

**DECLARATION FOR THE RECORD OF DECISION
FOR THE FRIDLEY PARK COMMONS WELL FIELD
SUPERFUND SITE
FRIDLEY, MINNESOTA**

Site Name and Location

Fridley Park Commons Well Field
Fridley, Minnesota

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Fridley Park Commons Well Field site (Site). This decision document was developed in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. Specifically, this decision document has been prepared in compliance with CERCLA Section 117, 42 U.S. C. § 9617, and NCP Section 300.435(c)(2)(ii). This ROD is also in accord with the Minnesota Environmental Response Liability Act, Minn. Stat. §§ 115 B.01 to 115B.20 (2004) ("MERLA"). This decision document explains the factual and legal basis for selecting the remedy for this site. The information supporting this remedial action decision is contained in the administrative record for this site.

The United States Environmental Protection Agency (U.S. EPA) and the State of Minnesota agree on the selected remedy in this ROD.

Description of the Selected Remedy

Concentrations of Trichloroethylene (TCE) in the municipal ground water supply wells (Nos. 6,7,8, and 9) at the Site have occasionally exceeded Maximum Contaminant Levels (MCLs) dating back to 1984. However, concentrations of TCE have been dropping over time since 1994. Well Nos. 6, 7, and 8 have been below MCLs since November 2001, and TCE concentrations in Well No. 9 have been below MCLs since January 2004. Additionally, Well Nos. 6, 7, 8, and 9 have been recently pumped (used) and have not shown an increase in TCE concentrations, a trend suggested by earlier testing. During testing in the 1990s, these wells would show an increase in TCE the more they were pumped. As a result, there does not remain a significant threat as long as TCE concentrations maintain their current levels or keep decreasing. Therefore, no CERCLA action is necessary for the site.

Although a source of contamination has not been identified, there is significant uncertainty as to whether a source of TCE remains nearby that may continue to threaten the Fridley Commons Park Well Field. Therefore, continued monitoring will be required to assure that the contamination levels remain at current concentrations or continue to decline and to verify that no unacceptable exposures to potential contamination at the site occur in the future. If the contamination levels begin to increase in the future, additional action may be necessary.



A ground water monitoring plan (beyond the routine public water supply system monitoring requirements of the Safe Drinking Water Act) will be developed to establish the monitoring requirements. It is anticipated that monitoring will be conducted quarterly for a period of at least two years, after which the frequency will be reduced if concentrations remain the same or continue to decline. Ground water monitoring will continue until Minnesota Pollution Control Agency (MPCA) and EPA agree that it is no longer required. Regardless of the monitoring requirements specified in this plan, the Fridley Well Field public water supply will also continue to be monitored by the Minnesota Department of Health (MDH) as specified by the Safe Drinking Water Act.

Statutory Determinations

No CERCLA remedy is required to be protective of human health and the environment.

Because this is a no action remedy where the source of the contamination has not been located, monitoring data will be reviewed to ensure that the remedy continues to provide adequate protection of human health and the environment. If the TCE concentrations remain below MCLs, the remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, and a five-year review will not be required for this remedy.



Sheryl A. Corrigan, Commissioner
Minnesota Pollution Control Agency

9/25/05
Date



Richard C. Karl, Director
Superfund Division

9/27/05
Date

SUMMARY FOR THE RECORD OF DECISION

1. Site Name, Location, and Description

The Fridley Commons Park Well Field (Site) is the location of an active public water supply well field with eight public wells, owned by the city of Fridley (City), Anoka County, Minnesota. The well field serves a population of approximately 29,000. The Site is located within the City approximately one mile north-northwest of the intersection of Interstate Highway 694 and Minnesota State Highway 65. The Site is approximately one mile east of the Mississippi River and approximately 0.2 miles northwest of Moore Lake (Figure 1). The Site provides recreational activities, and land use in the area surrounding the Site is mostly residential, with some areas of commercial and industrial use.

The City owns and operates eight municipal water supply wells and a water treatment plant (City Plant #2) at the Site. Four of the wells (Nos. 6, 7, 8, and 9) are open to the Prairie du Chien-Jordan (PdCJ) aquifer. The other four wells (Nos. 2, 3, 4, and 5) are open to the older Mount Simon-Hinckley aquifer.

