
Madeson 0n 12-19 1962	Was the well sealed watertight up	-
UUIIUIIU	Yes_ <i>Y</i>	No
Signature <u>Registered Well Driller</u> Registered Well Driller Please do not wr	12-1 Maileron 4 Complete Mail Address	Wain-
Rec'd No	10 ml 10 ml 10 ml	10 ml 10 ml
Ans'd	Gas-24 hrs	
Interpretation	48 hrs	
	Confirm	
	B Coli	

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State of Wisconsin	NO	TE:		. MEI	I CONST	RUCTOR'S	REPORT
Department of Natural Resources Box 7921	White Copy -	- Division's (3300-15		Rev 17-76
Box 7921 Mudison, Wisconsin 53707		 Driller's Co Owner's Co 				AUG 0 4	1070
COUNTY CHECK (N	iame 9.5		7	~ 3/8
Vanue Town V Section Section Jonoship		3. NAME//		AGENT			CHECK (A ONE
LOCATION SE 28 (SN)9	301	-	han H	attis	sling	Ble	2)
OR – Grid or Street No. Street Name		HOPRESS				-	-
AND - If available subdivision name, lot & block No.		POST OF	The start	1.		•	
1. Distance in feet from well Building Sanitary Brdg. C	rain Sanitary	Bidg. Sewer	Floor	Drain	Storm Bl		Storm Bldg, Sewer
	Dther C.I.	Other	Connec	ed To: Other Sewe		Other	C.I. Other
block)	ted to: Sewage Sun	np Clearw	ater Septic	Holding	ewage Abso	rption Unit	<u> </u>
San. Storm C.I. Other Sewer Sump	C.I. Oth			gank s	eepage Pit eepage Bed		
Clearwate Clearwate Dr. Sump					eepage Tren		
Waste Pit Well Nonconform		arn Animal utter Barn Pen	Animal Sile Yard Wil	h Pit Stora Facili	ge w/o	Earthen Si Storage Tr Pit	ench Or
Pump Tank					·		
emporary Watertight Solid Manure Subsurface anure Liquid Manure Storage Gasoline or Stack Tank Structure Oil Tank	Waste Pond or La Disposal Unit (Specify Type)	nd Other (G	ive Descripti	on)			
Well is intended to supply water for:	2	9. FORMAT	FIONS Kind	1		From (ft.)	To (ft.)
5. DRILLHOLE	· · · · · · · · · · · · · · · · · · ·						
Dia. (in.) From (tt.) To (ft.) Dia. (in.) From (ft.)	To (ft.)	<u> </u>	ANY	_C/4	¥	Surface	
8 Surface 78			And	GLA	121	5	42
6 78 155			n. Л			42	7/
7. CASING, LINER, CURBING AND SCREEN Material, Weight, Specification	<u> </u>		<u>7~d.</u>				
Dia. (in.) & Method of Assembly From (ft.)		5	AND	Rock		76	155
6 STO BIK Pipe Surface	78						
					<u> </u>		
weld ITS							
17-53							
		10. TYPE C	FDRILLIN			·	
			ole Tool	Rot W/C	ary-hammer Irilling & air		Jetting with
GROUT OR OTHER SEALING MATERIAL Kind From (ft.)	To (ft.)	- Ro	tary-air frilling mud		tary-hammer		Air
Mud fauttings surface	78		- tary-w/drillin		" /erse Rotary		Water
						1	
		Well constru-	ction comple	ted on		27	<u>19 </u>
1. MISCELLANEOUS DATA 	20 GPM	Well is termin	nated	<u>2</u> inc	thes	above fin below	nal grade
					ر	Yes D N	
Depth from surface to normal water level	<u>0 </u>	Well disinfect	ea upon con	Pierion			· · · · · · · · · · · · · · · · · · ·
when pumping Ft. Stabilized	TYes No	Well sealed w	atertight upo	on completion	on 🖵	Yes IN	0
Water sample sent to	Madison	h	labora	tory on	6	27	19 78
/our opinion concerning other pollution hazards, informat finishing the well, amount of cement used in grouting, blass	ion concerning diff	iculties encour given on reve	tered, and d se side.	ata relating	to nearby w	ells, screens,	seals, method of
ignature / / / / /		Complete M	ail Address	RT	<u>ر</u>		
Los 1. John	ad Wall Daillas	1	h.	120	Wi		
Register	red Well Driller	•	ran	mora		•	

