

**PERFLUOROCARBON (PFC)-CONTAINING FIREFIGHTING FOAMS  
AND THEIR USE IN MINNESOTA:  
WELL RECEPTOR SURVEYS FOR SELECT SITES AND  
FOLLOW-UP SAMPLING AT CRYSTAL AIRPORT AND KANDIYOH  
COUNTY LANDFILL**

**DELTA PROJECT NO. 45618DEL01**

**Prepared for:**

**Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155**

**Prepared by:**

**Delta Consultants  
5910 Rice Creek Parkway, Suite 100  
Shoreview, MN 55126  
(651) 639-9449**

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**1.0 INTRODUCTION**

**1.1 Purpose**

Delta Consultants (Delta) has worked under contract with the Minnesota Pollution Control Agency (MPCA) investigating perfluoroochemicals in Class B firefighting foams and the use of Class B firefighting foams in Minnesota. Previous information regarding this investigation was presented in the following reports:

- Perfluorocarbon (PFC)-Containing Firefighting Foams and Their Use In Firefighting Training in Minnesota, dated June 30, 2008 (the June 2008 Report);
- Addendum to PFC-Containing Firefighting Foams and Their Use In Firefighting Training in Minnesota, dated October 22, 2008 (the October 2008 Addendum Report);
- Firefighting Training Area Site Reconnaissance, Pine Bend Flint Hills Refinery, Marathon Refinery, Burnsville Fire Training Center, and Site Access for 21 Fire Departments, dated April 3, 2009 (the April 2009 Report);
- Report of Site Reconnaissance and Sampling at Select Firefighting Foam Training Areas in Minnesota, dated June 30, 2009 (the June 2009 Report);
- Report of Investigation Activities at Select Firefighting Foam Training Areas and Foam Discharge Sites in Minnesota, dated February 10, 2010 (the February 2010 Report); and,
- Perfluorocarbon (PFC)-Containing Firefighting Foams and Their Use In Firefighting Training in Minnesota, dated June 30, 2010 (the June 2010 Report).

This report presents additional data and information that addresses the recommendations for further assessment presented in the June 2010 Report. The recommendations included in the June 2010 Report are as follows:

1. Conduct groundwater receptor surveys to evaluate risk at the following sites where perfluorooctanoic acid (PFOA) and/or perfluorooctane sulfonate (PFOS) concentrations in groundwater exceeded the State health risk limits (HRLs) for drinking water:
  - Marathon Refinery in St. Paul Park
  - Bemidji Regional Airport
  - ABLE fire training center in Burnsville
  - Minneapolis-St. Paul International (MSP) Airport

2. Conduct a groundwater receptor survey to evaluate risk in the area of the Lake Superior College Emergency Response Training Center (ERTC) due to elevated PFOS and PFOA concentrations in the wetland surface water located adjacent to the training area.
3. Continue to monitor groundwater for PFCs at the existing monitoring well located downgradient of the fire site at the Kandiyohi County Landfill. Since the foam discharge occurred less than one year ago, it may take time for potential PFC impacts to migrate through the soil to the water table, and to migrate with groundwater to the location of well DMW-3. Consider installing a monitoring well closer to the site of the fire if site activities and land use nearer the fire site are conducive to the presence of a monitoring well.
4. At the time of sampling at Crystal Airport (in January 2010), there was no water in Shingle Creek. Since PFCs were detected in a sediment sample collected on the down stream side of Crystal Airport, but none were detected upstream, water samples should be collected at or near the locations of the previous sediment samples to test for PFCs in Shingle Creek adjacent to Crystal Airport.
5. Follow up with inquiries, and sampling if warranted, at any large fires that occur or have occurred where Class B foams are used extensively.

## **1.2 Background**

As a part of an overall investigation of PFCs in Minnesota, the MPCA and Minnesota Department of Health (MDH) are looking at firefighting foams as a possible source of PFCs in the environment. Aqueous film-forming foam (AFFF) was developed in the 1960s for use on Class B fires. AFFF has a fluorochemical-based surfactant that rapidly forms a film across the fire surface, which prevents the release of flammable fuel vapors and excludes oxygen from the fuel surface. PFCs have been identified in soil, sediment, surface water and groundwater samples collected from locations where various brands of Class B firefighting foams have been used repeatedly in training exercises or in large quantity to extinguish fires in Minnesota.

Municipal fire departments, fire departments at major oil refineries and airports in Minnesota, fire training schools in the State, and other knowledgeable persons were surveyed regarding their use and knowledge of Class B firefighting foams. Firefighting training sites and fire sites where AFFF is or was used were ranked for their potential to release PFCs to sensitive environments based on a number of criteria: the types and amounts of foam used, the frequency of the training events, the environmental setting of the site, and the presence of nearby receptors such as water supply wells and surface waters. The results of the research, survey and site ranking were presented in the June 2008 and October 2008 Addendum Reports. Both reports are available on the MPCA website at [www.pca.state.mn.us/cleanup/pfc/index.html](http://www.pca.state.mn.us/cleanup/pfc/index.html).

Based on the site ranking, a number of firefighting training sites and fire sites where Class B AFFF was discharged were chosen for further investigation. Additional investigation activities included site

reconnaissance, in-depth interviews with knowledgeable persons, and/or sampling of potentially affected media including groundwater, soil, surface water and/or sediments. Information and data collected at these select sites were documented in the April 2009, June 2009, February 2010 and June 2010 Reports. These reports are also available on the MPCA website. The investigation of PFCs in firefighting foam and their use in Minnesota found that PFCs are present in the environment (soil, groundwater, surface water and sediment) at sites where Class B firefighting foam was discharged repeatedly in training exercises or where large amounts of Class B foam were utilized on Class B fires.

### **1.3 Scope of Work**

To address the recommendations included in the June 2010 Report, Delta performed the following scope of work under MPCA Work Order SFDE1107-2:

1. Conduct groundwater receptor surveys at the sites identified in **Section 1.1**.
2. Conduct additional groundwater sampling from two existing wells at the Kandiyohi Landfill.
3. Conduct additional sediment and surface water sampling at Shingle Creek adjacent to the Crystal Airport.
4. Prepare a report summarizing work performed as part of the scope of work.

Details of the work performed as part of the contracted scope of work is described in **Sections 2.0 through 5.0**.

## **2.0 GROUNDWATER RECEPTOR SURVEYS**

Previous groundwater sampling identified PFOA and/or PFOS in groundwater at concentrations exceeding the State HRLs at the following firefighting foam training sites: Marathon Refinery in St. Paul Park; Bemidji Regional Airport in Bemidji, where the Bemidji Fire Department trains with Class B foam; ABLE Fire Training Center in Burnsville; and, former firefighting foam training areas at the MSP Airport. Additionally, PFOS and PFOA concentrations exceeding the State HRLs were also detected in a surface water sample collected from a wetland at the Lake Superior College ERTC in Duluth. In order to evaluate potential risks associated with the identified groundwater and surface water impacts, groundwater receptor surveys were conducted at the sites.

Groundwater receptor surveys included the following activities:

1. Walking surveys were conducted in order to identify all houses and businesses, surface water bodies, water wells, and any other features that may be a groundwater receptor. The walking surveys included the area within 500 feet upgradient and side-gradient of the sites and 1/2-mile downgradient of the sites
2. Information regarding the potable water source and water wells at the properties identified during the walking surveys were obtained from property owners or property tenants. Information was

obtained through personal interviews or via well survey questionnaires that were either left at a property or sent in the mail.

3. Inquiries were made as necessary with the water supply utility regarding municipal water sources, municipal well locations, and the availability of municipal water in the area of the sites.
4. The MDH County Well Index was searched in order to identify registered water wells located within the survey areas.

Groundwater receptor survey activities and findings for the five referenced sites are presented in **Sections 2.1 through 2.5**. Details of the well receptor surveys, including the presence or absence of water wells, the uses of identified wells, and verification of municipal water connections are summarized on **Table 1, Well Receptor Survey Summary for Select Firefighting Foam Training Sites in Minnesota**.

### **2.1 Marathon Refinery Groundwater Receptor Survey**

Class B firefighting foam is used in semi-annual training events at a firefighting training area located near the southwest corner of the refinery. The firefighting training area is built on a concrete pad with concrete curbing around the perimeter. Pooled or collected liquids on the training pad drain to an on-site storm sewer system, which is routed to an on-site wastewater treatment plant. Marathon Refinery has also utilized significant quantities of Class B firefighting foam to extinguish two large petroleum fires on the refinery grounds. A groundwater sample collected in an upgradient groundwater flow direction from the fire training area and upgradient of the site of the fires was also found to contain PFOS at a concentration above the State HRL.

The latest groundwater monitoring report for the Marathon Petroleum Company leaksite #917 was reviewed at the office of the MPCA on September 1, 2010. According to the latest *2008 Groundwater Monitoring Report* prepared by URS Corporation, the groundwater flow direction in the area of the firefighting practice area at the refinery is to the southwest, toward the Mississippi River. The Mississippi River is located approximately 600 feet west of the firefighting practice area at the refinery. According to the current MPCA Project Manager for leaksite #917, there has been no (recent) groundwater receptor survey associated with the refinery leaksite due to the proximity of the river adjacent to and downgradient of the site.

Based on this information, a groundwater receptor survey was conducted in the area situated within one-half mile southwest of the Marathon Refinery fire training area. The following Marathon Refinery receptor survey documents are included in **Appendix A**:

1. The figure **Well Receptor Survey – Marathon Refinery** depicts all properties identified during the walking survey.

2. Completed survey questionnaires received from property owners/occupants within the receptor survey area. Survey questionnaire responses are summarized in **Table 1**.
3. A well receptor map which utilizes the MDH County Well Index topographic base map showing the locations and unique well numbers of wells in the survey area registered with the State.
4. Well records for all of the wells identified within the survey area, including non-supply (monitoring) wells.

The receptor survey identified five water supply wells. The wells are located at the Hidden Harbor Marina and are used for a variety of purposes, including wash water and drinking water. Three domestic wells registered to Willie's Hidden Harbor were identified on the MDH County Well Index: unique well nos. 441942, 576171 and 429870. The Hidden Harbor Marina is located approximately 0.3 miles south of the fire training area at Marathon Refinery. No other water supply wells were identified by the receptor survey.

The City of St. Paul Park Public Works Department confirmed that the properties located within the receptor survey area are connected to the municipal water service, except for the Hidden Harbor Marina property; the City had no record of a property at 810 Front Street. The property parcel at 812 Front Street contains two houses, and the owner of the Hidden Harbor Marina indicated that this parcel and houses are also owned by him.

As previously mentioned, the Mississippi River is located approximately 600 feet west of the firefighting training area. Other PFC sampling of water, sediments and fish tissue from the Mississippi River has been conducted by the MPCA and as part of the PFC/Firefighting Foam project and as part of other non-related projects. Concentrations of PFCs have been identified in the waters, sediments and fish tissue collected from various locations along the Mississippi River.

## **2.2 Bemidji Regional Airport Groundwater Receptor Survey**

The Bemidji Fire Department trains with Class B firefighting foam in annual training exercises conducted in front of the fire station at the Bemidji Regional Airport.

Based on Delta's review of *Water Resources of the Mississippi Headwaters Watershed, North-Central Minnesota*, Hydrologic Investigations Atlas HA-278, U.S. Geological Survey, 1968, the current topographic map, and depth to water data collected during previous sampling at the Bemidji Airport, the depth to groundwater at the fire training area at the Bemidji Airport is approximately 14.5 feet bgs, and the inferred groundwater flow direction is generally to the southeast.

Delta conducted a groundwater receptor survey of the area located within one-half mile south and southeast of the training area at the Bemidji Airport. The following receptor survey documents are included in **Appendix B**:

1. The figure **Well Receptor Survey –Bemidji Regional Airport** depicts all properties identified during the walking survey.
2. Completed survey questionnaires received from property owners/occupants within the receptor survey area. Survey questionnaire responses are summarized in **Table 1**.
3. A well receptor map which utilizes the MDH County Well Index topographic base map showing the locations and unique well numbers of wells in the survey area registered with the State.
4. Well records for all of the wells identified within the survey area, including non-supply (monitoring) wells.

The receptor survey identified one active water supply well within or near the survey area. The well is present at the Kraus Anderson shop, which is located approximately one-half mile south-southeast of the fire training area at the Bemidji Airport. According to Kraus Anderson personnel, the well is approximately 20 feet deep and well water is used for washing and sanitary purposes, and not for drinking. A well record for this well was not found on the MDH County Well Index.

The MDH County Well Index lists Unique Well No. 169190 as an active commercial well located approximately one-quarter mile south of the fire foam training area at the airport.. Interviews with the current and past property owners of the property on which the well was located indicate that the well has been capped and a building addition built over the location of the sealed well.

Unique Well No. 450493 is reportedly located just outside the well receptor area. Delta located this well on the well receptor map included in **Appendix B** based on the section-township-range-subsection description, however, the actual location of the well was not field verified.

Multiple private domestic wells are registered with the MDH County Well index located between three-quarters mile and one mile southeast and east of the training area at the Bemidji Airport, as shown on the well receptor map included in **Appendix B**. Although located outside the receptor survey area, well records for these wells indicate that the wells are completed in the surficial deposits aquifer, with well depths ranging from 50 to 72 feet. The City of Bemidji Department of Public Works' Water & Sewer Superintendent was interviewed regarding the availability of municipal water in the receptor survey area. The Superintendent indicated that municipal water was available in the area.

Grass Lake is located approximately one-half mile south-southwest of the firefighting foam training area at the Bemidji Airport. According to the Bemidji Street Department, storm water at the airport is routed to

the southeast toward a low area (or intermittent wetland area) located along the east side of the airport, which in turn flows toward a wetland area to the north. The Bemidji Department of Streets does not believe storm water from the airport would flow toward Grass Lake.

### **2.3 ABLE Fire Training Center Groundwater Receptor Survey**

The ABLE Fire Training Center is jointly owned by the cities of Apple Valley, Burnsville, Lakeville and Eagan. The Burnsville Fire Department trained occasionally at the fire training center with Class B firefighting foam between 1989 and 2004. The ABLE Fire Training Center is located at the southeast corner of the intersection of Cliff Road and River Ridge Boulevard in Burnsville.

Based on Delta's review of *Geologic Atlas, Dakota County, Minnesota*, County Atlas Series Atlas C-6, Minnesota Geological Survey, 1990, the current topographic map, and depth to water data collected during previous sampling, the depth to groundwater at the ABLE Fire Training Center is approximately 45 to 50 feet bgs and the groundwater flow direction is generally to the north-northwest, toward the Minnesota River.

Delta conducted a groundwater receptor survey of the area located within 500 feet of the fire training center and the area situated one-half mile to the northwest and northeast. The following receptor survey documents are included in **Appendix C**:

1. The figure **Well Receptor Survey – ABLE Fire Training Center, Burnsville** depicts all properties identified during the walking survey.
2. Completed survey questionnaires received from property owners/occupants within the receptor survey area. Survey questionnaire responses are summarized in **Table 1**.
3. A well receptor map which utilizes the MDH County Well Index topographic base map showing the locations and unique well numbers of wells in the survey area registered with the State.
4. Well records for all of the wells identified within the survey area, including non-supply (monitoring) wells.

There are three municipal wells located within the survey area, Burnsville Well Nos. 1, 2 and 8. An interview during the receptor survey site reconnaissance with several City of Burnsville Public Works personnel indicated that they are not aware of any other water supply wells in the survey area besides municipal wells. These three wells, along with other Burnsville municipal wells, were tested twice for PFCs in 2009 by the Minnesota Department of Health. Laboratory analysis only detected 0.02 micrograms per liter (ug/l) perflourobutanoic acid, or PFBA, in one of the water samples collected from Well No. 1. The State HRL for PFBA is 7 ug/l. No other PFC compounds were detected in samples collected from Well No. 1, and no PFCs were detected in water samples collected from the other wells.

A search of the MDH County Well Index identified Unique Well No. 229108, an industrial well registered to the Northwestern States Cement Company installed in 1963. The MDH and the Dakota County Water Resources Department were contacted regarding the status of the well. The well is registered as active, however, the property formerly occupied by the Northwestern States Cement Company was recently razed to the ground and the ground surface bulldozed, with no visual evidence of the well evident. The Dakota County Water Resources Department indicated that they would follow-up with the well owner to have the well brought into compliance, which may mean filing the necessary paperwork if the well was sealed or abandoned during demolition of the site.

No other water supply wells were identified by the water well survey associated with the ABLE Fire Training Center.

Wetlands are located across Cliff Road from the ABLE Fire Training Center. The wetland is situated at the bottom of a hill where surface water runoff from the ABLE Fire Training Center or an adjacent industrial area up the hill may collect.

#### **2.4 MSP Airport Groundwater Receptor Survey**

Historically, the MSP fire department trained with Class B firefighting foam at two locations on airport property. The former training locations have since been at least partially excavated as part of the redevelopment of that portion of the airport.

Based on Delta's review of *Geologic Atlas, Hennepin County, Minnesota*, County Atlas Series Atlas C-4, Minnesota Geological Survey, 1989, site-specific groundwater flow data provided by the Metropolitan Airports Commission, and depth to water data collected during previous sampling, the depth to groundwater in the area of the former firefighting foam training areas at MSP Airport is approximately 25 to 28 feet bgs and the groundwater flow direction is generally to the southeast.

Delta conducted a groundwater receptor survey of the area located within 500 feet of the former fire training areas and the area situated one-half mile to the southeast. The following receptor survey documents are included in **Appendix D**:

1. The figure **Well Receptor Survey – MSP Airport** depicts all properties identified during the walking survey.
2. A well receptor map which utilizes the MDH County Well Index topographic base map showing the locations and unique well numbers of wells in the survey area registered with the State.

No water supply wells and no surface waters were identified within the survey area.

## **2.5 Lake Superior College ERTC Groundwater Receptor Survey**

The Lake Superior College ERTC was built in 1994 and a firefighter training area where firefighters can practice extinguishing simulated aircraft fires. Class B firefighting foam may have been used in training exercises from 1994 through 1996. Firefighting training foam, which is reportedly not made with PFCs, have been used for training exercises since approximately 1996.

*Review of Water Resources of the St. Louis River Watershed, Northeastern Minnesota, Hydrologic Investigations Atlas HA-586, U.S. Geological Survey, 1979, and the current topographic map, the groundwater flow direction is generally to the south, toward the St. Louis River. The depth to groundwater at a nearby well as reported by the well owner is approximately 75 feet.*

Delta conducted a groundwater receptor survey of the area located within one-half mile southwest and southeast of the ERTC. The following receptor survey documents are included in **Appendix E**:

1. The figure ***Well Receptor Survey – Lake Superior College ERTC*** depicts all properties identified during the walking survey.
2. Completed survey questionnaires received from property owners/occupants within the receptor survey area. Survey questionnaire responses are summarized in **Table 1**.
3. A well receptor map which utilizes the MDH County Well Index topographic base map showing the locations and unique well numbers of wells in the survey area registered with the State.