2. Site History and Enforcement Activities

Prior to 1958, the Site was mostly undeveloped tax-forfeited land characterized by small sand dunes and prairie grasses. The City and the school district began acquiring the property in 1958.

The oldest well in the well field, city well No. 2, was drilled in 1960. Other wells were added to the well field in the 1960s and 1970s. At least two wells (No. 7 and No. 9) were deepened from the glacial drift aquifer to the PdCJ Aquifer in the early 1970s. Wells Nos. 6-9 provided 45 to 75 percent of the City's total water supply at that time.

In 1981, the City began sampling municipal wells for the presence of volatile organic compounds (VOCs). Trichloroethylene (TCE) was detected in well 9 in February 1984, although it was not detected in blended water from the well field.

Followup testing of the wells at the Site revealed that the four PdCJ Aquifer wells (6, 7, 8 and 9) were contaminated with VOCs (mainly TCE). Analyses in late 1980's and early 1990's indicated that well No. 9 consistently had the highest concentrations of TCE. Well No. 9 was taken out of service in February 1989 and a well advisory issued in 1992 restricting use because of the high TCE level which exceeded the Maximum Contaminant Level (MCL) of 5 micrograms per liter (ug/L) (Figure 2). Well No. 9 had its highest level of 79 ug/l in April 1992.

In 1989, TCE was added to the list of chemicals for which EPA has set Maximum Contaminant Levels (MCLs) under the federal Safe Drinking Water Act. The MCL for TCE in public water supply systems is 5 ug/l.

In 1989, the City hired Bruce A. Liesch Associates, Inc. (Liesch) as its consultant to investigate the TCE ground water contamination at the Site. Liesch installed three glacial drift aquifer monitoring wells at the Site. Analytical data from these wells have indicated that the glacial drift aquifer in the vicinity of the Site did not appear to be impacted by TCE contamination. Liesch also conducted file searches at the MPCA to investigate potential off-site sources of TCE contamination and initially identified approximately 100 potential source sites within six miles of the Site.

Since October 1992, the City's water supply system has been partially supplemented by an interconnection to the New Brighton water system. This interconnection provides excess water from a ground water treatment system installed in New Brighton to remediate ground water affected by release of TCE from the Twin City Army Ammunition Plant. The interconnection provides most of the water the City uses in the winter, but as New Brighton's summer demand increases there is little water to be provided to Fridley via this interconnection.

In addition to taking Well No. 9 out of service, the City has attempted to use careful blending and decreased reliance on the PdCJ Aquifer wells in order to meet water quality standards at the well field. However, the City has indicated that periods of peak demand in the summer have forced it to utilize some of the contaminated wells (6, 7, and 8). This renewed pumping action caused TCE levels in the wells to rise again. Thus, the available data showed that TCE concentrations in the contaminated wells seem to be directly related to the volume of water pumped from the wells.

Wells Nos. 6, 7, and 8, while at various times indicating contamination from TCE, remain in service and are used primarily during times of peak summer water usage. The City has continued to monitor the affected wells as required by MDH for compliance with the Safe Drinking Water Act.

On February 20, 1991, the Site number MN985701309 was placed on the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) inventory of potential hazardous waste sites. The Preliminary Assessment (PA) was completed by Minnesota Pollution Control Agency (MPCA) staff and was approved by the EPA on September 20, 1991. A Screening Site Inspection (SSI) was conducted by MPCA staff on November 5 and 6, 1991. The SSI report was submitted to EPA and approved on July 6, 1992. The SSI recommended the Site for an Expanded Site Inspection (ESI). The Site was added to the State of Minnesota's Permanent List of Priorities, or State Superfund List, in June 1992. The 1996 ESI recommended listing on the National Priorities List (NPL) and more effort to define the source within the limitations of cost. The site was listed on the NPL in February 1999.

The MPCA has conducted investigations since the closure of Well No. 9 to narrow the range of the contamination source possibilities. The report entitled Evaluation of Ground Water Contamination, Fridley Commons Park Well Field Site, March 1997, by Barr Engineering, recommended an alternative water supply to be planned for implementation during peaking periods, some longer-term investigative techniques, and additional work to locate the source of contamination. The report concluded that it was likely an MCL

violation would occur in the future. Therefore, a more reliable source of TCE-free water should be prepared. Because of this report, the MPCA sought listing as a NPL Site.