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infe	Registered Well Driller	i

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e16				GRÉE	E COPY - DIV	ILLER'S	COPY			Box 45	onsin 53701	
JNTY	2			CHECK			NAME					
LOCATIO	ON (Number an	d Street or 1/	section, secti		Village		,	Burke	block numbers	when av	ulable.)	
N 2-1	NEŻ-SNŻ-	·SE2-SE				_		ľ	ngton 1			
	AT TIME OF Federal		9 & Los	מי				/				
OWNER'	S COMPLETE	MAIL ADDF	RESS					/ /				
	State St		dison,		53711 NITARY SEWI	\ ERIFLOOR	DRAIN	FOUNI	DATION DRA	IN	I WASTE WA	TER DRAIN
	nswer in appro		neuresi.		C. I. TILE	C. I. 1	TILE SE	WER CONN	ECTEDINDE	PENDENI	C. I.	TILE
R WA	TER DRAIN	SEPTIC TAN	K PRIVY S	50 SEEPAGE PI	60 non			none	ABANDONED	10ne WELLIS	none INK HOLE	none
ರೆ. I.	TILE	77			25							
r ne t POI	none LUTION SOL	77 JRCES (Give	description a	none	, quarry, drain	age well, s	,	none	none		none	•
one			· · · · · · · · · · · · · · · · · · ·			<u></u>						
Tell is	intended ch Bank	to supply	water for:									
JRILLH	OLE		•			10. FO	RMATION	IS			·	
Dim(in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)	<u>-</u>	Ki	nd	<u> </u>		From (ft.)	<u> </u>
	Surface	106	6	106	131	Fil	1			-	Surface	2
						San	d				2	18
	G, LINER, C	URBING, A	ND SCREE	N		с Г Л	y-Sand	- Cnato			18	71
Dia. (in.)		ind and Weigh		From (ft.)	To (ft.)	<u> </u>	y - 0,2110	-grave				
5	P.E. Ne	w Blac	k Steel	Surface	106	San	d & Gr	avel				103
		18.97#	1			San	dstone				103	120
						San	dstone	& Che	ert		120	131
	-							·····				
				<u> </u>		DR	ILLED	BY F	ROTARY ·			
ROUT			MATERIA	1	T . (fs.)							
				From (ft.) Surface								
	cutting	38			106						1	<u> </u>
						Well c	onstructio	on comple	eted on	Dec	ember l	9 1969
t MISCI	ELLANEOUS	DATA 4	Hrs.	at 2	O GPM	Well i	s termina	ted	L6 ind	thes] above] below f	inal grade
enth fro	m surface t	o normal v	vater level	2	'2' ft.	Well o	disinfecte	d upon c	ompletion		🔀 Ye	s 🗌 No
h to	water level	when pum	ping	3	0 ft .	Well s	ealed wa	itertight (upon comp	letion	[X] Ye	ns 🗌 No
'ater sar	mple sent t	0		M	adison			labor	ratory on:	Decer	uber 22	¹⁹ 69
ells, scr	eens, seals,	, type of	casing join	nts, metho	information od of finish ven on reve	ing the	well, an	culties er nount of	ncountered, cement us	and d ed in g	ata relating routing, bl	to nearby asting, sub-
ATURI			•					ADDRESS	OUR LAKE	S WEL		3 CO.
n Virin	in H. M.	delan	auns	ègistered	Well Driller				491	8 VERON	NA ROAD	
				Plea	se do not v					4		
JLIFORM	TEST RESUL	r.	10	GAS - 24 HI	ଞ. ଜ.	AS - 48 H	rs.	CONFIRM	121)	REMAI	222	