There are six houses located within the survey area and all of them are served by well water. Two of the houses share a well, so there are five private water supply wells in the survey area. Well records for these wells are not available on the MDH County Well Index. The City of Duluth Public Works Department confirmed that the houses within the receptor survey area are not connected to the municipal water supply, but that a water main is available to the property at 11825 Highway 23.

There are at least two creeks flowing near the firefighting practice area at the ERTC, which apparently join before flowing southward beneath Highway 23 and on to the back waters of the St. Louis River located approximately 0.2 miles south of the ERTC fire training area. PFCs were identified in a sediment sample collected previously as part of this project from one of the creeks.

## **3.0 FOLLOW-UP GROUNDWATER SAMPLING AT THE KANDIYOHİ LANDFILL**

A fire occurred at the construction and demolition (C&D) portion of the Kandiyohi Landfill in late October 2009. Fire departments from several nearby towns responded to the fire, and approximately 545 gallons of Class B firefighting foam concentrate were used to extinguish the landfill fire. The landfill is located approximately 3.5 miles southwest of New London, Minnesota.

Groundwater samples have been collected for PFC analysis from two existing wells at the Kandiyohi County Landfill on two occasions, in January and in May 2010. The approximate area of the foam discharge and the location of the sampled monitoring wells are shown on the figure ***Kandiyohi Landfill Firefighting Foam Discharge Site***, which is included in **Appendix F**. Monitoring well DMW-1A is located upgradient of the C&D portion of the landfill where the fire occurred, and monitoring well DMW-3 is located approximately 300 to 350 feet away in a roughly downgradient direction. Laboratory analysis detected PFBA in samples collected from DMW-3, at concentrations of 0.0061 ug/l and 0.011 ug/l in January and May 2010, respectively. No other PFC compounds were detected in the DMW-3 samples, and no PFCs were detected in the groundwater samples collected from DMW-1A.

Delta collected groundwater samples from the same wells, DMW-1A and DMW-3, on August 12, 2010. The groundwater samples were submitted to Axys Analytical Services Ltd. for analysis of PFCs. Laboratory analysis detected 0.00761 ug/l PFBA in the groundwater sample collected from DMW-3. No other PFC compounds were detected in the DMW-3 sample, and no PFCs were detected in the groundwater sample collected from DMW-1A. A copy of the data provided by the laboratory report is included in **Appendix F**. A table summarizing laboratory results for all three rounds of sampling at the Kandiyohi Landfill are included in **Appendix F**.

The lack of significant concentrations of PFCs detected in groundwater at DMW-3 may be because either PFCs in the firefighting foam released on the fire may not have migrated as far as DMW-3, or DMW-3 is not situated directly hydraulically downgradient from the area where the firefighting foam was discharged. However, based on *Water Table Contour Maps* for the landfill dated July 2008 and October 2008 provided by the MPCA, DMW-3 appears to be situated roughly downgradient of the area where firefighting foam was reportedly discharged. Based on ground surface and water table elevation data provided by the MPCA and depth to water data collected during sample collection, the depth from the surface where firefighting foam was discharged to the water table is approximately 25 feet to 35 feet. The distance between the C&D area where foam was discharged and the downgradient location of DMW-3 is approximately 300 to 350 feet. It appears likely that PFCs released to the environment have had insufficient time to migrate as far as the location of DMW-3 and that additional sampling at DMW-3 will be necessary to monitor for PFC impacts at DMW-3.

#### **4.0 FOLLOW-UP CREEK SAMPLING AT CRYSTAL AIRPORT**

Interviews with responding municipal fire departments around the Crystal Airport indicated that Class B firefighting foams may have been used in the past to respond to plane crash fires at the Crystal Airport. Generally, storm water runoff flows through various pathways and drainage ditches across the airport grounds to Shingle Creek. Shingle Creek flows along the east side of Crystal Airport to the southeast, to Twin Lake. Sampling for PFCs was conducted at Crystal Airport in January 2010 from several locations,

including upstream and downstream locations in Shingle Creek adjacent to Crystal Airport. Due to the winter season, only sediment samples, and not water samples, were collected from the Shingle Creek sampling locations. Sampling results identified several PFC compounds present the downstream sediment sample; PFCs were not detected in the sediment sample collected from the upstream location in Shingle Creek.

On October 1, 2010, Delta collected sediment and surface water samples from the same locations in Shingle Creek as the January 2010 sediment samples. The sample locations are shown on the figure **PFC Sampling Locations, October 2010 – Crystal Airport**, which is included in **Appendix G**. The samples collected from the upstream location were labeled Sed-3 (sediment) and SW-1 (surface water), and the samples collected from the downstream location were labeled Sed-4 and SW-2. The surface water and sediment samples were submitted to Axys Analytical Services Ltd. for analysis of PFCs.

Laboratory results for the surface water samples SW-1 and SW-2 detected concentrations of several PFC compounds; none of the concentrations were above the State HRLs. The PFC concentrations detected in the upstream sample (SW-1) were slightly higher than those detected in the downstream sample. A copy of the data provided by the laboratory is included in **Appendix G**.

Laboratory results for the sediment samples were not available at the time of this report but will be included in a future report to the MPCA.

## **5.0 INQUIRIES/SAMPLING AT RECENT FIRES**

At the time of this report, no large fires where large quantities of Class B foam were used were identified.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 Groundwater Receptor Surveys**

The groundwater receptor surveys conducted for the firefighting foam training sites at the Marathon Refinery in St. Paul Park, the Bemidji Airport, the ABLE Fire Training Center in Burnsville, MSP Airport, and the Lake Superior College ERTC in Duluth, identified potential groundwater receptors as described below:

- **Marathon Refinery:** Five water supply wells were identified by the receptor survey. The wells are present at the Hidden Harbor Marina located approximately 0.3 miles south of the firefighting training area at Marathon Refinery. Delta recommends pursuing access to the Hidden Harbor Marina for the purpose of collecting water samples from the five identified wells for PFC analysis.

Other PFC sampling by the MPCA of water, sediments and fish tissue from the Mississippi River has identified concentrations of PFCs in all of these media. Further, PFCs have been identified upgradient of the fire training area and fire sites at the Marathon Refinery. Therefore, sampling of the Mississippi River adjacent to the Marathon Refinery for PFCs is not likely to yield data useful to determining if firefighting foam training practices at the Marathon Refinery are releasing PFCs to the Mississippi River since the PFCs may be attributed to other sources.

- Bemidji Airport: One water supply was identified in the receptor survey area. The well is used at the Kraus Anderson construction shop for non-potable uses. While water from this well does not currently present exposure to PFCs from drinking the water, the non-potable uses may represent an exposure when well water is used for pressure cleaning construction equipment. Delta recommends pursuing access to the Kraus Anderson shop property for the purpose of collecting a water well sample for PFC analysis.

According to the well record for Unique Well No. 450493, it appears to be located just outside the well receptor area. The actual location of the well should be field verified. If the well is located within or near the receptor survey area, a water well sample for PFC analysis is recommended.

Other domestic water wells are located less than one mile southeast/downgradient of the training area at the Bemidji Airport. Since these wells are completed to relatively shallow depths into the surficial deposits aquifer, Delta recommends completing an expanded water well survey for the area southeast and east of the airport, situated between the airport and Highway 71. Upon completion of the survey, any water supply wells identified in the survey area should be sampled for PFCs.

- ABLE Fire Training Center, Burnsville: The groundwater receptor survey did not identify any non-municipal water supply wells in the survey area, except for the industrial well registered to the Northwestern States Cement Company. The property formerly occupied by Northwestern States Cement Company has been demolished and razed, and the well was not observed during a site reconnaissance. Therefore, this well likely no longer exists. Municipal wells present within the survey area have been sampled previously and detected PFC concentrations were below the HRLs. Delta recommends no further actions at this time with regards to sampling water supply wells in the receptor survey area for PFCs.

A wetland is located across Cliff Road from the ABLE Fire Training Center and downhill from an adjacent industrial area. The wetland may collect storm water runoff from the ABLE Fire

Training Center and the industrial area uphill. Delta recommends sampling wetland sediment and surface water for PFCs in order to determine the levels of PFCs present.

- MSP Airport: No potential groundwater receptors were identified in the receptor survey area at MSP Airport. Further, a stormwater retention pond and existing groundwater monitoring wells located more than one-half mile downgradient of the former fire training areas were sampled as part of a previous scope of work. Delta recommends no further actions at this time with regards to PFCs associated with the former fire training areas at MSP Airport.
- Lake Superior College ERTC, Duluth: The groundwater receptor survey identified five residential water supply wells located within one-half mile of the ERTC. The residences are not connected to the municipal water supply. The MPCA is currently pursuing access to these residences for the purpose of collecting water well samples for PFC analysis.

The MPCA is also pursuing access to the ERTC in order to collect sediment and surface water samples from the adjacent wetland and creek for PFC analysis.

## **6.2 Additional Sampling at Kandiyohi County Landfill**

Three rounds of groundwater sampling have been collected from existing monitoring wells since the October 2009 fire at the Kandiyohi County Landfill. Laboratory analyses of the groundwater samples have detected similar concentrations of PFBA in DMW-3, which is presumably located downgradient of the site of the C&D fire. No other PFC compounds were detected in groundwater samples from DMW-3, and no PFCs were detected in upgradient groundwater samples collected from DMW-1A.

At all of the firefighting foam training sites where groundwater was sampled as part of the PFC/Firefighting Foam investigation, foam training occurred either historically or over the course of several years through the time of sampling. There are no other sites besides the Kandiyohi County Landfill where groundwater was sampled so soon after a sole release of Class B foam, thus, there are no comparable sites to evaluate "breakthrough" data for PFC migration through soil and groundwater to a monitoring point. As discussed in **Section 3.0**, the lack of significant concentrations of PFCs detected in groundwater at DMW-3 appears to be due to travel time associated with both the migration of PFC-containing Class B firefighting foam from the surface of the landfill where foam was discharged to the water table, and the transport of PFCs in groundwater to the location of DMW-3.

Delta recommends additional sampling of groundwater at DMW-1A and DMW-3 to continue monitoring for PFCs in groundwater associated with the October 2009 discharge of firefighting foam.

### **6.3 Sampling at Crystal Airport**

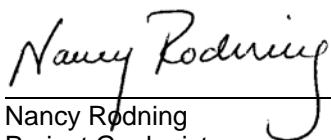
Laboratory results from the October 1, 2010, sediment sampling at Shingle Creek are pending at the time of this report. Conclusions and recommendations with regards to PFC sampling at Crystal Airport will be provided to the MPCA in a separate report.

### **6.4 Inquiries and/or Sampling at Large Fire Sites**

Sampling conducted as part of the MPCA's PFCs in Firefighting Foam investigation has identified PFCs in soil, groundwater, surface water and sediments at sites where significant quantities of Class B foam were discharged either repeatedly over time at a training site, or during a fire response. While the use of Class B foam is necessary and should be used to protect lives and property at a Class B fire, the release or migration of PFC-containing Class B foam to non-paved surfaces or surface water bodies will likely result in the release of PFCs to the environment. The release of PFC-containing Class B foam in or near environmentally sensitive areas such as Wellhead Protection Areas, areas with shallowly underlying karst bedrock, or lakes or streams may inadvertently provide an exposure pathway that may potentially impact human health via drinking water, direct exposure, or fish consumption. At large fire sites where significant quantities of Class B firefighting foam are discharged, the MPCA may want to assess the environmental setting, the presence of nearby surface waters, the presence of water supply wells in the area, and the potential risk posed to identified receptors. Water sample collection from private wells or surface water bodies for PFCs may be warranted dependent upon results of the assessment.

### **7.0 REMARKS**

The recommendations contained in this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Delta's client and anyone else specifically identified in writing by Delta as a user of this report. Delta will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this report.



Nancy Rodning  
Project Geologist

Date: November 15, 2010

Reviewed by:



John Estes  
Project Manager

Date: November 15, 2010

## **TABLES**

Table 1      Well Receptor Survey Summary for Select Firefighting Foam Training Sites  
in Minnesota

**TABLE 1**  
**WELL RECEPTOR SURVEY SUMMARY FOR SELECT FIRFIGHTING FOAM TRAINING SITES IN MINNESOTA**

Site # From Receptor Survey Map	Property Address	Property Occupant	Water Supply Well (Yes or No)	Well Use	Use of Public Water Supply?	How Determined	Public Water Supply Connection Confirmed?	Comments
<b>BEMIDJI AIRPORT</b>								
1	3824 Moberg Dr. NW	Bemidji Regional Airport	No	NA	Yes	Interview, Airport Manager	No	
2	3507 Gillet Dr. NW	Rausch Cold Weather Testing Facility	No	NA	Yes	Interview, site personnel	No	
3	3700 Norris Ct. NW	Bureau of Criminal Apprehension, MN Dept. of Public Safety	No	NA	Yes	Interview, site personnel	No	
4	3622 Moberg Dr. NW	Great River Dentistry	No	NA	Yes	Questionnaire returned	No	
5	3600 Moberg Dr. NW	Indoor Auto Mall	No	NA	Yes	Interviews, current and previous site owners	No	Well no. 169190 was a water supply well at this site; well has been sealed.
6	3500 Moberg Dr. NW	Quality Inn	No	NA	Yes	Interview, site manager	No	
7	3300 Gillett Dr. NW	Paul Bunyan Elementary & ISD #31 Offices	No	NA	Yes	Interview, school district business manager	No	
8	Gillett Dr. NW	City of Bemidji Water Treatment Facility	No	NA	Yes	Interview, City of Bemidji Public Works	No	
9	3168 Adams Av. NW	Kraus Anderson Construction Co.	Yes	Non-potable		Interview, site personnel	No	
10	3920 Hwy. 2 W.	MNDOT Northwest District	No	NA	Yes	Interview, site personnel	No	
<b>ABLE FIRE TRAINING CENTER, BURNSVILLE</b>								
Site	River Ridge Blvd.	ABLE Fire Training Center	No	NA	Yes	Interview, Burnsville Fire Chief	No	
1	12205 River Ridge Blvd.	Northern Tool & Equipment	No	NA	Yes	Interview, site personnel	No	
2	12101 Interstate 35W S.	Dodge of Burnsville	No	NA	Yes	Questionnaire returned	No	
3	600 121st St. W.	Walser Subaru	No	NA	Yes	Interview, site personnel	No	
4	12001 Interstate 35W S.	All State Self Storage	No	NA	Yes	Interview, site personnel	No	
5	11937 Interstate 35W S.	Chalet Driving Range	No	NA	Yes	Interview, property owner	No	Several groundwater monitoring wells related to a historical dump are located on the property.
6	Pleasant Av.	Archery range, tree/brush dump	No	NA	No	Interview, Burnsville Public Works	No	
7	201 121st St. W.	Bury & Carlson, concrete/asphalt recycling	No	NA	Yes	Interview, site personnel	No	
8	25 Cliff Rd. W.	Rivers Edge Business Center	No	NA	Yes	Questionnaire returned	No	
9	15 Cliff Rd. W.	American Electric Motion	No <sup>1</sup>	NA	Yes	Questionnaire not returned	No	
10	12259 Nicollet Av.	Nicollet Business Campus II	Unknown	NA	Yes	Questionnaire returned	No	Managed by Wellington Management
11	12270 Nicollet Av.	Nicollet Business Campus	No	NA	Yes	Questionnaire returned	No	Managed by Wellington Management
12	50 River Ridge Ct.	Burnsville Public Works	Yes	Municipal	Yes	Interviews with Public Works personnel		City well nos. 1, 2, 4, 5, 7, 8 nearby, locations indicated by Public Works personnel. No other water supply in survey area known to Public Works personnel.
13	12200 River Ridge Blvd.	Vacant/undeveloped	Yes	Industrial	NA	Site visit; correspondence with State, County.	No	Unique well no. 229108, industrial well, registered active. Buildings recently demolished and site razed. Site currently vacant. State and County cannot confirm current well status.

**TABLE 1**  
**WELL RECEPTOR SURVEY SUMMARY FOR SELECT FIRFIGHTING FOAM TRAINING SITES IN MINNESOTA**

Site # From Receptor Survey Map	Property Address	Property Occupant	Water Supply Well (Yes or No)	Well Use	Use of Public Water Supply?	How Determined	Public Water Supply Connection Confirmed?	Comments
<b>LAKE SUPERIOR COLLEGE ERTC, DULUTH</b>								
Site 1	11501 Hwy. 23	Lake Superior College ERTC	No	NA	Yes	Interview, Program Supervisor	No	
1	10401 Hwy. 23	Residence	No	NA	No	Interview, homeowner	City Public Works confirmed no connection	Residence connected to private well at 10423 Hwy. 23.
2	10423 Hwy. 23	Residence	Yes	Drinking	No	Based on other interviews	City Public Works confirmed no connection	Questionnaire not returned.
3	11801 Hwy. 23	Residence	Yes	Drinking	No	Interview, homeowner	City Public Works confirmed no connection	
4	11601 Hwy. 23	Residence	Yes	Drinking	No	Interview, homeowner	City Public Works confirmed no connection	Well depth 411 feet.
5	11605 Hwy. 23	Residence	Yes	Drinking	No	Interview, homeowner	City Public Works confirmed no connection	New well pump recently installed, depth to water ~75 feet.
6	11825 Hwy. 23	Residence	Yes	Drinking	No	Interview, homeowner	City Public Works confirmed no connection	
<b>MSP AIRPORT</b>								
1	7150 Humphrey Drive	Humphrey Terminal	No	NA	Yes	Interview, Mark Wacek, MAC	No	
2	Humphrey Drive	Humphrey Terminal Parking Ramp	No	NA	Yes	Interview, Mark Wacek, MAC	No	
3	34th Ave. S.	MSP Fire Station No. 1	No	NA	Yes	Interview, Mark Wacek, MAC	No	
4	34th Ave. S.	Hangars 4-8	No	NA	Yes	Interview, Mark Wacek, MAC	No	
5	2825 Cargo Rd.	FedEx	No	NA	Yes	Interview, Mark Wacek, MAC	No	
6	Cargo Rd.	UPS	No	NA	Yes	Interview, Mark Wacek, MAC	No	
7	MSP Airport	South airfield lighting electrical center	No	NA	Yes	Interview, Mark Wacek, MAC	No	
8	MSP Airport	Glycol Management Facility	No	NA	Yes	Interview, Mark Wacek, MAC	No	
<b>MARATHON REFINERY, ST. PAUL PARK</b>								
1	729 Factory St.	Residence, vacant	No	NA	Yes	Questionnaire not delivered	Yes	Questionnaire returned by Post Office, marked "vacant". Municipal water connection confirmed by City Public Works Dept; assume no water supply well on property.
2	812 Front St.	Residence	No	No	Yes	Questionnaire not returned	Yes	Two houses located on property, owned by Hidden Harbor Marina. Marina owner not aware of water wells on property.
3	388 9th Ave.	Hidden Harbor Marina	Yes	Potable uses	No	Interview, property owner	Confirmed no connection	Five water supply wells located on property.
4	Lions Levee Park	7th Ave. W.	NA	NA	NA	Site reconnaissance	NA	No buildings with water service.