In 2000, the MPCA contracted with Delta Environmental Consultants to conduct a Limited Remedial Investigation of the site. As a follow-up to the recommendations in the Barr 1997 report, monitoring wells in the Commons Park area and the Moore Lake Dump were investigated. An additional monitoring well was installed near the area of the Moore Lake Dump to determine whether the dump was a source of TCE contamination. Since the dump closed, homes now cover the old dump area, and implementing borings and trenching was not feasible. Sample results from the well did not detect TCE. Also, as part of the Investigation, an evaluation of more recent data for Municipal Wells Nos. 6-9 was undertaken. Only Well No. 9 consistently registered TCE contamination over the MCL. The source of the contamination was not found by these efforts and a true source has not been identified.

In 2002, the MPCA had Delta Environmental Consultants prepare a Focused Feasibility Study (FFS). The FFS evaluated several remedial alternatives to address the remaining contamination above the MCLs.

The City and MDH continue to monitor the wells while they are being used. Monitoring results since 2002 indicate that, except for Well No. 9, the concentration levels of TCE remain below the MCL or are not detected in all wells. Concentrations in Well No. 9 however, have been below the MCLs since January 2004. Additionally, breakdown products of TCE (e.g. di-chloroethylene (DCE) or vinyl chloride) were only detected intermittently until 1996, after which they have not been detected with one exception. Di-chloroethylene was detected on 10/19/2004 at a level of 1.6 ug/l, which is just above the detection limit and also below its MCL. As a result, breakdown products are not considered chemicals of concern for this site.

According to the City, Municipal Wells Nos. 6-9 were used throughout the summer of 2004 and contaminant levels remained below the MCL. Whereas studies in the 1990s showed levels of contamination increasing with usage, recent trends do not show that. Continued monitoring in 2005 shows the levels of TCE are non-existent or below the MCL. No definite source of TCE has ever been identified. However, TCE contamination in the ground water has been documented at other nearby Superfund sites within two miles of the well field. These sites include: Naval Industrial Reserve Ordnance Plant, Kurt Manufacturing, FMC Corp, and the New Brighton/Arden Hills Twin Cities Army Ammunition Plant.

Based upon the following factors: complexity of the ground water flow system; the fact that other major sources have been documented nearby and are being addressed; the significant costs of installing multiple monitoring wells necessary for additional characterization activities; TCE concentrations have remained below the MCL at the well field for the last year and a half; and a source of TCE may no longer exist, additional efforts to identify the potential source TCE contamination at the site were not be pursued.

3. Highlights of Community Participation

Compliance with the public participation requirements of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. §9613 (k) (2) (B) (i-iv); National Contingency Plan ("NCP"), 40 CFR §300.435(c)(ii); and Minnesota Environmental Response Liability Act ("MERLA"), Minn. Stat. § 115B. subd. 2b, has been achieved for the Site by the following activities for this ROD.

MPCA has compiled an update to the Administrative Record, which includes the 1997 Barr report, a focused feasibility study, and Technical Memorandum date July 14, 2005. The Administrative Record is being maintained at the MPCA offices at 520 Lafayette Road No., St. Paul, Minnesota 55155. A copy of the Administrative Record has been made available locally at the Anoka County Mississippi Library located at 410 Mississippi St N.E., Fridley, Minnesota.

- The MPCA placed formal advertisements in the local Sun Focus newspaper of general circulation on July 13, 2005, announcing the commencement of the public comment period, the availability of the Proposed Plan, and the time and place of the July 21, 2005 public meeting;
- The MPCA released the Proposed Plan for public comment and placed the Plan into the Administrative Record on July 14, 2005;
- The MPCA provided a 30-day public comment period, which ended on August 15, 2005;
- The MPCA distributed copies of the Proposed Plan to the community relations mailing list;
- The MPCA held a public meeting on July 21, 2005, at the Fridley City Council Chambers, at which time specifics of the Proposed Plan were presented to the community and verbal and written comments were encouraged;
- The MPCA made a transcript of the public meeting, which has been made available to the public and placed in the Administrative Record and site repositories;
- The MPCA has received no written comments on the Proposed Plan. No significant comments were received as documented in the attached Responsiveness Summary.