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2. CountyDana 2. LocationParcel_in_SW 3. Owner or AgentMelvin 4. AddressRoute			RECEIVE AUG/13 1948
2. CountyDana 2. LocationParcel_in_SW 3. Owner or AgentMelvin 4. AddressRoute		(Town	
. LocationParcel_in_SW_ . Owner or AgentMelvin . AddressRoute_	· .	Village of Burke	
. Owner or AgentMelvin . AddressRoute	tof.SE tof.Sec	City and a set	
AddressRoute			
AddressRoute	Randall,		
From well to nearest: Build	ing5ft; sew	erft; drainft; s	eptic tank30ft;
dry well or filter bed75	_ft; abandoned well	ft.	•
. Well is intended to supply wa	ater for: <u>Residen</u>	Ce	
. DRILLHOLE OR EXCAVA		10. FORMATIONS:	
Dia. (in.) From (it.)	To (ft.)		Thick- Total ness Depth
0	119	Kind	(ft.) (ft.)
		Sand	7373
· · · · · · · · · · · · · · · · · · ·		_Sandstone	46119
8. CASING AND LINER PIPE	OR CURBING: From To (IL) (IL)		
	0 97		
5 Wrought steel			
. Jai Jeal's reasonered.	alonat inte Not.	so chailtaan oonastaa	1 955 247 105
			of avere durg
9. GROUT:	•		
Kind	From To (it.) (it.)		
None	·····		
		······································	·
		<u> </u>	
		·	
1. MISCELLANEOUS DATA:		••• ••••	
ield test:4 Hrs. at	10GPM.	Construction of the well was	completed on
epth from surface to water:	27 ft.		19_48
		The well is terminated (above) (below) the perman	inches
Vater-level when pumping:		Was the well disinfected up	•
Vater sample sent to laboratory	7 at	-	X No
Madison on	June 4, 19 48	Was the well sealed waterti	
11 0	1 1 1 .	Yes	X No
ignature Lenny A Registered Well Dri	mlrscht.	<u>844 E. Dayton St.</u> Complete Mail	Address
HENRY ARMBRICHT	1	Madison 3, Mis.	

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Note: Section days after con of Health on a	form p	rovideo	i by th	e Boa	ard.		•								_ ,								÷ .	12	1.01	iste	:5712	
Owner																												
Street or R	FD	Rov	te_1	<u>‡ 50</u>	ر						Po	st	Offi	ce	2	27	L	l		17	e,		Ú	12	Δ	<u>ر</u>		
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<u> </u>	1.5.#	51	<u>, 5</u>	mi	<u> e 5</u>	e	B	st		<u>,</u>	Л)a.	di	50]	Se	ec.		2	8	`
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See discussion	and illu	Istratio	on in F	Part I	II W	7ell I	Drill	ing								ran	i in	the	sp:	ace	belo	w.	cons	ide	r 10) ft	. as	ť
distance betwe	en lines	. Be	sure to	indi	cate	NOR	TH					_														•••	.4:.	:
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rtau: ane	¢			CHECK	ONE Village	e 🗆 Cii	NAME	 	rke		/		<u> </u>
	ON (Number a	nd Street or 1/4	section, sec	tion, township a			,			nbers when r	ailable.)		
WNER	AT TIME OF	DRILLING		R10E-T8N		Hy	151			. /	,		
lst]	Nationa s complete	1 Bank	of Mad	lison									
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none		none	hone	none	1	ne	1	none		one	none	<u>)</u> :	
none		URCES (Give	description	such as dump,	quarry, drain	uage well, s	tream, pon	d, laks, stc.	.)				
	s intended	to supply	water for	r:			- <u></u>		·····		·		
	ch Bank					<u></u>							
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					-	Clay					1		6
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6	P.E. Ne	w Black	Stee	1 Surface	141911	Lime	Rock		·····		15		25
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GROUT	I OR OTHE	R SEALING	MATERIA	4L	· · · · · · · · · · · · · · · · · · ·	·							
		ind		From (ft.)	To (ft.)			- <u></u>					
Meat f	forced (cement		Surface	4419"								
						AV-11					June	30	19 69
L MISCI	ELLANEOUS	DATA		<u> </u>	l	well c	onstructio	on comp	leted on	· · · · · · · · · · · · · · · · · · ·	above		<u> </u>
Id test		4	Hrs.	at 15	GPM		termina	······	10] below		al grade
)epth fro	m surface	to normal v	vater leve	39	ft.	well d	ISINTECTE	d upon	completi	on 	X) `	1.65	□ No
pth to	water level	when pum	ping	49	ft.	Well s	ealed w	atertight	upon co	ompletion		Yes 	□ No
Nater sar	mple sent	to		<u></u>	Ma	dison		labo	oratory c	on:	June	30	1969
wells, scr	reens, seals	, type of	casing jo	n hazards, i ints, method ould be give	d of finish	ning the	well, an	iculties e nount of	cement	red, and d used in g	ata relati grouting,	ng to blast	o nearby ing, sub
INATURI	E ,					COMPL	ETE MAL	ADDRESS		erson; W			Ling C
Mar	orn A	Mildes	chann	Registered W	/ell Driller					'So. Ma 'erson,		-	3549
	TECT DECIT			Please GAS - 24 HRS	do not v	write in s		CONFIR	MED	REMA	RKS		
JULLEORM	TEST RESUL	.1		uno - 14 mro	. la		പ. ക	1 min		1 Contra			