**Notes:**

Sites included on this Table are depicted on applicable Well Receptor Survey figures included in report.

<sup>1</sup> Receptor Survey Questionnaire indicated that if questionnaire was not returned it would be assumed that the property has no water wells, basements or sumps.

NA - Not Applicable

Delta Consultants

**APPENDIX A**

**Marathon Refinery**  
**Groundwater Receptor Survey Documents**



LEGEND:

Property Occupant

- 1 Residence – 729 Factory St.
- 2 Residence – 812 Front St.
- 3 Hidden Harbor Marina – 388 9th Ave.
- 4 Lions Levee Park – 7th Ave. S.



**FIGURE  
RECEPTOR SURVEY  
MARATHON OIL FIRE TRAINING AREA  
ST. PAUL PARK, MINNESOTA**

PROJECT NO. 45618DEL01	PREPARED BY NR	DRAWN BY DD
DATE 11/9/10	REVIEWED BY	FILE NAME Marathon-1



Receptor Survey Questionnaire

view telephone  
10-26-10

PROPERTY ADDRESS: 388 9th Av. W - Hidden Harbor Marine

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well active (in use), abandoned (not in use), or sealed (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_ *Bought property*

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_ *~1 year ago*

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) \_\_\_\_\_

1f. Where on the property is (was) the well located? 1 - Main house

1 - Perch out 1 - Basement 1 - Housing 1 - Drink water

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

*810 & 812 front St - owned by  
Marine*

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?

Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Tim Kennedy

Telephone Number 651-400-0846 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

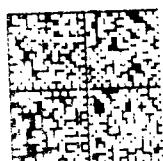
If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Nancy Rodning, SUITE 100  
5910 RICE CREEK PARKWAY, SUITE 100  
ST. PAUL, MINNESOTA 55126 USA

DELTA

VRK

PROPERTY OWNER OR TENANT  
729 FACTORY STREET  
ST. PAUL PARK, MN 55071



\$ 000.44

VAC

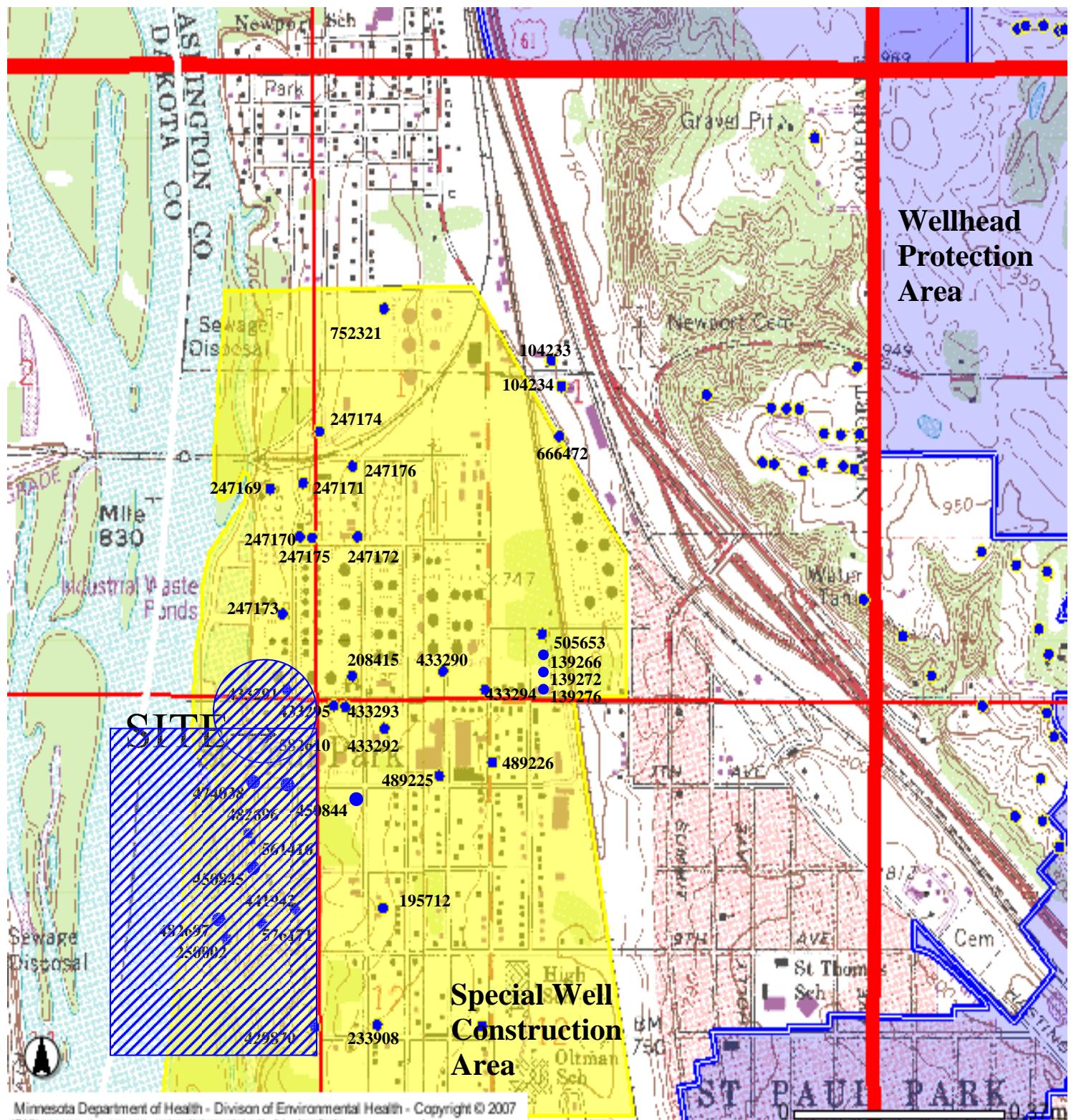
MXIE 550 4E 4  
RETURN TO SELLER  
VACANT  
UNABLE

BC: 55126502

33071345023

NOT A SOLICITATION

MARATHON PETROLEUM REFINERY CWI Well Map



## Approximate Area of Receptor Survey

Minnesota Unique Well No.

250002

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date07/25/1995  
05/11/2005

Well Name WILLIE'S HIDDEN HARBOR Township Range Dir Section Subsections Elevation 27 22 W 11 ADBDCD Elevation Method				690 ft. 7.5 minute topographic map (+/- 5 feet)	Well Depth 235 ft.	Depth Completed 235 ft.	Date Well Completed
				Drilling Method --			
				Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
				Use Abandoned	Status Sealed		
				Casing Type Steel (black or low carbon)	Joint No Information	Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/>	No Above/Below 0 ft.
				Casing Diameter 4 in. to 220 ft.	Weight lbs./ft.	Hole Diameter	
				Open Hole from 220 ft. to 235 ft.			
				Screen NO Diameter	Make Slot/Gauze	Length	Set Between
				Static Water Level 14 ft. from Land surface	Date Measured 06/06/1995		
				PUMPING LEVEL (below land surface) ft. after hrs. pumping	g.p.m.		
				Well Head Completion Pitless adapter manufacturer	Model		
				<input type="checkbox"/> Casing Protection	<input type="checkbox"/> 12 in. above grade		
				<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS GAMMA LOGGED 6-6-1995. WELL SEALED 07-15-1996 BY 62119				Grouting Information	Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Located by: Minnesota Geological Survey				Method: Digitized - scale 1:24,000 or larger (Digitizing Table)			
Unique Number Verification: Information from owner				Input Date: 07/18/1996			
System: UTM - Nad83, Zone15, Meters				X: 499426 Y: 4965451			
				Nearest Known Source of Contamination feet direction type			
				Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Pump Not Installed Date Installed			
				Manufacturer's name Model number HP Volts			
				Length of drop Pipe ft. Capacity g.p.m. Type Material			
				Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Borehole Geophysics Yes First Bedrock Prairie Du Chien Group Last Strat St.Lawrence				Well Contractor Certification Minnesota Geological Survey License Business Name	MGS		Name of Driller
County Well Index Online Report				250002	Printed 11/3/2010 HE-01205-07		

Minnesota Unique Well No.

429870

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date08/15/1991  
09/29/2005

Well Name BROWN, WILLIE Township Range Dir Section Subsections Elevation 27 22 W 11 DAAAAA Elevation Method		733 ft. CALC FROM 2-FOOT COUNTY DEM	Well Depth 220 ft.	Depth Completed 220 ft.	Date Well Completed 02/23/1987	
			Drilling Method Non-specified Rotary			
Well Address 215 10TH AV W ST PAUL PARK MN 55071			Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
Geological Material GRAVEL LIME SANDROCK		Color BROWN YELLOW YELLOW	Hardness SOFT HARD SOFT	From 0 8 165 220	Use Domestic Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 1 ft.	
				Casing Diameter 8 in. to 8 ft. 4 in. to 189 ft.	Weight 18 lbs./ft. 11 lbs./ft.	Hole Diameter 12 in. to 8 ft. 8 in. to 18 ft.
				Open Hole from 189 ft. to 220 ft.		
				Screen NO Diameter	Make Slot/Gauze	Type Length Set Between
				Static Water Level 40 ft. from Land surface	Date Measured 02/23/1987	
				PUMPING LEVEL (below land surface) 80 ft. after 2 hrs. pumping	20 g.p.m.	
				Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS			Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			Grout Material: Neat Cement	from 0 to 189 ft. 5 yds.		
Located by: Minnesota Geological Survey Unique Number Verification: Information from owner System: UTM - Nad83, Zone15, Meters		Method: Digitization (Screen) - Map (1:24,000) Input Date: 09/07/2005 X: 499675 Y: 4965234	Nearest Known Source of Contamination 75 feet N direction Sewer type			
			Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
			Pump <input type="checkbox"/> Not Installed Date Installed 04/03/1987 Manufacturer's name GRUNDFOS Model number SP-2-12 HP 0.5 Volts 230 Length of drop Pipe 84 ft. Capacity 12 g.p.m. Type Submersible Material Galvanized			
			Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
			Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
First Bedrock Prairie Du Chien Group Last Strat Jordan		Aquifer Jordan Depth to Bedrock 8 ft.	Well Contractor Certification Kimmes-Bauer License Business Name	19521 Lic. Or Reg. No.	ANDERSON, L. Name of Driller	
County Well Index Online Report		429870	Printed 11/3/2010 HE-01205-07			

Minnesota Unique Well No.

433291

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date06/07/1993  
03/06/2002

Well Name ASHLAND PETROLEUM MW-102 Township Range Dir Section Subsections Elevation 27 22 W 2 DDDCCC Elevation Method				725 ft. 7.5 minute topographic map (+/- 5 feet)	Well Depth 47 ft.	Depth Completed 47 ft.	Date Well Completed 04/26/1989
					Drilling Method Non-specified Rotary		
				Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
				Use Monitor well			
				Casing Type Steel (black or low carbon)	Joint Welded	Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/>	No Above/Below 3 ft.
				Casing Diameter 8 in. to 13 ft. 4 in. to 22 ft.	Weight lbs./ft.	Hole Diameter lbs./ft.	
				Open Hole from 22 ft. to 47 ft.			
				Screen NO Make Type Diameter	Slot/Gauze	Length	Set Between
				Static Water Level ft. from Date Measured			
				PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
				Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS M.G.S. NO. 2788. 27-22-2 DDDCCC ELEV 725+5 103-D				Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
				Grout Material: Neat Cement from 0 to 22 ft.	8.5 bags		
Located Minnesota Geological Survey Unique Number Verification Information from owner System UTM - Nad83, Zone15, Meters				Method Digitization (Screen) - Map (1:24,000) Date 02/13/2004 X: 499596 Y: 4966070	Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
				Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material			
				Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Cuttings Yes First Bedrock Prairie Du Chien Group Last Strat Prairie Du Chien Group				Well Contractor Certification Keys Well Co. 62012 License Business Name Lic. Or Reg. No.	SAMPSON, C.		Name of Driller
County Well Index Online Report				433291	Printed 6/29/2008 HE-01205-07		

Minnesota Unique Well No.

433295

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date06/10/1993  
05/06/2005

Well Name ASHLAND PETROLEUM MW-204 Township Range Dir Section Subsections Elevation 27 22 W 12 BBBBBA Elevation Method				729 ft. 7.5 minute topographic map (+/- 5 feet)	Well Depth 56 ft.	Depth Completed 56 ft.	Date Well Completed 05/15/1989
					Drilling Method Non-specified Rotary		
				Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
				Use Abandoned Status Sealed			
				Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No Above/Below 3 ft.			
				Casing Diameter 8 in. to 56 ft.	Weight lbs./ft.	Hole Diameter	
				Open Hole from 56 ft. to 56 ft.			
				Screen NO Make Type Diameter	Slot/Gauze	Length	Set Between
				Static Water Level ft. from Date Measured			
				PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
				Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS M.G.S. NO.3090. WELL SEALED 11-09-2000 BY 62012 ORIGINAL USE DO - DOMESTIC				Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
				Grout Material: Neat Cement from 0 to 56 ft.	35 bags		
				Nearest Known Source of Contamination feet direction type			
				Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material			
				Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Cuttings Yes First Bedrock Prairie Du Chien Group Last Strat Prairie Du Chien Group				Well Contractor Certification Keys Well Co. 62012 SAMPSON, C. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report				433295	Printed 6/29/2008 HE-01205-07		

Minnesota Unique Well No.

441942

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date08/14/1991  
09/29/2005

Well Name WILLIE'S HIDDEN HARBOR Township Range Dir Section Subsections Elevation 27 22 W 11 ADADBA Elevation Method					727 ft. CALC FROM 2-FOOT COUNTY DEM	Well Depth 240 ft.	Depth Completed 240 ft.	Date Well Completed 10/29/1984
					Drilling Method Non-specified Rotary			
Well Address 388 9TH AV W ST PAUL PARK MN 55071					Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
					Use Domestic			
					Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 1 ft.			
					Casing Diameter 8 in. to 25 ft. 4 in. to 203 ft.	Weight 18 lbs./ft. 11 lbs./ft.	Hole Diameter 12 in. to 25 ft. 8 in. to 200 ft.	
					Open Hole from 203 ft. to 240 ft.			
					Screen NO Make Type Diameter Slot/Gauze Length Set Between			
					Static Water Level 25 ft. from Land surface Date Measured 10/29/1987			
					PUMPING LEVEL (below land surface) 30 ft. after 2 hrs. pumping 50 g.p.m.			
					Well Head Completion Pitless adapter manufacturer WHITEWATER Model SU4X5 <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
					Grout Material: Neat Cement from 0 to 203 ft. 4 yds.			
Located by: Minnesota Geological Survey Method: Digitization (Screen) - Map (1:24,000) Unique Number Verification: Information from owner Input Date: 09/07/2005 System: UTM - Nad83, Zone15, Meters X: 499620 Y: 4965527					Nearest Known Source of Contamination 75 feet E direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
					Pump <input type="checkbox"/> Not Installed Date Installed 12/03/1987 Manufacturer's name GRUNDFOS Model number SP-2-12 HP 1.5 Volts 230 Length of drop Pipe 42 ft. Capacity 10 g.p.m. Type Submersible Material Galvanized			
					Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
					Well Contractor Certification Kimmes-Bauer 19521 ANDERSON, L. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report					441942	Printed 11/3/2010 HE-01205-07		

Minnesota Unique Well No.

482696

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date04/22/2003  
04/25/2007

Well Name W-200 Township Range Dir Section Subsections Elevation 27 22 W 11 AADCBC Elevation Method				702 ft. 7.5 minute topographic map (+/- 5 feet)	Well Depth 195 ft.	Depth Completed 195 ft.	Date Well Completed 09/18/1992
					Drilling Method Non-specified Rotary		
Well Address 100 3RD W ST PAUL PARK MN 55071					Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.	
Geological Material DRIFT LIMESTONE SANDSTONE	Color	Hardness	From 0 3 155	To 3 155 195	Use Abandoned	Status Sealed	
					Casing Type Steel (black or low carbon)	Joint Welded	Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/>
					Casing Diameter 14 in. to 3 ft. 8 in. to 155 ft.	Weight 55.57 lbs./ft. 28.55 lbs./ft.	Hole Diameter 17.5 in. to 3 ft. 13 in. to 155 ft.
					Open Hole from 170 ft. to 195 ft.		
					Screen NO Diameter	Make Slot/Gauze	Type Length Set Between
					Static Water Level 46 ft. from Land surface	Date Measured 09/18/1992	
					PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.		
					Well Head Completion Pitless adapter manufacturer Model <input checked="" type="checkbox"/> Casing Protection Y <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS WELL SEALED 08-16-2000 BY 62012 ORIGINAL USE : MONITOR WELL					Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Located by: Minnesota Department of Health Unique Number Verification: N/A System: UTM - Nad83, Zone15, Meters				Method: GPS SA Off (averaged) Input Date: 08/15/2000 X: 499487 Y: 4965714	Grout Material: Neat Cement Grout Material: Neat Cement Grout Material: Neat Cement	from to 3 ft. from to 170 ft. from to 155 ft.	2 bags 4 yds. 5 yds.
					Nearest Known Source of Contamination feet direction type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
					Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
					Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
First Bedrock Prairie Du Chien Group Last Strat Jordan				Aquifer Jordan Depth to Bedrock 3 ft.	Well Contractor Certification Keys Well Co. License Business Name	62012 Lic. Or Reg. No.	CONTONIKOLAS. Name of Driller
County Well Index Online Report				482696	Printed 11/3/2010 HE-01205-07		

Minnesota Unique Well No.