4. Scope and Role of Operable Unit or Response Action

Concentrations of TCE in the ground water supply wells have exceeded MCLs in the past. These exceedences are primarily attributed to Well No. 9. Concentrations have been dropping over time. All wells except Well No. 9, have been below MCLs since November 2002, and concentrations in Well No. 9 have been below MCLs since January 2004. Pumping tests in the 1990s found the level of TCE increased as the amount of pumping increased. Recently these Wells have been pumped/used and have not shown an increase in TCE concentrations. As a result, there does not remain a significant threat if concentrations maintain their current levels or keep decreasing. However, there remains significant uncertainty as to whether there remains a source of TCE nearby that may continue to threaten the Fridley Commons Park Well Field. Therefore, continued monitoring will be required to assure that the contamination levels remain at current concentrations or continue to decline. If the contamination levels begin to increase in the future, additional action may be necessary.

A ground water monitoring plan will be developed to establish the monitoring requirements. It is anticipated that monitoring will be conducted quarterly for a period of at least two years, after which the frequency will be reduced if concentrations of TCE remain the same or continue to decline. Also, ground water monitoring will continue until MPCA and EPA agree that it is no longer required. Regardless of the monitoring requirements specified in this plan, the Fridley Well Field public water supply will also continue to be monitored by the Minnesota Department of Health (MDH) as specified by the Safe Drinking Water Act.

There are no operable units being pursued at this site. Therefore, the remedy selected by this ROD is intended to be the final remedy for the entire site.

5. Site Characteristics

Municipal Wells Nos. 6, 7, 8, and 9, which have been impacted by TCE contamination, are open to the Prairie du Chien Jordan Aquifer (PdCJ) Aquifer. The other 4 municipal wells (2, 3, 4, and 5) are screened in the Mt. Simon -Hinckley aquifer.

A thick layer of post-glacial and glacial drift underlies the City. The uppermost unconsolidated unit in the vicinity of the well field is the Fridley Formation, a predominantly fine-grained, silty sand that was deposited by alluvial and lacustrine processes. The Twin Cities Till (Till), a reddish-brown to gray silty clay to clayey sand till underlies the Fridley Formation across most of the area. The Till varies in thickness from 50 to 100 feet within the area surrounding the well field. The Hillside Sand lies between the Twin Cities Till and bedrock. This glacial outwash unit is typically a medium to coarse sand with occasional layers of gravel and silty sand till.

The St. Peter Sandstone is the uppermost bedrock unit in the area and ranges in thickness from 0 to 70 feet. Beneath the St. Peter Sandstone is the Prairie du Chien Group. The Prairie du Chien Group includes the Shakopee formation and the Oneota Formation, which are composed of fractured dolomite rock and occasional sandy dolomite beds. The Prairie du Chien Group is fractured and ranges in thickness up to 140 feet.

The Jordan Sandstone underlies the Prairie du Chien Group and is the lowermost bedrock unit that is hydraulically connected to the Prairie du Chien Group, the aquifer through which TCE appears to be transported to the city wells. The Jordan Sandstone is a fine- to coarse-grained sand that is loosely cemented in most locations; it is typically 90 feet thick. Underlying the Jordan Sandstone is the lowermost bedrock unit that subcrops in the vicinity of Fridley, the St. Lawrence Formation, which consists of a glauconitic dolomite with interbedded, dolomitic shale and siltstone layers. This unit, which is 35 feet to 40 feet thick, acts as a regional confining unit.

The glacial drift, Prairie du Chien Group and the Jordan Sandstone are the primary geologic units that need to be considered with respect to detections of TCE in samples from municipal wells at the Site.

Beneath the St. Lawrence formation lie the Franconia, Ironton, and Galesville Formations. These units consist of sandstones, siltstones, and dolomitic sandstones. The Franconia, Ironton, and Galesville Formations are hydraulically connected and produce low to moderate amounts of water. The Eau Claire Formation, a regional confining unit consisting of silty-grained sandstone, separates the Franconia, Ironton, and Galesville Formations from the Mount Simon and Hinckley Formations. The Mount Simon and Hinckley Formations are thick sandstone units that form one of the primary aquifers in the Twin Cities along with the Prairie du Chien –Jordan aquifer described above.