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State of Wisconsin Dartment of Natural Resources Private Water Supply		- Division's Copy	$\begin{pmatrix} 1 \end{pmatrix}$ NST -15	RUCTOR'S RE	PORT ev., 2-79		
Box 7921 Madison, Wisconsin 53707		- Driller's Copy - Owner's Copy	<u> </u>	SEP 10 19	94 085		
COUNTY Dane	CHECK (J) ONE:		me Bur	ka:			
LOCATION N.E.	Section Township Range	3. NAME Q OWNER	AGENT AT JIME OF	FDRILLING CH	ECK () ONE		
OR - Grid or Street No. Street or Road	Name	ADDRESS 350 9	Posta	an A			
AND - It available subdivision name, lot & block No. POST. OFFICE POST. OFFICE POST. OFFICE							
	itary Bldg. Drain Sanitary B	Bidg. Sewer Floor Dr Other C. J. Sewer O			orm Bidg. Sewer		
answer in appropriate block) Street Sewer j Other Sewers Foundation Dr	18		ther Sewer C.1.	:			
San. Storm C.I. Other. Sewer Clearwater	Sewage C.I. Oth Sump			Rete	ention or ematic Tank		
Dr. 'rivy Pet Pit: Nonconforming Existing Waste Pit: Nonconforming Existing	Subsurface Pumproom	arn Animal Animal Silo utter Barn Vard With	Seepage ren Glass Lined Silo Piti Storage w/o		Earthen h Manure Basin		
Pit Well Pump Tank	Nonconforming Existing	Berr	Facility Pit	Or Pit			
emporary Manure Watertight Liquid Manure Subsurface Waste Pond or Land Disposal Unit Concrete Floor Only Concrete Floor and Partial Concrete Waste Pond or Land Concrete Waste Pond or Land Disposal Unit Concrete Floor Only Concrete Floor and Partial Concrete Waste Pond or Land Concrete Waste Pond or Land Disposal Unit Concrete Floor Only Concrete Floor and Partial Concrete Waste Pond or Land Concrete Waste Pond or Land Disposal Unit Concrete Floor Only Concrete Floor and Partial Concrete Waste Pond or Land Concrete Waste Pond or Land Disposal Unit Concrete Floor And Partial Concrete Waste Pond or Land Concrete Waste Pond or Land Disposal Unit Concrete Floor And Partial Concrete Waste Pond or Land Disposal Unit Concrete Waste Pond or Land Disposal Unit Concrete Floor And Partial Concrete Waste Pond or Land Disposal Unit Concrete Waste Pond or Land Disposal Unit Concrete Floor And Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Disposal Unit Concrete Waste Pond or Land Disposal Unit Concrete Floor And Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Partial Concrete Waste Pond or Land Pond or La							
Well is intended to supply water for:	louse	9. FORMATIONS Kind		From (ft.)	To (ft.)		
6. DRILLHOLE Dia. (in.) From (tt.) To (ft.) Dia. (in.)	From (ft.) To (ft.)	clay		Surface	7		
8 Surface 63		Sand	/	7	18		
6 63 105		salt son	ad work	18	55		
7. CASING, LINER, CURBING AND SCREEN Material, Weight, Specification Dia. (in.) Mfg. & Method of Assembly	From (ft.) To (ft.)	sign conde	solo	55	105		
6 Hd. Blk Pipe	Surface 63			- 0			
280							
meld ite.		/					
A-53			,,				
		10. TYPE OF DRILLING	MACHINE USED	·			
GROUT OR OTHER SEALING MATERIAL			w/drilling mud & air	Jet	tting with		
1	From (ft.) To (ft.)	Rotary-air W/drilling mud	Rotary-hammer & air] Air 🗖] Water		
mud & cuttings	Surface 8		Reverse Rotary				
11. MISCELLANEOUS DATA	8 63	Well construction completed	ion <u>Juli</u>	above Final a	<u>19_8_4</u>		
Yield Test:AH	<u>gs. at GPM</u>	Well is terminated	inches	below final g	μau c		
Depth from surface to normal water level	<u></u>	Well disinfected upon compl	letion 4	Yes 🗌 No			
Depth of water level 70 Ft.	Stabilized Yes 🗆 No	Well sealed watertight upon	completion	Yes 🗌 No			
Water sample sent to							
finishing the well, amount of cement used in-grouting, blasting, etc., should be given on reverse side.							
Signature Business Name and Complete Mailing Address HOTAIT DIFILLENS ROUTE 2 RANDOLPH, WISCONSIN 53956							