561416

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date04/22/2003  
04/25/2007

Well Name RW-5 Township Range Dir Section Subsections Elevation 27 22 W 11 AADCCB Elevation Method					705 ft. 7.5 minute topographic map (+/- 5 feet)	Well Depth 75 ft.	Depth Completed 75 ft.	Date Well Completed 07/06/1995
					Drilling Method Non-specified Rotary			
Well Address ST PAUL PARK MN 55071					Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
					Use Other (specify in remarks)			
					Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.			
					Casing Diameter 8 in. to 25 ft.	Weight lbs./ft.	Hole Diameter 12 in. to 25 ft. 8 in. to 75 ft.	
					Open Hole from 25 ft. to 75 ft.			
					Screen NO Diameter	Make Slot/Gauze	Length Set Between	
					Static Water Level 30 ft. from Land surface Date Measured 07/06/1995			
					PUMPING LEVEL (below land surface) 75 ft. after 2 hrs. pumping 30 g.p.m.			
					Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS WELL LOCATION: 700 BLOCK OF FRONT ST. ST. PAUL PARK, MN 55071 WATER STARTED COMING AT 32' USE-REMEDIAL					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Grout Material: Neat Cement from to 24 ft. 8 bags			
Located by: Minnesota Department of Health Unique Number Verification: N/A System: UTM - Nad83, Zone15, Meters					Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
					Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
					Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
First Bedrock Prairie Du Chien Group Last Strat Prairie Du Chien Group					Well Contractor Certification Traut M.J. Well Co. 71536 ROBBIE&JEFF License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report					561416	Printed 4/10/2009 HE-01205-07		

Minnesota Unique Well No.

576171

County  
Quad  
Quad IDWashington  
Inver Grove Heights  
103D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date09/25/1996  
12/30/2004

Well Name WILLIES HIDDEN HARBOR Township Range Dir Section Subsections Elevation 27 22 W 11 ADACCA Elevation Method						702 ft. Calc from DEM (USGS 7.5 min or equiv.)	Well Depth 200 ft.	Depth Completed 200 ft.	Date Well Completed 07/17/1996
						Drilling Method Non-specified Rotary			
Well Address 388 9TH AV ST PAUL PARK MN						Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
						Use Domestic			
						Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.			
						Casing Diameter 4 in. to 189 ft.	Weight lbs./ft.	Hole Diameter 12 in. to 30 ft. 8 in. to 189 ft.	
						Open Hole from 189 ft. to 200 ft.			
						Screen NO Make Type Diameter	Slot/Gauze	Length Set Between	
						Static Water Level 12 ft. from Land surface Date Measured 07/17/1996			
						PUMPING LEVEL (below land surface) 20 ft. after 1 hrs. pumping 30 g.p.m.			
						Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS 27-22-11 ELEV 103-D						Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
						Grout Material: Neat Cement	from 2 to 160 ft.	54 bags	
						Nearest Known Source of Contamination 100 feet W direction Body of water type			
						Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
						Pump <input checked="" type="checkbox"/> Not Installed Date Installed 07/18/1996 Manufacturer's name OWNER'S Model number 0 HP 0 Volts Length of drop Pipe ft. Capacity g.p.m Type Submersible Material			
						Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
						Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
						Well Contractor Certification Schroepfer Well Co. 62119 SCHROEPFER, T License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report						576171	Printed 11/3/2010 HE-01205-07		

## **APPENDIX B**

### **Bemidji Regional Airport Groundwater Receptor Survey Documents**



LEGEND:

Property Occupant

- 1 Bemidji Regional Airport
- 2 Rausch Cold Weather Testing Facility
- 3 Bureau of Criminal Apprehension,  
MN Dept. of Public Safety
- 4 Great River Dentistry
- 5 Indoor Auto Mall
- 6 Quality Inn
- 7 Paul Bunyan Elementary & ISD #31 Offices
- 8 City of Bemidji Water Treatment Facility
- 9 Kraus Anderson Construction Co.
- 10 MNDOT Northwest District



**FIGURE  
RECEPTOR SURVEY  
BEMIDJI FIRE DEPARTMENT FIRE TRAINING AREA  
BEMIDJI AIRPORT  
BEMIDJI, MINNESOTA**

PROJECT NO. 45618DEL01	PREPARED BY NR	DRAWN BY DD	FILE NAME Bemidji-1
DATE 11/9/10	REVIEWED BY		



Receptor Survey Questionnaire

over Telephone  
10-11-10 12:50pm

PROPERTY ADDRESS: Quail Ridge 3500 Victoria Dr.

1. Is there, or has there ever been, a water well on the property? Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well **active** (in use), **abandoned** (not in use), or **sealed** (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Kevin Rakow - Cm

Telephone Number 218-444-7708 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Not the Holiday Inn

via telephone 10-11-10

Receptor Survey Questionnaire

PROPERTY ADDRESS: 3000 Mokers Dr NW - Indoor Auto Mall

1. Is there, or has there ever been, a water well on the property? Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well **active** (in use), **abandoned** (not in use), or **sealed** (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Todd Lowth

Telephone Number 218-751-3140 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

11/3/10

*Former Holiday Inn. Well registered. Knowing  
no well, on city water. Former owner is  
Gary Campbell from properties*



## PHONE COMMUNICATION RECORD

Date 11-3-10

Time 12:00

Person Incoming

Contacted Outgoing

Phone 218-414-11-6900

Project No.

Project Name/Location

Contacted by Nancy R

Participants

Subject Well 169190 - Holiday Inn (Indoor Auto Mall)

Notes

There was a well there in the 1970's, there was no city water then.

(City water came to area). Well was appraisal, the ~~new~~ convention center addition was built over the location of that well.

Receptor Survey Questionnaire

PROPERTY ADDRESS: Great River Dentistry, 3622 Moberg Drive NW, Bemidji

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Douglas R. Williams, AAS

Telephone Number 218-751-4216 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

via telephone  
10-11-10

PROPERTY ADDRESS: 3700 Morris Ct NW

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well **active** (in use), **abandoned** (not in use), or **sealed** (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Jim Dougherty, MN Bureau of Criminal Apprehension

Telephone Number 218-755-6650 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

PROPERTY ADDRESS: 3300 Gillett Dr NW - Paul Bunyan ISD #31

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Chris - Business manager

Telephone Number 218-333-3100 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

*Via Telephone*  
0-21-10

Receptor Survey Questionnaire

**PROPERTY ADDRESS:** 3507 Gillet Dr NW - Pausch Cold Weather Testing

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) \_\_\_\_\_

1f. Where on the property is (was) the well located? \_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Jason

Telephone Number 218-751-0016 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

via telephone  
10-14-10

PROPERTY ADDRESS: 3920 Hwy 2 West - mNDOT

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

1e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) \_\_\_\_\_

1f. Where on the property is (was) the well located? \_\_\_\_\_  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Dan Trice

Telephone Number 218-755-6567 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

*Delta Consultants*

Receptor Survey Questionnaire

PROPERTY ADDRESS: Kraus Anderson Const. Shop 3168

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well **active** (in use), **abandoned** (not in use), or **sealed** (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? 20 FEET (if depth is unknown check here  )

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

1e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) drinking water, lawn sprinkler, cooling  
No drinking

1f. Where on the property is (was) the well located?  
\_\_\_\_\_  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

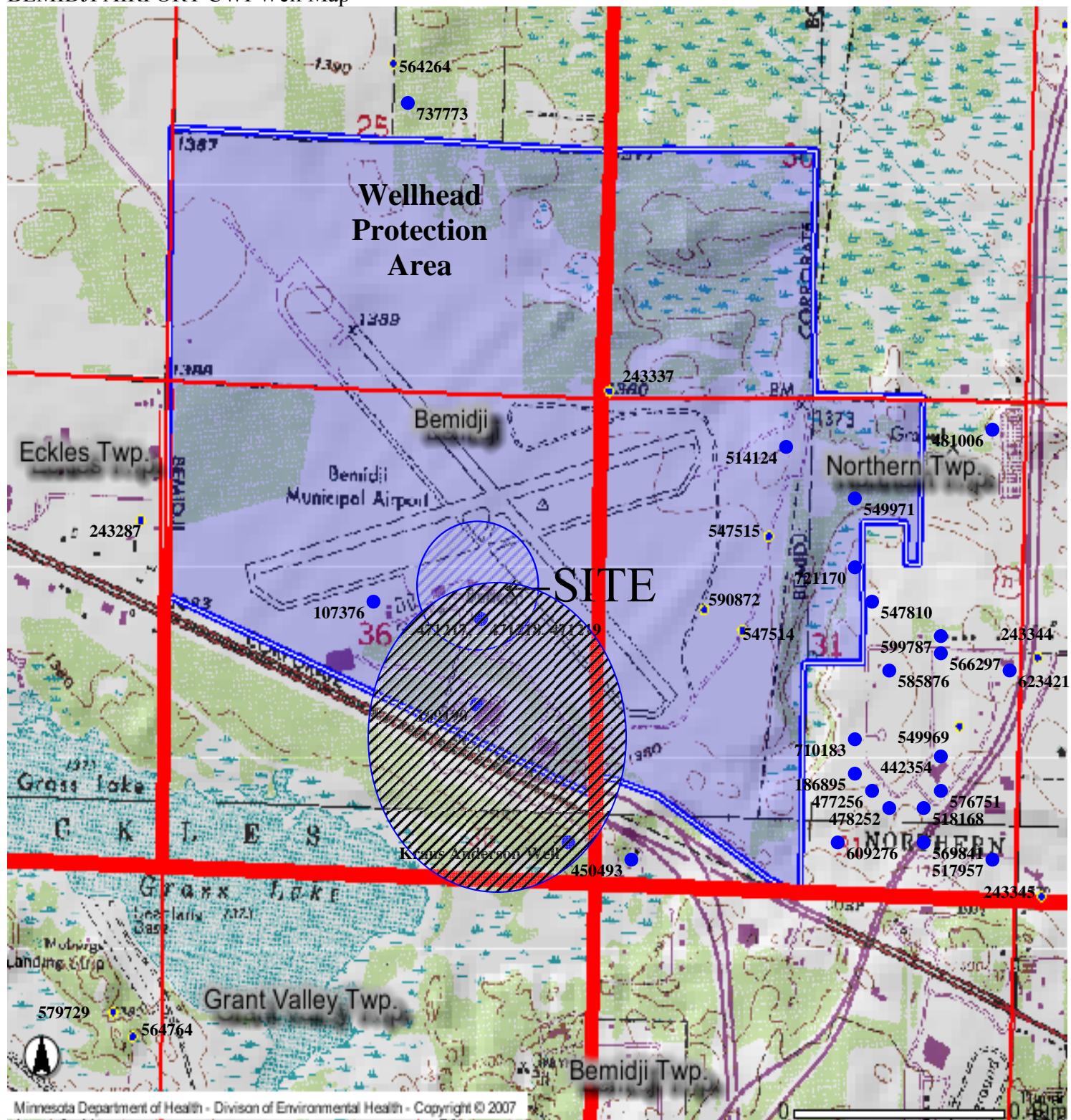
Name \_\_\_\_\_

Telephone Number 218-751-4207 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

## BEMIDJI AIRPORT CWI Well Map



Approximate Area of Receptor Survey

Minnesota Unique Well No.

169190

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date02/28/1989  
03/11/2005

Well Name HOLIDAY INN							Well Depth	Depth Completed	Date Well Completed	
147	34	W	36	Elevation	ft.		86 ft.	86 ft.	03/14/1980	
Elevation Method							Drilling Method Non-specified Rotary			
							Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							--	From Ft. to Ft.		
							Use Commercial			
							Casing Type Steel (black or low carbon)	Joint Welded	Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/>	
							No Above/Below ft.			
							Casing Diameter	Weight	Hole Diameter	
							Open Hole from ft. to ft.			
							Screen YES	Make JOHNSON	Type stainless steel	
							Diameter	Slot/Gauze	Length	Set Between
								15		76 ft. and 86 ft.
							Static Water Level			
							10 ft. from Land surface	Date Measured	03/14/1980	
							PUMPING LEVEL (below land surface)			
							70 ft. after 60 hrs. pumping	100 g.p.m.		
							Well Head Completion			
							Pitless adapter manufacturer	Model		
							<input type="checkbox"/> Casing Protection	<input type="checkbox"/> 12 in. above grade		
							<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS FRONT SECTION 36							Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Nearest Known Source of Contamination			
							feet direction type			
							Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed	Date Installed		
							Manufacturer's name	Model number	HP Volts	
							Length of drop Pipe ft.	Capacity g.p.m.	Type Material	
							Abandoned Wells	Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Variance	Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Well Contractor Certification			
							Diamond Water Wells	18446	WADDELL, L.	
							License Business Name	Lic. Or Reg. No.	Name of Driller	
County Well Index Online Report							169190	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

186895

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date02/28/1989  
03/11/2005

Well Name RUEBEN ROBERTSON								Well Depth	Depth Completed	Date Well Completed		
147	33	W	31	DC	Elevation	ft.		66 ft.	66 ft.	08/16/1984		
								Drilling Method Cable Tool				
								Drilling Fluid	Well Hydrofractured?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
								--	From Ft. to Ft.			
								Use Domestic				
								Casing Type Galvanized	Joint Threaded	Drive Shoe?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Above/Below 1 ft.
								Casing Diameter	Weight	Hole Diameter		
								2 in. to 62 ft.	3.75 lbs./ft.			
								Open Hole from ft. to ft.				
								Screen YES	Make JOHNSON	Type stainless steel		
								Diameter	Slot/Gauze	Length	Set Between	
								1.3	8	4	62 ft. and 66 ft.	
								Static Water Level				
								18 ft. from Land surface Date Measured 08/16/1984				
								PUMPING LEVEL (below land surface)				
								18 ft. after 120 hrs. pumping 10 g.p.m.				
								Well Head Completion				
								Pitless adapter manufacturer Model				
								<input type="checkbox"/> Casing Protection	<input checked="" type="checkbox"/> 12 in. above grade			
								<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)				
NO REMARKS								Grouting Information	Well Grouted?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
								Nearest Known Source of Contamination				
								75 feet E direction Other type				
								Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
								Pump	<input type="checkbox"/> Not Installed	Date Installed 08/16/1984		
								Manufacturer's name TATI Model number 5CAT HP 0.5 Volts 110				
								Length of drop Pipe 21 ft. Capacity 6 g.p.m. Type Jet Material Galvanized				
								Abandoned Wells	Does property have any not in use and not sealed well(s)?			
								<input type="checkbox"/> Yes <input type="checkbox"/> No				
								Variance	Was a variance granted from the MDH for this well?			
								<input type="checkbox"/> Yes <input type="checkbox"/> No				
								Well Contractor Certification				
								Nelson Well Drilling		04121	NELSON, L.	
								License Business Name		Lic. Or Reg. No.	Name of Driller	
County Well Index Online Report								186895		Printed 4/3/2009		
										HE-01205-07		

Minnesota Unique Well No.

450493

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date03/03/1991  
07/24/2000

Well Name OLSON, RON Township Range Dir Section Subsections Elevation ft. 147 33 W 31 CCC Elevation Method							Well Depth 47 ft.	Depth Completed 47 ft.	Date Well Completed 09/23/1987	
							Drilling Method Jetted			
Well Address BEMIDJI MN 56601							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
							Use Domestic			
							Casing Type Galvanized Joint Threaded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 1 ft.			
							Casing Diameter 2 in. to 42 ft.	Weight 3 lbs./ft.	Hole Diameter	
							Open Hole from ft. to ft.			
							Screen YES Make JOHNSON Type			
							Diameter 1.3	Slot/Gauze 12	Length 48	Set Between 43 ft. and 47 ft.
							Static Water Level 14 ft. from Land surface Date Measured 09/23/1987			
							PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS							Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Well Contractor Certification License Business Name Lic. Or Reg. No. Name of Driller <u>SIZER, G.</u>			
County Well Index Online Report							450493	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

471217

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date 09/25/1992  
Update Date 08/28/2007  
Received Date 06/24/1991

Well Name BEMIDJI AVIATION MW-1								Well Depth 20 ft.	Depth Completed 20 ft.	Date Well Completed 06/06/1991	
								Drilling Method Other			
								Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
								Use Abandoned Status Sealed			
								Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No Above/Below 2 ft.			
								Casing Diameter 2 in. to 10 ft.	Weight lbs./ft.	Hole Diameter 8 in. to 20 ft.	
								Open Hole from ft. to ft.			
								Screen YES	Make JOHNSON	Type stainless steel	
								Diameter 2	Slot/Gauze 20	Length 10	Set Between 10 ft. and 20 ft.
								Static Water Level 15 ft. from Land surface Date Measured 06/06/1991			
								PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
								Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS MONITORING WELL IS USED TO CK THE SPREAD OF GAS IN THE GROUND WATER. WELL SEALED 10-05-1993 BY 75330 ORIGINAL USE MW - MONITOR WELL - #1 DRILLING METHOD - HOLLOW ROD								Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
								Grout Material: Bentonite from 9 to 10 ft.			
								Grout Material: Neat Cement from to 9 ft.			
								Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material			
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
								Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Well Contractor Certification Valnes Well Co. 75330 VALNES, T. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report								471217	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

471218

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date 09/25/1992  
Update Date 10/16/2008  
Received Date 06/24/1991

Well Name BEMIDJI AVIATION MW-2							Well Depth 20 ft.	Depth Completed 20 ft.	Date Well Completed 06/06/1991	
Township 147 Range 34 Dir W Section 36 Subsections ACD Elevation ft. Elevation Method							Drilling Method Other			
Well Address 2 HY W MN							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
Geological Material CONCRETE SAND - MODERATE YELL/BRN SAND - DARK YELL/BRN SAND - PALE YELL/BRN							Use Abandoned Status Sealed	Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below 2 ft.		
							Casing Diameter 2 in. to 10 ft.	Weight lbs./ft. 8 in. to 20 ft.		
							Open Hole from ft. to ft.	Screen YES Make JOHNSON Type stainless steel		
							Diameter 2	Slot/Gauze 10	Length 10	Set Between 10 ft. and 20 ft.
							Static Water Level 16 ft. from Land surface Date Measured 06/06/1991			
							PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS MW WELL IS USED TO CHECK THE SPREAD OF GASOLINE IN THE GROUND WATER. WELL SEALED 10-05-1993 BY 75330 ORIGINAL USE MW - MONITOR WELL - #2 DRILLING METHOD - HOLLOW ROD							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Grout Material: Bentonite from 9 to 10 ft.			
							Grout Material: Neat Cement from to 9 ft.			
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
							Well Contractor Certification <u>Valnes Well Co.</u> 75330 <u>VALNES, T.</u> License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report							471218	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

471219

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date09/25/1992  
10/16/2008  
06/24/1991

Well Name BEMIDJI AVIATION MW-3 Township Range Dir Section Subsections Elevation ft. 147 34 W 36 ACD Elevation Method						Well Depth 20 ft.	Depth Completed 20 ft.	Date Well Completed 06/06/1991	
						Drilling Method --			
Well Address 2 HY W MN						Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
Geological Material						Color	Hardness	From To	
								Use Abandoned Status Sealed	
						Casing Type Steel (black or low carbon)	Joint Threaded	Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/>	
						No Above/Below 2 ft.			
						Casing Diameter 2 in. to 10 ft.	Weight lbs./ft.	Hole Diameter 8 in. to 20 ft.	
						Open Hole from ft. to ft.			
						Screen YES	Make JOHNSON	Type stainless steel	
						Diameter 2	Slot/Gauze 10	Length 10	Set Between 10 ft. and 20 ft.
						Static Water Level 15.5 ft. from Land surface	Date Measured 06/06/1991		
						PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
						Well Head Completion Pitless adapter manufacturer Model			
						<input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade			
						<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS MW WELL IS TO CHECK TO SPREAD OF GASOLINE IN THE GROUND WATER. WELL SEALED 10-05-1993 BY 75330 ORIGINAL USE MW - MONITOR WELL						Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
						Grout Material: Bentonite	from 9 to 10 ft.		
						Grout Material: Neat Cement	from to 9 ft.		
						Nearest Known Source of Contamination feet direction type			
						Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
						Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m. Type Material			
						Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
						Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
First Bedrock						Well Contractor Certification Valnes Well Co. License Business Name	75330 Lic. Or Reg. No.	VALNES, T. Name of Driller	
Last Strat						Aquifer Depth to Bedrock ft.			
County Well Index Online Report						471219	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

477256

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date04/04/1992  
07/24/2000

Well Name PETSCHE, WILLIAM Township Range Dir Section Subsections Elevation ft. 147 33 W 31 DDB Elevation Method							Well Depth 54 ft.	Depth Completed 54 ft.	Date Well Completed 07/03/1991
							Drilling Method Cable Tool		
Well Address 2323 ALGEE CT NW MN							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
Geological Material SAND CLAY SAND CLAY & ROCK							Use Domestic Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 3 ft.		
							Casing Diameter 4 in. to 50 ft.	Weight lbs./ft.	Hole Diameter
							Open Hole from ft. to ft.		
							Screen YES Diameter 2	Make COOK Slot/Gauze 12	Length 4 Set Between 50 ft. and 54 ft.
							Static Water Level 26 ft. from Land surface Date Measured 07/03/1991		
							PUMPING LEVEL (below land surface) 38 ft. after 30 hrs. pumping 15 g.p.m.		
							Well Head Completion Pitless adapter manufacturer MAASS Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS							Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name AERMOTOR Model number HP 0.5 Volts 220 Length of drop Pipe 30 ft. Capacity g.p.m. Type Submersible Material Plastic		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							Well Contractor Certification Lahman Well Drilling 04051 LAHMAN, C. License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							477256	Printed 4/3/2009 HE-01205-07	

Minnesota Unique Well No.