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

See Instructions on Reverse Side Town Village _ Madis 1. County City Check one and give name T8N Ø 2. Location Let 28 R 10 E. NE. and number of premise or Section. Town and Range numbers Name of street 3. Owner [] or Agent [] ele Lu Name of individual, partnership or firm 4. Mail Address __ Parage Re __ Madisor 5. From well to nearest: Building_6_ft; sewer____ft; drain____ft; septic tank 50 ft;_____ dry well or filter bed_6_5_ft; abandoned well_____ft. _____ 6. Well is intended to supply water for: Murate 7. DRILLHOLE: **10. FORMATIONS:** From To (ft.) || Dia. (in.) | From (ft.) | To ([L.) To ((د) Dia. (in.) | From (ft.) | Kind 108 10 Δ 0 68 10 9 8. CASING AND LINER PIPE OR CURBING: 5:5 5 Kind and Weight Dia. (in.) From (ft.) To (ft.) 8 76 0 ASIA 76 40 90 · · · 9. GROUT: Kind From (IL) | To (IL) . : 68. Construction of the well was completed on: 14 Then 7000, 1963 11. MISCELLANEOUS DATA: The well is terminated 10^{-10} inches Yield test: 52 Hrs. at 12 GPM. \square above, below \square the permanent ground surface. Depth from surface to water-level: $-\frac{45}{5}$ ft. Was the well disinfected upon completion? Water-level when pumping: _____fl.____ft. Yes_____ No_____ Water sample was sent to the state laboratory at: Was the well sealed watertight upon completion? Madeson on Chai __ <u>1963</u> Yes_____ No_____ City Signature __ M. me Registered Well Driller Complete Mail Address Please do not write in space below 10'ml 10 ml 10 ml 10 ml 10 ml Rec'd_____ No____ Ans'd ______ Gas-24 hrs. _____ Interpretation _____ 48 hrs. _____ -Confirm _____ B. Coli

Examiner_.