478252

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date09/19/1991  
07/24/2000

Well Name SHIPPER, SHARON							Well Depth 50 ft.	Depth Completed 50 ft.	Date Well Completed 07/01/1991
Township 147 Range 33 Dir W Section 31 Subsections ACC Elevation ft. Elevation Method							Drilling Method Non-specified Rotary		
Well Address 2405 ALYCE CT BEMIDJI MN 56601							Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
Geological Material SAND BROWN Hardness From 0 To 19 SAND GRAY 19 26 SILTY CLAY GRAY 26 30 SAND GRAY 30 50							Use Domestic	Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below 1 ft.	
							Casing Diameter 4 in. to 45 ft.	Weight lbs./ft. 8.8 in. to 50 ft.	
							Open Hole from ft. to ft.	Screen YES Make JOHNSON Type plastic Diameter 4 Slot/Gauze 23 Length 5 Set Between 45 ft. and 50 ft.	
							Static Water Level 12 ft. from Land surface Date Measured 07/01/1991	PUMPING LEVEL (below land surface) 38 ft. after 60 hrs. pumping 30 g.p.m.	
							Well Head Completion Pitless adapter manufacturer STEEL MASS Model J <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 40 to 10 ft.		
							Nearest Known Source of Contamination 100 feet direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed 07/02/1991 Manufacturer's name AERMOTOR Model number SD12-50 HP 0.5 Volts 230 Length of drop Pipe 35 ft. Capacity 9 g.p.m. Type Submersible Material Plastic		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							Well Contractor Certification North Star Drilling 49588 FELL, B. License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							478252	Printed 4/3/2009 HE-01205-07	

Minnesota Unique Well No.

514124

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date03/09/1993  
03/11/2005

Well Name FRONTIER HOMES INC							Well Depth	Depth Completed	Date Well Completed	
Township 147	Range 33	Dir W	Section 31	Subsections BAA	Elevation	ft. 56	56 ft.	56 ft.	09/28/1992	
Elevation Method							Drilling Method Cable Tool			
							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
							Use Domestic			
							Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below ft.			
							Casing Diameter 4 in. to 52 ft.	Weight 11 lbs./ft.	Hole Diameter	
							Open Hole from ft. to ft.			
							Screen YES Make COOK Type stainless steel			
							Diameter 4	Slot/Gauze 10	Length 4	Set Between 52 ft. and 52 ft.
							Static Water Level 18 ft. from Land surface Date Measured 09/28/1992			
							PUMPING LEVEL (below land surface) 33 ft. after 30 hrs. pumping 15 g.p.m.			
							Well Head Completion Pitless adapter manufacturer MAASS Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS							Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No			
							Nearest Known Source of Contamination feet direction type			
							Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
							Well Contractor Certification Lahman Well Drilling License Business Name Lic. Or Reg. No.	04051	LAHMAN, C. Name of Driller	
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							514124	Printed 4/3/2009 HE-01205-07		
County Well Index Online Report										

Minnesota Unique Well No.

518168

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date03/09/1993  
02/04/2004

Well Name KOLP, RICHARD Township Range Dir Section Subsections Elevation ft. 147 33 W 31 DAC Elevation Method								Well Depth 54 ft.	Depth Completed 54 ft.	Date Well Completed 10/20/1992	
								Drilling Method Non-specified Rotary			
Well Address 3611 LAUREL DR NW MN								Drilling Fluid Revert	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
								Use Domestic			
								Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below ft.			
								Casing Diameter 4 in. to 50 ft.	Weight lbs./ft. 8.5 in. to 30 ft. 6.25 in. to 54 ft.	Hole Diameter	
								Open Hole from ft. to ft.			
								Screen YES Make JOHNSON Type			
								Diameter 2	Slot/Gauze 12	Length 4	Set Between 50 ft. and 54 ft.
								Static Water Level 16 ft. from Land surface Date Measured 10/20/1992			
								PUMPING LEVEL (below land surface) 16 ft. after 120 hrs. pumping 35 g.p.m.			
								Well Head Completion Pitless adapter manufacturer MAASS Model 4J1 <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS DICK'S MARINE								Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
								Grout Material: Neat Cement from 7 to 30 ft.			
								Grout Material: Cuttings from 30 to 39 ft.			
								Nearest Known Source of Contamination 60 feet South West direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
								Pump <input type="checkbox"/> Not Installed Date Installed 10/22/1992 Manufacturer's name STA-RITE Model number 10SP4C02T HP 0.5 Volts 220 Length of drop Pipe 40 ft. Capacity 10 g.p.m Type Submersible Material			
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
								Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
First Bedrock Last Strat								Well Contractor Certification Nelson Well Drilling 04121 REED, G. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report								518168	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

547810

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date10/26/1994  
02/04/2004

Well Name OLSON, REID & KATHY Township Range Dir Section Subsections Elevation ft. 147 33 W 31 ACC Elevation Method							Well Depth 55 ft.	Depth Completed 55 ft.	Date Well Completed 06/23/1994	
							Drilling Method Non-specified Rotary			
Well Address 2321 ANNE ST NW BEMIDJI MN 56601							Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							From Ft. to Ft.			
Geological Material SAND CLAY SAND							Use Domestic			
							Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	Above/Below ft.		
							Casing Diameter 4 in. to 50 ft.	Weight lbs./ft.	Hole Diameter 8 in. to 30 ft.	
							6.25 in. to 55 ft.			
							Open Hole from ft. to ft.			
							Screen YES Make Type stainless steel			
							Diameter 2	Slot/Gauze 10	Length 5	Set Between 50 ft. and 55 ft.
							Static Water Level 18 ft. from Land surface Date Measured 06/23/1994			
							PUMPING LEVEL (below land surface) 18 ft. after 120 hrs. pumping 20 g.p.m.			
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS							Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Grout Material: Bentonite	from 8 to 30 ft. 3 bags		
							Nearest Known Source of Contamination 75 feet S direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump Manufacturer's name Length of drop Pipe ft.	Not Installed Date Installed Model number HP Volts Capacity g.p.m Type Material		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
First Bedrock Last Strat							Well Contractor Certification Nelson Well Drilling License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report							547810	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

566297

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date12/20/1995  
02/04/2004

Well Name BEWELY, DAVID Township Range Dir Section Subsections Elevation ft. 147 33 W 31 ACD Elevation Method							Well Depth 55 ft.	Depth Completed 55 ft.	Date Well Completed 11/14/1995
							Drilling Method Non-specified Rotary		
Well Address 2120 ANNE ST BEMIDJI MN 56601							Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
							Use Domestic		
							Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.		
							Casing Diameter 4 in. to 51 ft.	Weight lbs./ft.	Hole Diameter 6.75 in. to 55 ft.
							Open Hole from ft. to ft.		
							Screen YES Diameter 2	Make HALBURTON Slot/Gauze 12	Length 4 Set Between 51 ft. and 55 ft.
							Type stainless steel		
							Static Water Level 13 ft. from Land surface Date Measured 11/14/1995		
							PUMPING LEVEL (below land surface) 22 ft. after 60 hrs. pumping 25 g.p.m.		
							Well Head Completion Pitless adapter manufacturer MONITOR Model SNAPPY <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Grout Material: Bentonite from 8 to 30 ft. 2 bags		
							Nearest Known Source of Contamination 60 feet W direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed 11/15/1995 Manufacturer's name MYERS Model number HP 0.5 Volts 230 Length of drop Pipe ft. Capacity 10 g.p.m Type Submersible Material		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							Well Contractor Certification Aqua Well Drilling 04463 SCANDIN. R. License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							566297	Printed 4/3/2009 HE-01205-07	

Minnesota Unique Well No.

569841

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date12/20/1995  
07/24/2000

Well Name HURLEY, LLOYD Township Range Dir Section Subsections Elevation ft. 147 33 W 31 DDC Elevation Method							Well Depth 57 ft.	Depth Completed 57 ft.	Date Well Completed 11/20/1995	
							Drilling Method Non-specified Rotary			
Well Address BANDWELL PARK MN							Drilling Fluid Other	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
							Use Domestic			
							Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.			
							Casing Diameter 4 in. to 52 ft.	Weight lbs./ft.	Hole Diameter 8 in. to 57 ft.	
							Open Hole from ft. to ft.			
							Screen YES Make HOWARD SMITH Type stainless steel			
							Diameter 2	Slot/Gauze 12	Length 5	Set Between 52 ft. and 57 ft.
							Static Water Level 17 ft. from Land surface Date Measured 11/20/1995			
							PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS BANDWELL PARK							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Grout Material: Neat Cement	from 8 to 40 ft.	1 yds.	
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name STA-RITE Model number HP 0.5 Volts 230 Length of drop Pipe ft. Capacity 10 g.p.m Type Submersible Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							Well Contractor Certification Sizer Water Well 04620 License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report							569841	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

576751

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date03/06/1997  
02/04/2004

Well Name WIEBOLT, DARWIN Township Range Dir Section Subsections Elevation ft. 147 33 W 31 DAD Elevation Method							Well Depth 55 ft.	Depth Completed 55 ft.	Date Well Completed 06/07/1996	
							Drilling Method Non-specified Rotary			
Well Address LUELE DR BEMIDJI MN 56601							Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
							Use Domestic			
							Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.			
							Casing Diameter 4 in. to 51 ft.	Weight lbs./ft.	Hole Diameter 6.75 in. to 55 ft.	
							Open Hole from ft. to ft.			
							Screen YES Make JOHNSON Type stainless steel			
							Diameter 2	Slot/Gauze 12	Length 4	Set Between 51 ft. and 55 ft.
							Static Water Level 20 ft. from Land surface Date Measured 06/07/1996			
							PUMPING LEVEL (below land surface) 30 ft. after 60 hrs. pumping 20 g.p.m.			
							Well Head Completion Pitless adapter manufacturer MONITOR Model SNAPPY <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Grout Material: Bentonite from 8 to 30 ft. 2 bags			
							Nearest Known Source of Contamination 60 feet S direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed 06/14/1996 Manufacturer's name STA-RITE Model number HP 0.75 Volts 230 Length of drop Pipe 40 ft. Capacity 12 g.p.m Type Submersible Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							Well Contractor Certification Aqua Well Drilling 04463 SCANDIN. R. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report							576751	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

585876

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date09/26/1997  
10/08/2008

Well Name OTTERTAIL REALTY Township Range Dir Section Subsections Elevation ft. 147 33 W 31 ADC Elevation Method							Well Depth 57 ft.	Depth Completed 57 ft.	Date Well Completed 06/14/1997	
							Drilling Method Non-specified Rotary			
Well Address 1925 ANN ST NW BEMIDJI MN							Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
							From Ft. to Ft.			
Geological Material NO RECORD							Use Domestic			
							Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.			
							Casing Diameter 4 in. to 53 ft.	Weight lbs./ft. 8.5 in. to 30 ft. 6.25 in. to 57 ft.	Hole Diameter	
							Open Hole from ft. to ft.			
							Screen YES Make JOHNSON Type stainless steel			
							Diameter 2	Slot/Gauze 12	Length 4	Set Between 53 ft. and 57 ft.
							Static Water Level 18 ft. from Land surface Date Measured 06/14/1997			
							PUMPING LEVEL (below land surface) 20 ft. after 2 hrs. pumping 30 g.p.m.			
							Well Head Completion Pitless adapter manufacturer SNAPPY Model 8PL41U <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Grout Material: Neat Cement from 0 to 30 ft. 3 bags			
							Nearest Known Source of Contamination 78 feet N direction Septic tank/drain field type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed 06/17/1997 Manufacturer's name MEYERS Model number 2N52-12 HP 0.5 Volts 220 Length of drop Pipe 40 ft. Capacity 12 g.p.m Type Submersible Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
First Bedrock Last Strat							Well Contractor Certification Nelson Well Drilling 04121 REED, G. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report							585876	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

599787

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date05/10/1999  
03/11/2005

Well Name HWMENIK, JAMES Township Range Dir Section Subsections Elevation ft. 147 33 W 31 Elevation Method						Well Depth 55 ft.	Depth Completed 55 ft.	Date Well Completed 04/17/1998	
						Drilling Method Non-specified Rotary			
Well Address 1898 ANN ST						Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No	From Ft. to Ft.	
						Use Domestic			
						Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	Above/Below ft.		
						Casing Diameter 4 in. to 55 ft.	Weight lbs./ft.	Hole Diameter	
						Open Hole from ft. to ft.			
						Screen YES Make JOHNSON Type stainless steel			
						Diameter 2	Slot/Gauze 12	Length 5	Set Between 50 ft. and 55 ft.
						Static Water Level 15 ft. from Land surface Date Measured 04/17/1998			
						PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
						Well Head Completion Pitless adapter manufacturer SNAPPY Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS						Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
						Grout Material:	from 8 to 30 ft.	2 bags	
						Nearest Known Source of Contamination 55 feet North West direction Tanks type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
						Pump <input type="checkbox"/> Not Installed	Date Installed		
						Manufacturer's name STA RITE	Model number HP 0.5	Volts 230	
						Length of drop Pipe ft.	Capacity 10 g.p.m.	Type Submersible Material	
						Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
						Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
						Well Contractor Certification Sizer Water Well License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report						599787	Printed 4/3/2009 HE-01205-07		

Minnesota Unique Well No.

609276

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date07/01/1998  
07/24/2000

Well Name DAHL, JOHN Township Range Dir Section Subsections Elevation ft. 147 33 W 31 DCB Elevation Method								Well Depth 60 ft.	Depth Completed 60 ft.	Date Well Completed 04/14/1998
								Drilling Method Non-specified Rotary		
Well Address BARDWELL PARK BEMIDJI MN 56601								Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	From Ft. to Ft.
								Use Domestic		
								Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.		
								Casing Diameter 4 in. to 55 ft.	Weight lbs./ft.	Hole Diameter 8.8 in. to 60 ft.
								Open Hole from ft. to ft.		
								Screen YES Diameter 4	Make CERTAINTEED Slot/Gauze 23	Length 5 Set Between 55 ft. and 60 ft.
								Type plastic		
								Static Water Level 12 ft. from Land surface Date Measured 04/14/1998		
								PUMPING LEVEL (below land surface) 40 ft. after 60 hrs. pumping 30 g.p.m.		
								Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS								Grouting Information Grout Material: Bentonite	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No from 0 to 30 ft.	
								Nearest Known Source of Contamination 50 feet direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
								Pump Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
								Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
								Well Contractor Certification North Star Drilling 49588 FELL, B. License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report								609276	Printed 4/3/2009 HE-01205-07	

Minnesota Unique Well No.

721170

County  
Quad  
Quad ID

Beltrami

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date08/02/2006  
01/12/2006

Well Name COOP. DEVELOPMENT Township Range Dir Section Subsections Elevation ft. 147 33 W 31 ACB Elevation Method							Well Depth 72 ft.	Depth Completed 72 ft.	Date Well Completed 04/18/2005	
							Drilling Method Non-specified Rotary			
Well Address 2419 BORING CT NW BEMIDJI MN 56601							Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
							Use Domestic			
							Casing Type Plastic Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.			
							Casing Diameter 4 in. to 60 ft.	Weight lbs./ft. 8.5 in. to 30 ft. 6.25 in. to 72 ft.	Hole Diameter	
							Open Hole from ft. to ft.			
							Screen YES Make JOHNSON Type stainless steel			
							Diameter 4	Slot/Gauze 10	Length 12	Set Between 60 ft. and 72 ft.
							Static Water Level 15 ft. from Land surface Date Measured 04/18/2005			
							PUMPING LEVEL (below land surface) 20 ft. after 2 hrs. pumping 100 g.p.m.			
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection N <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
NO REMARKS							Grouting Information	Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Grout Material: Bentonite	from	to 30 ft.	3 bags
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
							Pump <input type="checkbox"/> Not Installed Date Installed 04/21/2005 Manufacturer's name GOULD Model number 556530 HP 3 Volts 230 Length of drop Pipe 40 ft. Capacity 70 g.p.m Type Submersible Material			
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
							Well Contractor Certification Nelson Well Drilling 04121 REED, J. License Business Name Lic. Or Reg. No. Name of Driller			
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							721170	Printed 4/3/2009 HE-01205-07		
County Well Index Online Report										

## **APPENDIX C**

### **ABLE Fire Training Center, Burnsville Groundwater Receptor Survey Documents**



**FIGURE**  
**RECEPTOR SURVEY**  
**ABLE FIRE TRAINING CENTER**  
**BURNSVILLE, MINNESOTA**

PROJECT NO. 45618DEL01	PREPARED BY NR	DRAWN BY DD
DATE 11/9/10	REVIEWED BY	FILE NAME Burnsville-1



↑  
North

Receptor Survey Questionnaire

In Person Interview  
8-17-10

PROPERTY ADDRESS: 12205 River Ridge Blvd - Northern Tool

1. Is there, or has there ever been, a water well on the property?

Yes  No  Unknown

If you answered **No or Unknown**, proceed to Question 2.