WELL CONSTRUCTOR'S REPORT TO W. See Instructions	ISCONSIN STATE BOARD OF HEALTH Wel 6 on Reverse Side							
1. County Darce	Village Burke MAR - 21954							
	or Section, Town and Range numbers							
3. Owner for Agent	partnership or firm							
4. Mail Address K	David Rd, Madison, Wis,							
5. From well to nearest: Building_20_ft; sewer	ft; drainft; septic tankft;							
dry well or filter bed_ $5\Delta_{ft}$; abandoned well	ft							
6. Well is intended to supply water for: Private home								
7. DRILLHOLE:	10. FORMATIONS:							
Dia. (in.) From (ft.) To (ft.) Dia. (in.) From (ft.) To (ft.)	Kind From To (ft.) (ft.)							
10 0 42 6 42 120	<u> </u>							
	Saudstone 12 50							
8. CASING AND LINER PIPE OR CURBING:	Rime & Shell rock 50 95							
Dia. (in.) Kind and Weight From (fL) To (fL.)	Sandstone 95 120							
6 Standard 0 47								
9. GROUT:	· · · · · · · · · · · · · · · · · · ·							
Kind From (IL) To (IL)	· · · · · ·							
<u>Cement</u> 0 42	Construction of the well was completed on:							
11. MISCELLANEOUS DATA:	aug. 3 19/2							
Yield test:/8 Hrs. at10 GPM.	The well is terminatedS inches							
Depth from surface to water-level: -3.9 ft.	🖄 above, below 🗋 the permanent ground surface.							
	Was the well disinfected upon completion?							
Water-level when pumping:37ft.	Yes No							
Water sample was sent to the state laboratory at:	Was the well sealed watertight upon completion?							
Madison on aug 1962	Yes No							
Signature Am Culmun Registered Well Driller Please do not write	409 Rettike Que Madison, Uro Complete Mail Address 53714							
Rec'd No	10 ml 10 ml 10 ml 10 ml 10 ml							
Ans'd	Gas-24 hrs							
Interpretation	48 hrs							
	Confirm							
	B. Coli							

Examiner_____

(Office Record-Do not fill In) County Mary Twp (See Rates) TO THE WISCONSIN STATE BOARD OF HEALTH, WELL DRILLING DIVISION, MADISON, WIS. all prive, sever, etc., at their respective locations and allow uo lisw odta. WELL LOG PREMISES DIAGRAM, and REPORT For Official Record of the Board M \overline{a} \overline{A} \overline{M} \underline{a} \overline{c} TO BE USED FOR THAT PURPOSE ONLY en Driller Hasbender 1300 Owner Address B. \mathbb{D} Address lo DANE 19.3.7 Date of Report la Registration No. Give below the location of the property on which well is drilled. If incorporated village or city: Name Lot Bik Street and Ne If unincorporated hamlet County . morel Eighway If Lake Shore Plat Let 57 Highway ANE 352 <u>2885</u> If Farm If School . Came Two 2m District If other public building . Lind . . Two. Counts Sec. Miscellaneous'. Eind Counts Twa 844 WELL LOG and REPORT Kind of casing and liner in fect. Kind of shoe. Indicate grout, screen, seal, etc. WELL DIAGRAM Record of FINAL Pumping Test Give depth of formations in feet. State if dry or water bearing. .: Vertical Lines - in. Dia. Horizontal Lines - ft. Depth 8 8 10 12 14 14 16 24 . . . 4 5 glittlew ر کر Welldrillers L" Rife 1834 Duration of test. 30 7130 Hours 2 Pumping Rate. Stel Shoe G. P. M. 20 Depth of pump in well. FL Standing water-level (from surface.) FL 175 Water level when pumping d s] Fr 12-3-Water. End of test. Check: Clear _X_ Cloudy Turbid Was well sterilized before test? Yes ______ No _ Date _ To which Laboratory was sample sent? 247 Date Date 14-127 Was the well sealed on completion? How high did you leave casing above grade? Well was completed Clar 13_ 1937 Methyle Lync Bander (187) 199124 ez el el 1124 y la catol de las Well Driller: Michael Farbedy Signature. (Be sure to complete the report on the reverse side)