*8-17-10*

*No answer of any*

1a. If you answered **Yes**, is the well active (in use), abandoned (not in use), or sealed (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well?        FEET (if depth is unknown check here  )

1c. In what year was the well installed (if known)?       

1d. If the well was abandoned, what year was the well sealed?       

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
      

1f. Where on the property is (was) the well located?  
        
      

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name       

Telephone Number        DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?

Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Silvia Manager

Telephone Number        DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

PROPERTY ADDRESS: John Adamick -> Dodge of Bemusco  
12101 Hwy 35W

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) \_\_\_\_\_

1f. Where on the property is (was) the well located? \_\_\_\_\_  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?

Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name John Adamick -> Dodge of Bemusco

Telephone Number 612 / 237-8001 (cell) DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

PROPERTY ADDRESS: 1216-1 Hwy 35 W SOUTH BURNSVILLE

1. Is there, or has there ever been, a water well on the property? Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE ABANDONED SEALED

1b. How deep is (was) the well? FEET (if depth is unknown check here  )

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) \_\_\_\_\_

1f. Where on the property is (was) the well located? \_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name JOHN THAMICH

Telephone Number 612-237-8001  DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property? Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name JOHN THAMICH

Telephone Number 612-237-8001  DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

- In Person Interview  
8-17-10

Receptor Survey Questionnaire

**PROPERTY ADDRESS:** 600 121st St. W. - Waisan Subur

1. Is there, or has there ever been, a water well on the property? **Yes**  **No**  **Unknown** *Not active or F*

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

       ACTIVE             ABANDONED             SEALED

1b. How deep is (was) the well?        FEET (if depth is unknown check here       )

1c. In what year was the well installed (if known)?       

1d. If the well was abandoned, what year was the well sealed?       

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
      

1f. Where on the property is (was) the well located?  
        
      

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

**Yes**  **No**

Name       

Telephone Number        DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property? **Yes**  **No**

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name       

Telephone Number        DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

*in Person Interview  
8-17-08*

**PROPERTY ADDRESS:** 12001 Hwy 35 - All State Self Storage

1. Is there, or has there ever been, a water well on the property? **Yes**  **No**  **Unknown**

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) \_\_\_\_\_

1f. Where on the property is (was) the well located? \_\_\_\_\_  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

**Yes**  **No**

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property? **Yes**  **No**

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name Ernest Mancuso \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

PROPERTY ADDRESS:

11937 Hwy 35W CHASE GORE

1. Is there, or has there ever been, a water well on the property?

Yes

No

Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well **active** (in use), **abandoned** (not in use), or **sealed** (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE

ABANDONED

SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes

No

Name

MICHAEL McGOWAN

Telephone Number

(952) 890-1081

DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?

Yes

No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name

ABOVE

Telephone Number

DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

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11-3-10 No water supply wells, just monitoring wells.

In Person Interview - 8-17-10

Receptor Survey Questionnaire

PROPERTY ADDRESS: Berry & Carlson - 201 121st St. NW

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No or Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

PROPERTY ADDRESS: Rivers Edge Business Center, 25 W. Cliff Road, Burnsville

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well?        FEET (if depth is unknown check here  )

1c. In what year was the well installed (if known)?       

1d. If the well was abandoned, what year was the well sealed?       

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
      

1f. Where on the property is (was) the well located?  
        
      

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name       

Telephone Number        DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name MICHAEL VALENTINE, MANAGING PARTNER

Telephone Number 612-850-4374  DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

Receptor Survey Questionnaire

PROPERTY ADDRESS: 12259 (12250-12268) Nicollet Avenue, Burnsville

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No or Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)  
\_\_\_\_\_

1f. Where on the property is (was) the well located?  
\_\_\_\_\_

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

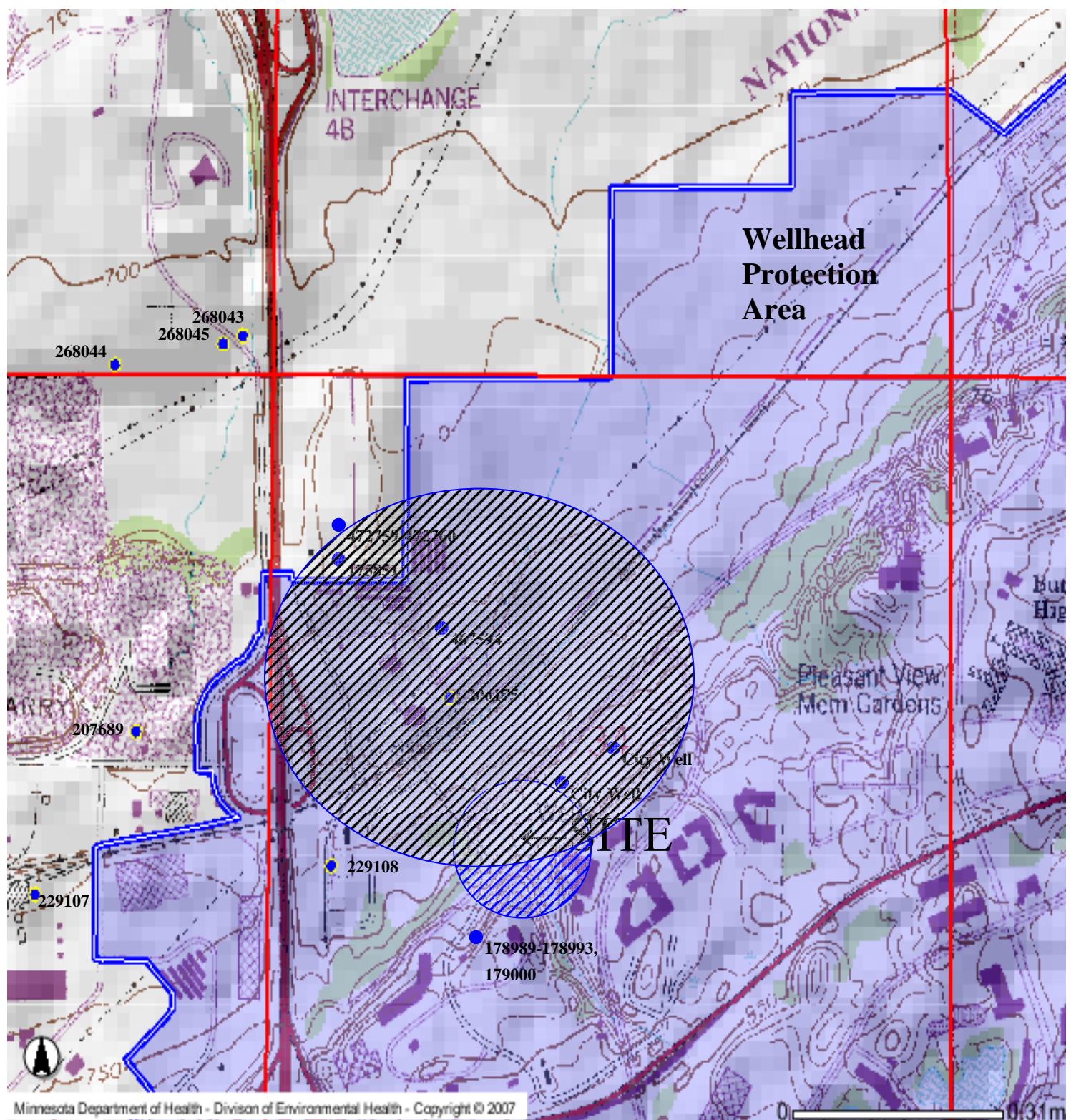
Name Jack Kau-Wellington Mgmt.

Telephone Number 651-999-5537 DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

## BURNSVILLE CWI Well Map



Approximate Area of Receptor Survey

Minnesota Unique Well No.

175851

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date

06/22/2001

Well Name BURNSVILLE TW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 BCD Elevation Method							Well Depth 100 ft.	Depth Completed 100 ft.	Date Well Completed 04/16/1980
							Drilling Method Non-specified Rotary		
							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.	
							Use Test well		
							Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 2 ft.		
Geological Material DRIFT SHAKOPEE		Color YELLOW	Hardness HARD	From 0	To 17	100	Casing Diameter 6 in. to 60 ft.	Weight 20 lbs./ft.	Hole Diameter
							Open Hole from 60 ft. to 160 ft.		
							Screen NO Make Type Diameter	Slot/Gauze	Length Set Between
							Static Water Level 5 ft. from Land surface Date Measured 04/16/1980		
							PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.		
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Grout Material: Neat Cement	from 0 to 60 ft.	2.5 yds.
							Nearest Known Source of Contamination feet direction type		
							Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed 05/16/1980 Manufacturer's name DEMPSTER Model number 15C2-59-S1 HP 0.5 Volts 115 Length of drop Pipe 54 ft. Capacity 20 g.p.m. Type Submersible Material Galvanized		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Well Contractor Certification Stevens Well Co. 27194 KADERLIK, C. License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							175851	Printed 4/2/2009 HE-01205-07	

Minnesota Unique Well No.

178989

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date

06/22/2001

Well Name BURNSVILLE MW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 Elevation Method							Well Depth 110 ft.	Depth Completed 110 ft.	Date Well Completed 06/00/1981
							Drilling Method Non-specified Rotary		
Well Address 12111 RIVER RIDGE BURNSVILLE MN							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
Geological Material DRIFT LIMEROCK SANDSTONE LIMEROCK							Use Monitor well		
							Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.		
							Casing Diameter 12 in. to 11 ft. 6 in. to 70 ft.	Weight 49 lbs./ft. 19 lbs./ft.	Hole Diameter 18.5 in. to 11 ft. 12 in. to 70 ft.
							Open Hole from 70 ft. to 110 ft.		
							Screen NO Make Type Diameter	Slot/Gauze	Length Set Between
							Static Water Level ft. from Date Measured		
							PUMPING LEVEL (below land surface) ft. after hrs. pumping 200 g.p.m.		
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Grout Material: Neat Cement	from 0 to 70 ft.	
							Nearest Known Source of Contamination feet direction type		
							Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
First Bedrock Last Strat Aquifer Depth to Bedrock ft.							Well Contractor Certification <u>Stevens Well Co.</u> <u>27194</u> <u>KADERLIK, C.</u> License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							178989	Printed 4/2/2009 HE-01205-07	

Minnesota Unique Well No.

178990

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date06/22/2001  
06/22/2001  
06/22/2001

Well Name BURNSVILLE MW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 Elevation Method							Well Depth 110 ft.	Depth Completed 110 ft.	Date Well Completed 06/00/1981
							Drilling Method Non-specified Rotary		
Well Address 12111 RIVERIDGE BL BURNSVILLE MN							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
							Use Test well		
							Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No Above/Below 110 ft.		
							Casing Diameter 12 in. to 11 ft.	Weight 49 lbs./ft.	Hole Diameter 18.5 in. to 11 ft.
							6 in. to 70 ft.	19 lbs./ft.	12 in. to 70 ft.
							Open Hole from 70 ft. to 110 ft.		
							Screen NO Make Type Diameter	Slot/Gauze	Length Set Between
							Static Water Level ft. from Date Measured		
							PUMPING LEVEL (below land surface) ft. after hrs. pumping 200 g.p.m.		
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS MONITORING WELL SHAKOPEE.							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from 0 to 70 ft.		
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Well Contractor Certification <u>Stevens Well Co.</u> <u>27194</u> <u>KADERLIK, C.</u> License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							178990	Printed 4/2/2009 HE-01205-07	

Minnesota Unique Well No.

178991

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date

06/22/2001

Well Name BURNSVILLE MW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 Elevation Method							Well Depth 110 ft.	Depth Completed 110 ft.	Date Well Completed 06/00/1981
							Drilling Method Non-specified Rotary		
Well Address 12111 RIVER RIDGE BL							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
							Use Monitor well		
							Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.		
							Casing Diameter 12 in. to 12 ft.	Weight 49 lbs./ft.	Hole Diameter 18.5 in. to 12 ft.
							6 in. to 70 ft.	19 lbs./ft.	12 in. to 70 ft.
							Open Hole from 70 ft. to 110 ft.		
							Screen NO Make Type Diameter	Slot/Gauze	Length Set Between
							Static Water Level ft. from Date Measured		
							PUMPING LEVEL (below land surface) ft. after hrs. pumping 200 g.p.m.		
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS IN THE PUMP SECTION LOCK BOXES & RECORDERS WERE USED.							Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Well Contractor Certification <u>Stevens Well Co.</u> <u>27194</u> <u>KADERLIK, C.</u> License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							178991	Printed 4/2/2009 HE-01205-07	

Minnesota Unique Well No.

178992

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date06/22/2001  
06/22/2001  
06/22/2001

Well Name BURNSVILLE MW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 Elevation Method								Well Depth 220 ft.	Depth Completed 220 ft.	Date Well Completed 06/00/1981	
								Drilling Method Non-specified Rotary			
Well Address 12111 RIVER RIDGE BL MN								Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
								Use Monitor well			
								Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.			
								Casing Diameter 12 in. to 35 ft.	Weight lbs./ft.	Hole Diameter 18.5 in. to 35 ft.	
								6 in. to 185 ft.	lbs./ft.	12 in. to 183 ft.	
								Open Hole from ft. to ft.			
								Screen NO Make Type			
								Diameter	Slot/Gauze	Length	Set Between
								Static Water Level ft. from Date Measured			
								PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
								Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS JORDAN EVERY 8-10 FEET HAD HARD LENSES.								Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Nearest Known Source of Contamination feet direction type			
								Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Well Contractor Certification <u>Stevens Well Co.</u> <u>27194</u> <u>KADERLIK, C.</u> License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report								178992	Printed 4/2/2009 HE-01205-07		

Minnesota Unique Well No.

178993

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date

06/22/2001

Well Name BURNSVILLE MW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 Elevation Method								Well Depth 220 ft.	Depth Completed 220 ft.	Date Well Completed 06/00/1981
								Drilling Method Non-specified Rotary		
Well Address 12111 RIVER RIDGE BL								Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
								Use Monitor well		
								Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below ft.		
								Casing Diameter 12 in. to 11 ft. 6 in. to 183 ft.	Weight 49 lbs./ft. 19 lbs./ft.	Hole Diameter 18.5 in. to 11 ft. 12 in. to 183 ft.
								Open Hole from 183 ft. to 220 ft.		
								Screen NO Make Type Diameter Slot/Gauze Length Set Between		
								Static Water Level ft. from Date Measured		
								PUMPING LEVEL (below land surface) ft. after hrs. pumping 200 g.p.m.		
								Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS LOCK BOXES & RECORDERS								Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		
								Nearest Known Source of Contamination feet direction type		
								Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
								Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
								Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
								Well Contractor Certification <u>Stevens Well Co.</u> <u>27194</u> <u>KADERLIK, C.</u> License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report								178993	Printed 4/2/2009 HE-01205-07	

Minnesota Unique Well No.

179000

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date

06/22/2001

Well Name BURNSVILLE MW Township Range Dir Section Subsections Elevation ft. 27 24 W 34 Elevation Method							Well Depth 220 ft.	Depth Completed 220 ft.	Date Well Completed 06/00/1981
							Drilling Method Non-specified Rotary		
Well Address 12111 RIVER RIDGE BL BURNSVILLE MN							Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
							Use Monitor well		
							Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No Above/Below 2.5 ft.		
							Casing Diameter 12 in. to 11 ft.	Weight 49 lbs./ft.	Hole Diameter 18.5 in. to 11 ft.
							6 in. to 183 ft.	19 lbs./ft.	12 in. to 183 ft.
							Open Hole from 183 ft. to 220 ft.		
							Screen NO Make Type Diameter Slot/Gauze Length Set Between		
							Static Water Level ft. from Date Measured		
							PUMPING LEVEL (below land surface) ft. after hrs. pumping 200 g.p.m.		
							Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS							Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
							Grout Material: Neat Cement	from 0 to 183 ft.	
							Nearest Known Source of Contamination feet direction type		
							Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material		
							Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
							Well Contractor Certification <u>Stevens Well Co.</u> <u>27194</u> <u>KADERLIK, C.</u> License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report							179000	Printed 4/2/2009 HE-01205-07	

Minnesota Unique Well No.

206175

County  
Quad  
Quad ID  
Dakota  
Bloomington  
104D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 1031

Entry Date  
Update Date  
Received Date  
10/19/1990  
06/22/2001

Well Name BURNSVILLE Township Range Dir Section Subsections Elevation 27 24 W 34 BDC Elevation Method				725 ft. 7.5 minute topographic map (+/- 5 feet)	Well Depth 220 ft.	Depth Completed 220 ft.	Date Well Completed 12/20/1963
				Drilling Method --			
				Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
				Use Abandoned Status Inactive			
				Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.			
				Casing Diameter 6 in. to 180 ft. 6 in. to 180 ft.	Weight lbs./ft.	Hole Diameter lbs./ft.	
				Open Hole from ft. to ft.			
				Screen NO Make Type Diameter	Slot/Gauze	Length	Set Between
				Static Water Level ft. from Date Measured			
				PUMPING LEVEL (below land surface) 0 ft. after hrs. pumping 200 g.p.m.			
				Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS ABANDONED OPEN HOLE ARTESIAN FLOW OPEN HOLE CASING: 010 TO 0012:006 TO 0180.				Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
				Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
				Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
First Bedrock Prairie Du Chien Group Last Strat Jordan Aquifer Jordan Depth to Bedrock 12 ft.				Well Contractor Certification Tri-state Well Co. 27118 License Business Name Lic. Or Reg. No.	Name of Driller		
County Well Index Online Report				206175	Printed 6/26/2008 HE-01205-07		

Minnesota Unique Well No.