MAY 15 1944 WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH Town colorest (Village SHE 1. County and A Bru-TUE NO 8201 11941 99 Zit (Gity ONY あてびすしれてきを入るる 2. Location 29 - 35. Vore: 28ast Friend A 3. Owner or Agents & MICHOTTOWNORCH 4. Address: MENOVI 5. Sewer ft; Idrain to ft; seption tank worft; fdisposal unit 69 ft; barn-tyard ft; abandoned well ... ft; other trees Explain on obverse side. DRILLHOLE OR EXCAVATION INT CASING PIPE CLINER PIPETOR CURBING PILL Dia .- _ _ _ From - _ _ _ Tor I of a wing in to I some for To From (in) " To Jeskinansa :(ft.) (ft.) (in) (ft.) (ft.) 90 IU OL 9.3 5. OLASO JERVO 31.1 the name of the Owner. ζo. эрвя эрія ſŢŢ Stin C:anil Very Erre Thoreau of 18 20 -----Give the name of the street and the number of the schemes of Line L. dus sollie frormations ensu sht .stull liam and to GROUT: sht From To .etat2 and the State. To (ft.) (ft.) (ft.) (ft.) Kind Kind 2093 03 X7 323 199.3 018 120 36 O D CODI 1.2.2.2.2.2.2. 9 2 Reneus YFATIMA **MANOITICCA** dto patranano Yield-test: Hrs.-at-/O_GPM.-To static water-level 38 ft. ft, Drawdown - - - -Water-sample-was_sent_to_the_ ·____ • State Laboratory at Maduron Construction of the well was com-NOLL TAROANT pleted on 5-14-194-3 The well is terminated . Z incles mit to fodtam ptor (above) (below) the permanent grade. : ren ner : ay be g Was the Weils disinfected upon del completion? - - - Yes 1/ No Was the well sealed watertight upon completion?- - Yes / No This report was prepared by or under the supervision of: INN/ 1 Registered Well_Driller 194 3 Permit No. 206 Date 5-14

SEZ, NEZ, NNZ, NEZ, NEZSEZ sec. 29, T. 8 N., R. 10 E. Pesbender Bros., drillers, 1937

Semples examined by F. T. Thwaites, Nos. 98791-98827

UN-SS

=869'ETM	· · ·		· ·
0-40	40	Silt, sandy, light pink, dolomitic	
40-50	10	Sand, fine to silty, pink-gray, dolomitic	
50-80	30	Silt, pink, dolomitic, pebbles of dolomite	
80-100	20	Silt, gray, dolomitic	СП
100-150	50	Sand, very fine to coarse, gray, dolomitic	- 6 ⁿ pipe
150-160	10	Silt, sandy, gray, dolomitic	
160-165 165-170 170-180	5	Sandstone, medium to fine, gray, dolomitic Shale, gray, dolomitic Sandstone, fine, light gray, dolomitic	183
180-269	89	Sandstone, fine to medium, light gray,	
		slightly dolomitic	6* hole

No DNR Well Construction Report Feceived

APPENDIX F

Flush Mount Well Construction Variance Letter from the WDNR

State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

CEGT IL MOR

Carroll D. Besadny, Secretary

Southern District Headquarters 3911 Fish Hatchery Road Fitchburg, WI 53711 TELEFAX NO. 608-275-3338

File Ref: 4400

June 21, 1990

Mr. Kevin Swanson Warzyn Engineering One Science Court P.O. Box 5385 Madison, WI 53705

> SUBJECT: Request for Variance for Flush With Grade Monitoring Wells at the Wisconsin International Guard Facility in Madison

Dear Mr. Swanson:

We have received and reviewed your request for variance from monitoring well construction specifications in Wisconsin Administrative Code, NR 141.13(3b) for two flushed monitoring wells (W6 and W8) installed at the Wisconsin National Guard facility at Truax Field in Madison, Wisconsin. Based on the amount of vehicle traffic in the vicinity of these wells and likelihood to damage to above-ground wells, your request for variance is hereby approved.

If you have any questions, feel free to give me a call at 275-3332.

Sincerely,

Theodore J. Amman Environmental Specialist

TJA:ct 9007\SW1SWAN.TXA cc: Mike Lemcke - WR/2