229108

County Dakota  
Quad Bloomington  
Quad ID 104D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

Entry Date 05/20/1991  
Update Date 03/08/2007  
Received Date

Well Name NORTHWESTERN STATES CEMENT CO.				Well Depth	Depth Completed	Date Well Completed
Township Range Dir Section Subsections Elevation 27 24 W 34 CBCABA Elevation Method				743 ft. 7.5 minute topographic map (+/- 5 feet)	270 ft.	10/04/1963
				Drilling Method --		
				Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.	
				Use Industrial		
				Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No Above/Below 0 ft.		
				Casing Diameter 20 in. to 29 ft. 12 in. to 194 ft.	Weight lbs./ft.	Hole Diameter lbs./ft.
				Open Hole from 194 ft. to 270 ft.		
				Screen NO	Make	Type
				Diameter	Slot/Gauze	Length
						Set Between
Geological Material GLACIAL DRIFT SHAKOPEE-ONEOTA DOLOMITE JORDAN SANDSTONE						
				Color	Hardness	From To 0 27 27 179 179 270
				Static Water Level -1 ft. from Land surface Date Measured 10/04/1963		
				PUMPING LEVEL (below land surface) 14 ft. after hrs. pumping 360 g.p.m.		
				Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
REMARKS WELL FLOWS DON'T KNOW HOW HIGH ABOVE GROUND LEVEL. LINER PIPE GROUTED WITH PURE CEMENT.				Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
				Grout Material: Neat Cement from to ft.		
Located Minnesota Geological Survey Unique Number Verification Information from owner System UTM - Nad83, Zone15, Meters				Method Digitization (Screen) - Map (1:24,000) Date 08/30/2004 X: 477296 Y: 4958679		
				Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
				Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP <u>0</u> Volts Length of drop Pipe ft. Capacity g.p.m. Type Material		
				Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
				Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
First Bedrock Prairie Du Chien Group Last Strat Jordan				Well Contractor Certification Tri-state Well Co. 27118 BENEKE, R. License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report				229108	Printed 6/26/2008 HE-01205-07	

Minnesota Unique Well No.

467594

County  
Quad  
Quad IDDakota  
Bloomington  
104D

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING  
RECORD**

Minnesota Statutes Chapter 103I

Entry Date  
Update Date  
Received Date12/04/1992  
10/01/2008

Well Name MW-1 Township Range Dir Section Subsections Elevation ft. 27 24 W 34 BBA Elevation Method								Well Depth 22 ft.	Depth Completed 22 ft.	Date Well Completed 10/09/1990	
								Drilling Method Power Auger			
Well Address 121ST ST & PLEASANT LM BURNSVILLE MN								Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
								Use Monitor well			
								Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No Above/Below 3 ft.			
								Casing Diameter 2 in. to 16.5 ft.	Weight lbs./ft.	Hole Diameter 8.25 in. to 21.5 ft.	
								Open Hole from ft. to ft.			
								Screen YES Make JOHNSON Type stainless steel			
								Diameter 2	Slot/Gauze 10	Length 5	Set Between 16.3 ft. and 21.3 ft.
								Static Water Level 19 ft. from Land surface Date Measured 10/09/1990			
								PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
								Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS 121ST ST. & PLEASANT AVE., BURNSVILLE BURNSVILLE IND. PARK 3RD ADDITION, BLOCK 3, LOT 1 DAKOTA COUNTY PERMIT #90-6095: MW 1								Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
								Grout Material: Neat Cement	from 2 to 14 ft.	0.05 yds.	
								Grout Material: CONCRETE	from to 2 ft.		
								Nearest Known Source of Contamination 1500 feet North West direction Landfill type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
								Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
								Well Contractor Certification American Eng Testing M0024 ROMAN, B. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report								467594	Printed 4/2/2009 HE-01205-07		

Minnesota Unique Well No.

472759

County  
Quad  
Quad ID

Dakota

MINNESOTA DEPARTMENT OF HEALTH

**WELL AND BORING****RECORD**

Minnesota Statutes Chapter 1031

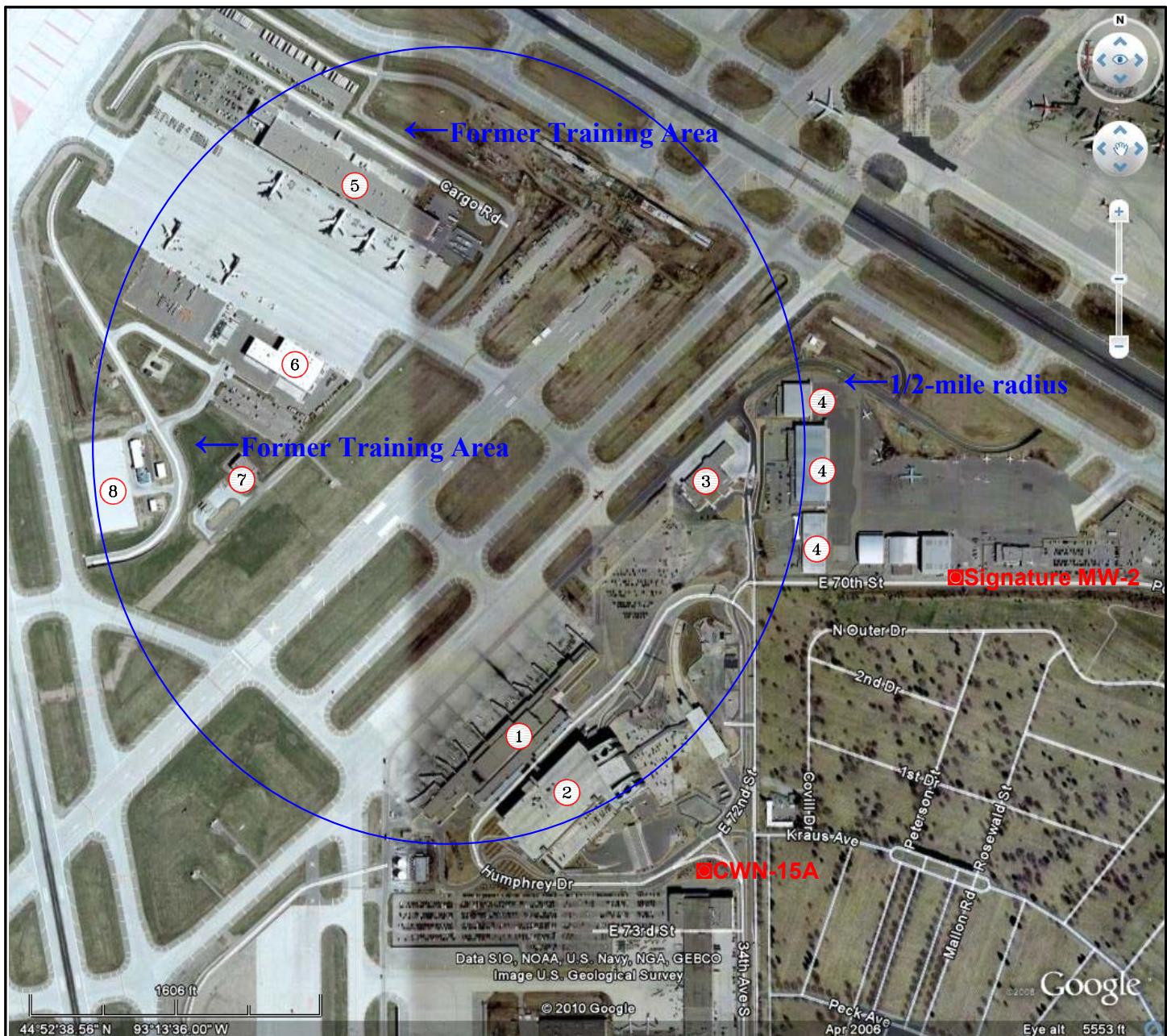
Entry Date  
Update Date  
Received Date09/29/2008  
09/29/2008

Well Name MW-1 Township Range Dir Section Subsections Elevation ft. 27 24 W 34 BB Elevation Method								Well Depth 22 ft.	Depth Completed 21 ft.	Date Well Completed 09/18/1990	
								Drilling Method Power Auger			
Well Address BURNSVILLE MN								Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From Ft. to Ft.		
Geological Material FILL, MIX OF SILT OR FLY ASH & PEA PEAT ORG CLAY W/ FEW SHELLS, ROOTS PEAT SANDY LEAN CLAY SOME GRAVEL LEAN CLAY W/ SAND SANDY LEAN CLAY W/ SOME GRAVEL STI								Color BLACK GRAY BROWN BROWN GRY/BRN	Hardness 1 3 SOFT SOFT 17	From To 0 1 1 3 3 8 8 9 9 17 17 22	Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Above/Below 2.7 ft.
								Casing Diameter 2 in. to 10.5 ft.	Weight lbs./ft.	Hole Diameter 8 in. to 20.5 ft.	
								Open Hole from ft. to ft.			
								Screen YES Diameter 2	Make WESCO Slot/Gauze 10	Type stainless steel Length Set Between 10.5 ft. and 20.5 ft.	
								Static Water Level 14.1 ft. from Land surface Date Measured 09/18/1990			
								PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.			
								Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)			
REMARKS LOCATION: MAP ATTACHED TO WELL LOG								Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from to 5.5 ft.			
								Nearest Known Source of Contamination feet direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
								Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number HP Volts Length of drop Pipe ft. Capacity g.p.m Type Material			
								Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No			
First Bedrock Last Strat Aquifer Depth to Bedrock ft.								Well Contractor Certification Gislason, John M0070 BRABENDER, K. License Business Name Lic. Or Reg. No. Name of Driller			
County Well Index Online Report								472759	Printed 4/2/2009 HE-01205-07		

## **APPENDIX D**

### **MSP Airport**

### **Groundwater Receptor Survey Documents**



LEGEND:

- Monitoring Well
- Property Occupant
- 1 Humphrey Terminal
- 2 Humphrey Terminal Parking Ramp
- 3 MSP Fire Station No. 1
- 4 Hangers 4-8
- 5 FedEx
- 6 UPS
- 7 South airfield lighting electrical center
- 8 Glycol Management Facility

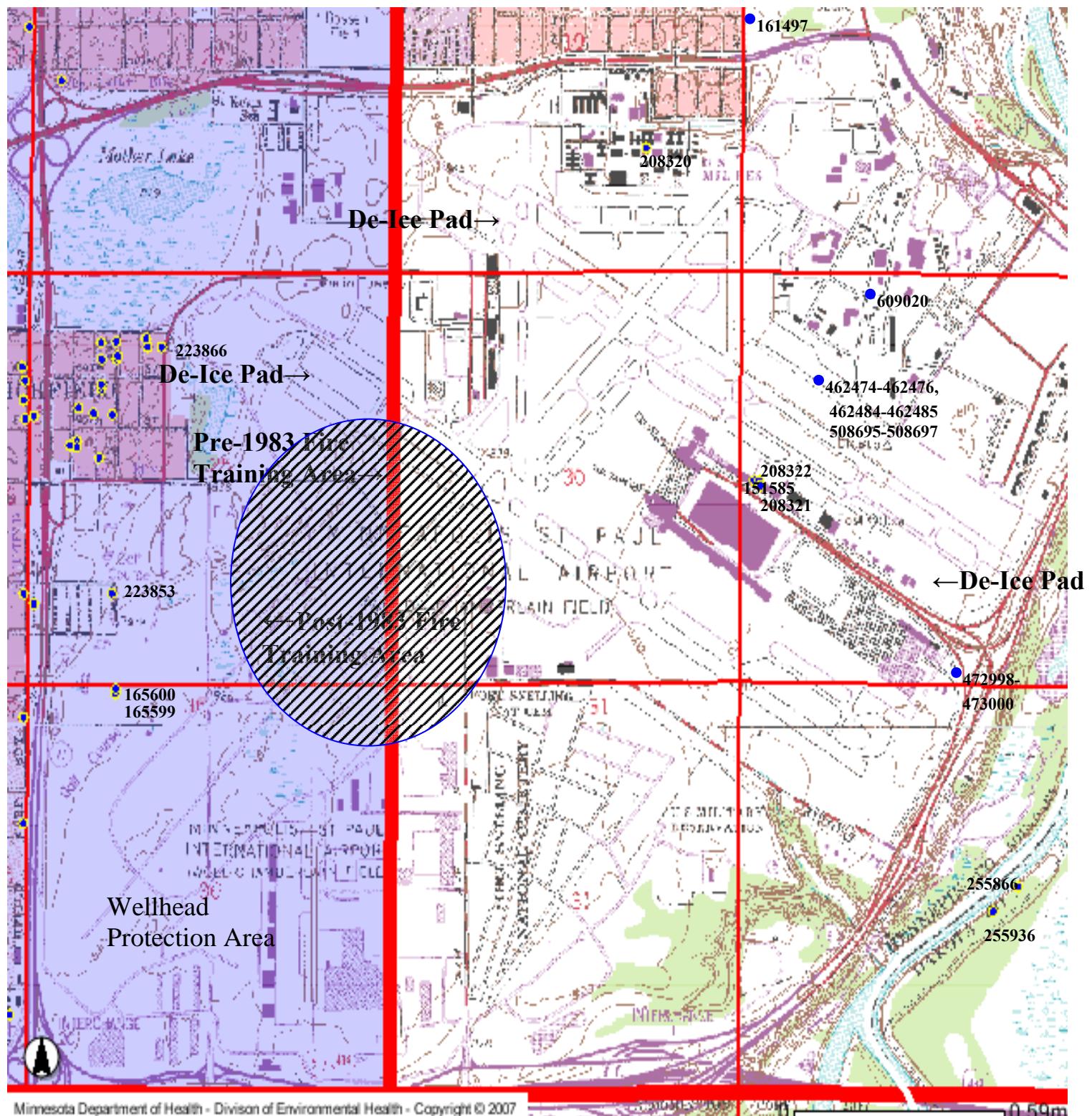


**FIGURE**  
**RECEPTOR SURVEY**  
**FORMER FIRE TRAINING AREAS**  
**MSP AIRPORT**  
**MINNEAPOLIS, MINNESOTA**

PROJECT NO. 45618DELO1	PREPARED BY NR	DRAWN BY DD	FILE NAME MSP Airport-1
DATE 11/9/10	REVIEWED BY		



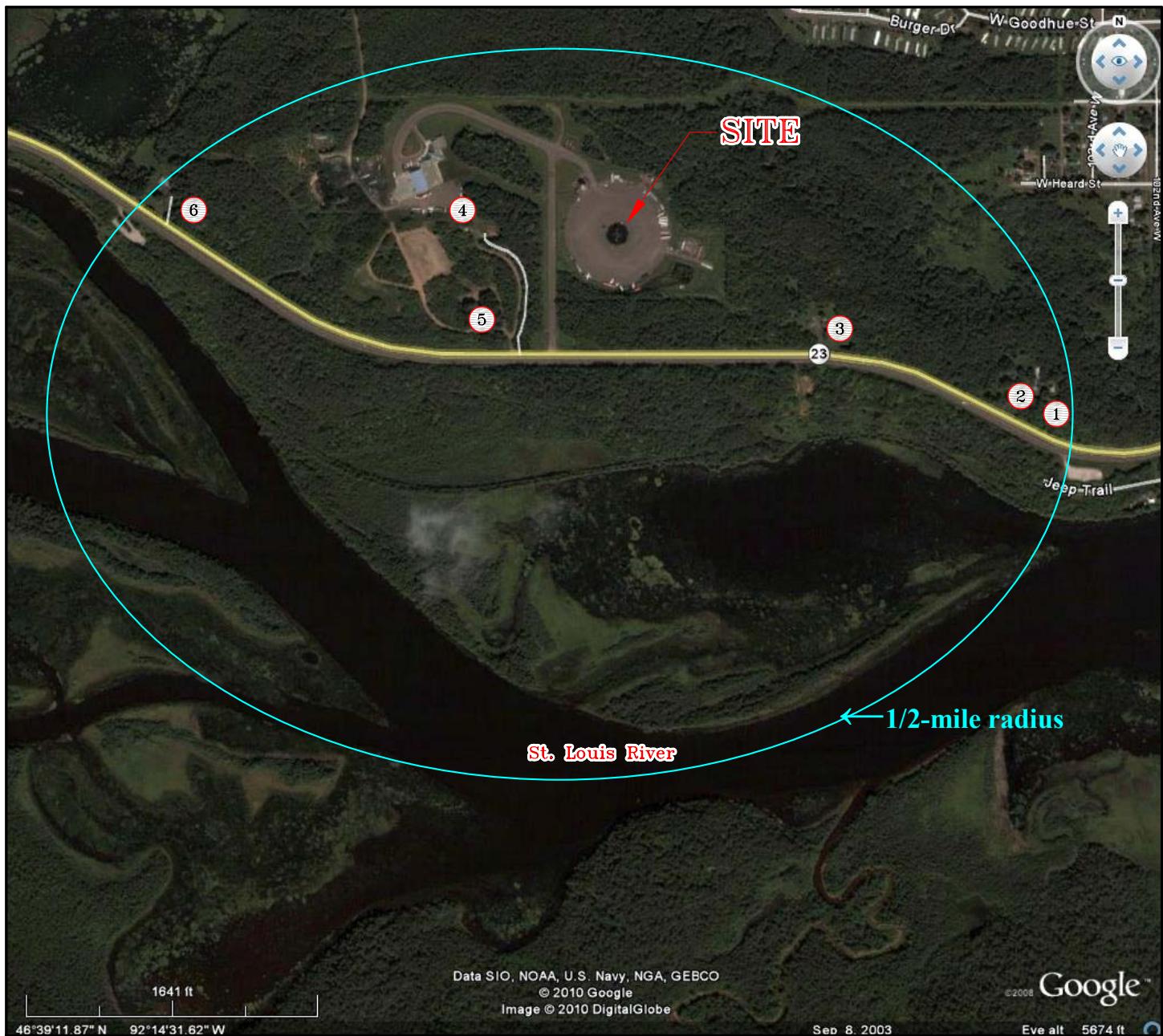
MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT CWI Well Map



### Approximate Area of Receptor Survey

## **APPENDIX E**

### **Lake Superior College ERTC Receptor Survey Documents**



LEGEND:

- Property Occupant
- 1 Residence – 10401 Hwy 23
  - 2 Residence – 10423 Hwy 23
  - 3 Residence – 11801 Hwy 23
  - 4 Residence – 11601 Hwy 23
  - 5 Residence – 11605 Hwy 23
  - 6 Residence – 11825 Hwy 23



**FIGURE**  
**RECEPTOR SURVEY**  
**LAKE SUPERIOR COLLEGE ERTC**  
**11501 HIGHWAY 23**  
**DULUTH, MINNESOTA**

PROJECT NO.	PREPARED BY	DRAWN BY	
45618DEL01	NR	DD	
DATE	REVIEWED BY	FILE NAME	
11/9/10		Superior-1	



Receptor Survey Questionnaire

via telephone  
11-2-10

PROPERTY ADDRESS: 11825 Hwy 23

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well **active** (in use), **abandoned** (not in use), or **sealed** (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well?        FEET (if depth is unknown check here       )

1c. In what year was the well installed (if known)?       

1d. If the well was abandoned, what year was the well sealed?       

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) Well done site

1f. Where on the property is (was) the well located?  
      

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name Bob Espenson

Telephone Number 218-626-2744  
218-393-4960

DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?

Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name       

Telephone Number        DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or MPCA Project Manager Nile Fellows at 651-757-2352.

Receptor Survey Questionnaire

via telephone  
10-20-00

PROPERTY ADDRESS: 10401 Hwy 23

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well active (in use), abandoned (not in use), or sealed (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well?        FEET (if depth is unknown check here       )

1c. In what year was the well installed (if known)?       

1d. If the well was abandoned, what year was the well sealed?       

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)       

1f. Where on the property is (was) the well located? Wee didn't have good  
water. We  
were from next door - neighbor's well water

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name Ruth McIntyre

Telephone Number 218-626-1128

DAY or EVENING (please circle one  
and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name       

Telephone Number        DAY or EVENING (please circle one  
and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

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Receptor Survey Questionnaire

- In Person Interviewed

PROPERTY ADDRESS: 11605 W Hwy 23

1. Is there, or has there ever been, a water well on the property?  Yes No Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here \_\_\_\_\_)

1c. In what year was the well installed (if known)? \_\_\_\_\_ ?

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) drinking water

1f. Where on the property is (was) the well located? \_\_\_\_\_

in house

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name Jerry Ferraro

Telephone Number 626-3525

DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property?  Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_ DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

In Person (Interviewed)

Receptor Survey Questionnaire

PROPERTY ADDRESS: 10801 Hwy 23 Tonawha 55808

1. Is there, or has there ever been, a water well on the property?  Yes No Unknown

If you answered **No** or **Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well *active* (in use), *abandoned* (not in use), or *sealed* (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE  ABANDONED  SEALED

1b. How deep is (was) the well? \_\_\_\_\_ FEET (if depth is unknown check here  ?)

1c. In what year was the well installed (if known)? 1950s

1d. If the well was abandoned, what year was the well sealed? \_\_\_\_\_

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.) drinking, etc.

1f. Where on the property is (was) the well located? house corner - SE corner

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes No

Name John McIntosh

Telephone Number 218-213-7850 all  DAY or EVENING (please circle one and state best time to reach you)

2. Is a public water supply currently utilized by the property? Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name \_\_\_\_\_

Telephone Number \_\_\_\_\_  DAY or EVENING (please circle one and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2352.

## Receptor Survey Questionnaire

PROPERTY ADDRESS: 11601 HIGHWAY 23, DULUTH, MN 55808

1. Is there, or has there ever been, a water well on the property?  Yes  No  Unknown

If you answered **No or Unknown**, proceed to Question 2.

1a. If you answered **Yes**, is the well active (in use), abandoned (not in use), or sealed (decommissioned following Minnesota Department of Health [MDH] Well Code guidelines).

ACTIVE       ABANDONED       SEALED

1b. How deep is (was) the well? 411 FEET (if depth is unknown check here  )

1c. In what year was the well installed (if known)? 1991

1d. If the well was abandoned, what year was the well sealed? -NA-

3e. If the well is active, for what purpose is it used? Example: (drinking water, lawn sprinkler, cooling, etc.)

3e. If the well is active, for what purpose is it used? Examples (etc.)  
etc.) DRINKING WATER, SHOWERS, LAUNDRY

use

1f. Where on the property is (was) the well located? APPROXIMATELY 40'

11. Where on the property is (was) the well located? **NORTHWEST OF THE HOUSE IN THE REAR  
YARD AREA**

1g. If there is currently a water supply well on the property, would you grant access to the property in order to obtain a water sample from either an indoor or outside faucet (at no cost to property owner)?

Yes  No

Name DIXON K. BASTIE

Telephone Number (218) 348-7287

DAY or EVENING (please circle one  
and state best time to reach you)

2. Is a public water supply currently utilized by the property?

Yes  No

3. May we contact you for further information if necessary? If so, please provide your name and telephone number.

Name - SEE ABOVE -

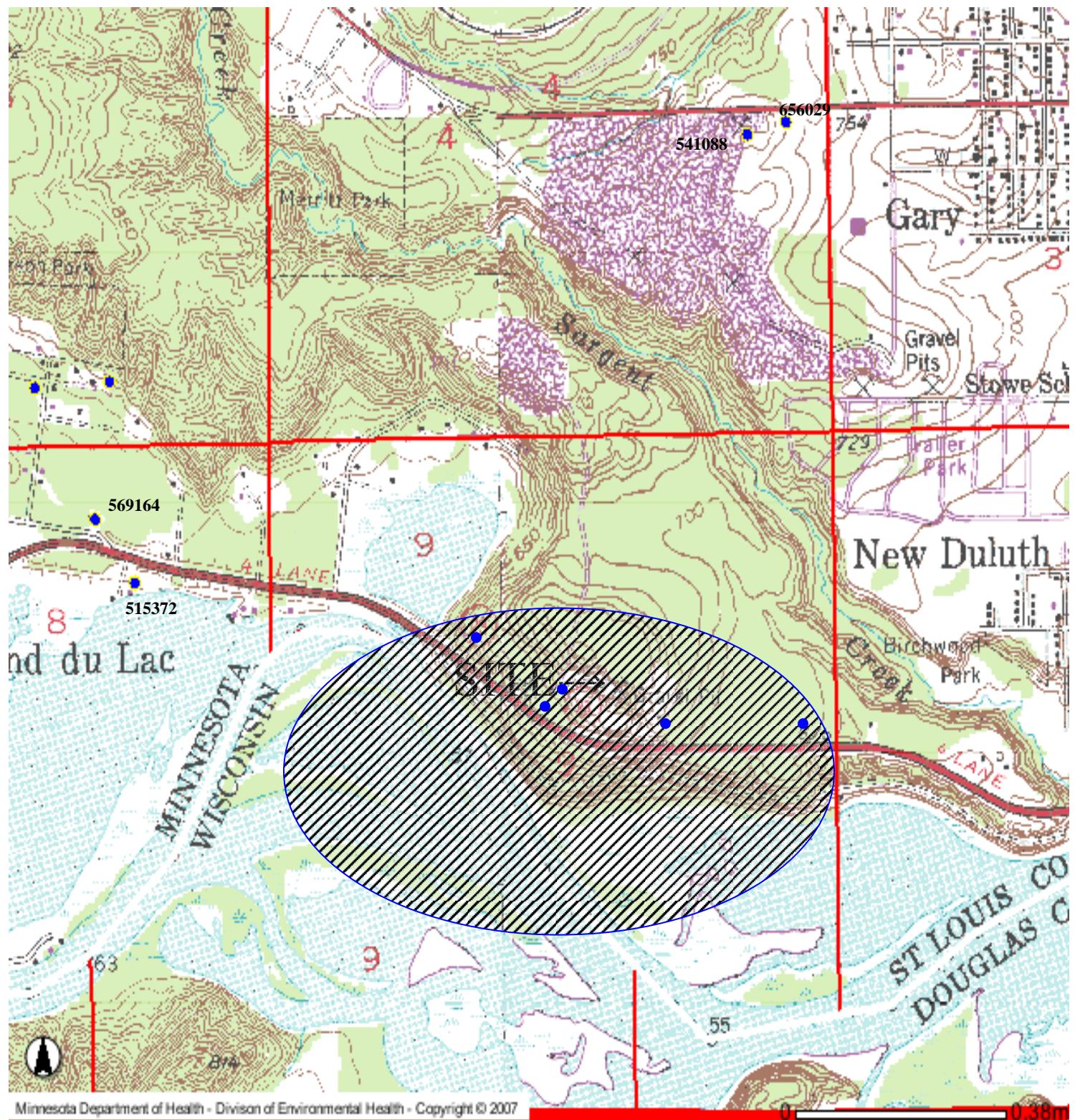
### Telephone Number

DAY or EVENING (please circle one  
and state best time to reach you)

Please complete this form and mail it back to Delta in the enclosed self-addressed stamped envelope. Delta thanks you in advance for taking the time to complete this form.

If you have any questions, or need help completing this form, please feel free to contact Nancy Rodning, Delta Consultants, at (651)697-5152 or 1-800-477-7411, or Nile Fellows, MPCA, at 651-757-2252.

## LAKE SUPERIOR COLLEGE - DULUTH CWI Well Map



Approximate Area of Receptor Survey

## **APPENDIX F**

### **Kandiyohi County Landfill Sample Location Map and Laboratory Data**



CLIENT ID	Kandiyohi DMW-1A	Kandiyohi DMW-3	Lab Blank	Spiked Matrix	Spiked Matrix (Duplicate)
AXYS ID	L15189-1	L15189-2	WG33729-101	WG33729-102 (A)	WG33729-103 (DUP WG33729-102)
WORKGROUP	WG33729	WG33729	WG33729	WG33729	WG33729
Sample Size	0.491 L	0.505 L	0.500 L		
UNITS	ng/L	ng/L	ng/L	% Recov	% Recov
PFBA	< 2.54	7.61	< 2.50	94.4	94
PFPeA	< 2.54	< 2.48	< 2.50	93.6	92.7
PFHxA	< 2.54	< 2.48	< 2.50	100	98.4
PFHpA	< 2.54	< 2.48	< 2.50	88.8	87.7
PFOA	< 2.54	< 2.48	< 2.50	94.6	86.4
PFNA	< 2.54	< 2.48	< 2.50	92.8	96.4
PFDA	< 2.54	< 2.48	< 2.50	101	93.2
PFUnA	< 2.54	< 2.48	< 2.50	99.7	93.9
PFDoA	< 2.54	< 2.48	< 2.50	104	100
PFBS	< 5.09	< 4.95	< 5.00	97.2	85.9
PFHxS	< 5.09	< 4.95	< 5.00	102	84.4
PFOS	< 5.09	< 4.95	< 5.00	95	73.8
PFOSA	< 2.54	< 2.48	< 2.50	85.9	79.3

< = less than the detection limit; number following this symbol represents the detection limit.

**Groundwater Analytical Results, PFCs**  
**Kandiyohi County Landfill**  
**Delta Project No. 19382DEL0**

			Perfluorobutanoic acid (PFPeA)	Perfluoro-n-pentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnA)	Perfluorododecanoic acid (PFDoA)	Perfluorobutanoic sulfonate (PFBS)	Perfluorohexane sulfonate (PFHxS)	Perfluorooctane sulfonate (PFOS)	Perfluorooctane sulfonamide (PFOSA)
#Perfluorinated Carbon Chains:			4	5	6	7	8	9	10	11	12	4	6	8	8
Health-Based Limits:			7000 <sup>(1)</sup>	ND	ND	ND	300 <sup>(2)</sup>	ND	ND	ND	ND	7000 <sup>(1)</sup>	RAA <sup>(3)</sup>	300 <sup>(2)</sup>	ND
Sample ID	Sample Date	Laboratory													
Kandiyohi DMW-1A	1/12/2010	Axys	< 2.43	< 2.43	< 2.43	< 2.43	< 2.43	< 2.43	< 2.43	< 2.43	< 2.43	< 4.87	< 4.87	< 4.87	< 2.43
Kandiyohi DMW-3	1/12/2010	Axys	<b>6.1</b>	< 2.51	< 2.51	< 2.51	< 2.51	< 2.51	< 2.51	< 2.51	< 2.51	< 5.01	< 5.01	< 5.01	< 2.51
Kandiyohi DMW-1A	5/4/2010	Axys	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 4.99	< 4.99	< 4.99	< 2.49
Kandiyohi DMW-3	5/4/2010	Axys	<b>11</b>	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 2.49	< 4.98	< 4.98	< 4.98	< 2.49
Kandiyohi DMW-1A	10/1/2010	Axys	< 2.54	< 2.54	< 2.54	< 2.54	< 2.54	< 2.54	< 2.54	< 2.54	< 2.54	< 5.09	< 5.09	< 5.09	< 2.54
Kandiyohi DMW-3	10/1/2010	Axys	<b>7.61</b>	< 2.48	< 2.48	< 2.48	< 2.48	< 2.48	< 2.48	< 2.48	< 2.48	< 4.95	< 4.95	< 4.95	< 2.48

Notes:

All results and standards are in nanograms per liter (ng/L), which is equivalent to parts per trillion.

Axys: Axys Analytical Services LTD

**Bolded** type indicates detection above the laboratory method detection limit.

(1) Health-Based Value (HBV) for chronic exposure defined by the Minnesota Department of Health.

(2) Health Risk Limit (HRL) for drinking water defined by the Minnesota Department of Health.

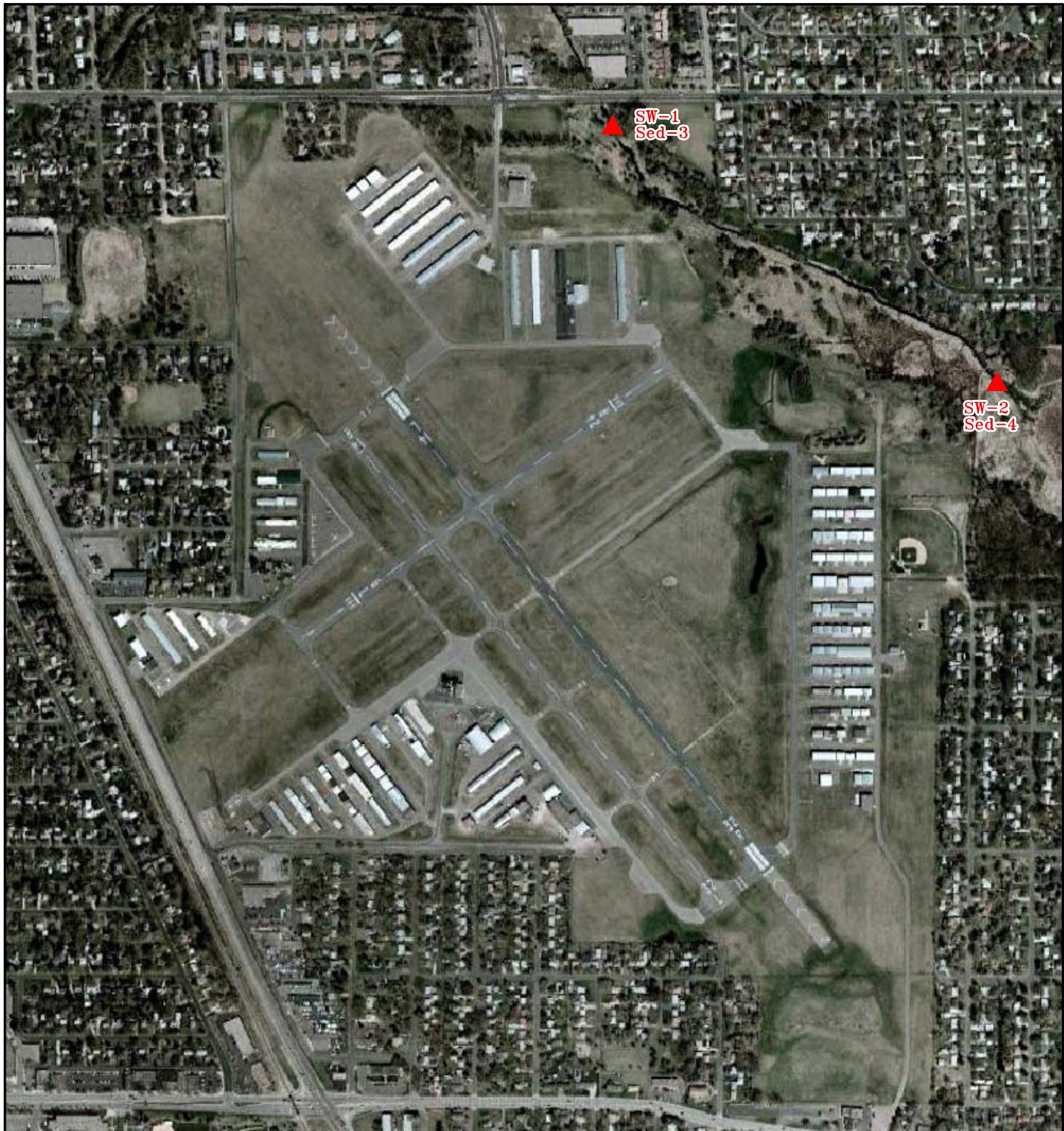
(3) Risk Assessment Advise (RAA) set by the Minnesota Department of Health for PFHxS does not specify numeric values.

ND: No health-based limit defined.

**DELTA**

## **APPENDIX G**

### **Crystal Airport – Shingle Creek Sample Location Map and Laboratory Data**



LEGEND:

▲ Sample Location



0 750  
SCALE IN FEET

**FIGURE**  
**OCTOBER 2010 SAMPLE LOCATIONS**  
**CRYSTAL AIRPORT**  
**CRYSTAL, MINNESOTA**

PROJECT NO. 45618DEL01	PREPARED BY NR	DRAWN BY DD
DATE 11/10/10	REVIEWED BY	FILE NAME Crystal-1



CLIENT ID	Crystal SW-1	Crystal SW-2	Lab Blank	Spiked Matrix	Spiked Matrix (Duplicate)
AXYS ID	L15487-1	L15487-2	WG34176-101	WG34176-102 (A)	WG34176-103 (DUP WG34176-102)
WORKGROUP	WG34176	WG34176	WG34176	WG34176	WG34176
Sample Size	0.503 L	0.484 L	0.500 L		
UNITS	ng/L	ng/L	ng/L	% Recov	% Recov
PFBA	35.7	25.4	< 2.50	105	118
PFPeA	5.54	4.58	< 2.50	100	103
PFHxA	5.62	4.91	< 2.50	109	116
PFHpA	3.31	< 2.58	< 2.50	99.5	95.3
PFOA	6.28	5.95	< 2.50	113	110
PFNA	< 2.48	< 2.58	< 2.50	98.8	112
PFDA	< 2.48	< 2.58	< 2.50	111	113
PFUnA	< 2.48	< 2.58	< 2.50	102	102
PFDoA	< 2.48	< 2.58	< 2.50	111	110
PFBS	< 4.97	< 5.16	< 5.00	121	120
PFHxS	< 4.97	< 5.16	< 5.00	116	117
PFOS	8.18	< 5.16	< 5.00	106	103
PFOSA	< 2.48	< 2.58	< 2.50	102	99.2

< = less than the detection limit; number following this symbol represents the detection limit.