The effects of erosion on the Prairie du Chien Group and the Jordan Sandstone include several bedrock valleys in the vicinity of the Site, where the Prairie du Chien and the Jordan have been partially or completely removed by erosion. These buried bedrock valleys can permit fairly direct migration of ground water and contaminants into or out of the aquifers. In addition, the bedrock valleys can affect the confined/unconfined nature of the aquifer, as well as flow gradients and flow directions in the aquifer. The PdCJ is an important aquifer in the region, so pumping effects of the nearby wells are significant with respect to the movement of contaminants through the aquifer. Many wells near the Site are open to the PdCJ Aquifer. Some of these wells are high capacity industrial or municipal wells and may have large radii of influence so that they could produce well interference in the vicinity of the Site. The overall flow direction within the aquifer is west-southwest toward the Mississippi River. However, significant variation can be present on a local scale.

Because the ground water contamination at the Site has historically been limited to the PdCJ wells (Nos. 6, 7, 8, and 9), the hydrogeologic setting is defined by the conditions in the PdCJ Aquifer. The PdCJ Aquifer is actually comprised of two distinctly different formations: the Prairie du Chien Group and the Jordan Formation (Figure 3). The Prairie du Chien is typically composed of dolostone or sandy dolostone, while the Jordan is predominantly quartzose sandstone. There is no confining layer separating the two formations; thus the two formations act as a single aquifer. The Prairie du Chien Group is approximately 140 feet thick in the vicinity of the Site, and the Jordan Sandstone is approximately 60 feet thick in the well field area.

The municipal wells, which have been impacted by TCE contamination (i.e., Nos. 6, 7, 8, and 9), are open to the PdCJ Aquifer. However, as shown in Figure 4, these wells rely primarily on the Prairie du Chien as a source of water, since they intersect only a short section of the Jordan. Thus, the hydrogeologic characteristics of the Prairie du Chien Group are significant, while the hydrogeologic characteristics of the Jordan Sandstone are relatively insignificant with respect to these four wells. The fractured, sometimes karst nature of the Prairie du Chien is extremely important in this context, and plays a large role in controlling ground water movement through the aquifer.

Other important factors in the hydrogeologic setting at the Site include the effects of erosion on the Prairie du Chien Group and the Jordan Sandstone. For example, there are several bedrock valleys in the vicinity of the Site, where the Prairie du Chien and the Jordan have been partially or completely removed by erosion. These buried bedrock valleys can permit fairly direct migration of ground water and contaminants into or out of the aquifer. In addition, the bedrock valleys can affect the confined/unconfined nature of the aquifer, as well as flow gradients and flow directions in the aquifer.

Since the PdCJ is an important regional aquifer. Pumping effects of the nearby wells are significant with respect to the movement of contaminants through the PdCJ aquifer. There are many wells near the Site that are open to the PdCJ Aquifer. Some of these wells are high capacity industrial or municipal wells and may have large radii of influence, and may cause well interference effects in the vicinity of the Site.

An important factor concerning the hydrogeologic setting is the type of contamination in the ground water. TCE is a commonly used industrial solvent which is slightly soluble in water and is more dense than water. When pure TCE enters ground water from a source, some of it dissolves in the ground water and migrates downward through the aquifer(s) due to gravity until it hits a confining layer while some of it dissolves and moves laterally. The rest of the TCE moving downward in the aquifer does so in the form of a dense non-aqueous phase liquid (DNAPL). These two phases of TCE have different physical properties and migration characteristics, although they are both subject to changes in the aquifer attributes (e.g., hydraulic conductivity).

A limited well survey was conducted in the area and identified wells have been sampled, but the extent and direction of the plume was not identified due to the complexity of the fractured bedrock PdCJ aquifer. Several other public water supply wells for other municipalities are located within a four-mile radius of the Site. A few private and many industrial wells also are operated in the area.

In February 1984, trichloroethylene (TCE) was detected in City Well No. 9. Subsequent testing detected TCE and several other organic chemicals in well Nos. 6, 7, 8, and 9. The affected media (the Prairie du Chien aquifer) is used for drinking water supply by the City. The four City drinking water supply wells in the Mt. Simon-Hinckley have so far not been impacted to this point.

To date, a source for the TCE ground water contamination has not been identified, but is believed to be located off-site based on the absence of TCE in the glacial drift monitoring wells present.

Concentrations of TCE in the ground water supply wells have exceeded MCLs in the past. These exceedences are primarily attributed to Well No. 9. Concentrations have been dropping over time. All wells except Well No. 9, have been below MCLs since November 2002, and concentrations in Well No. 9 have been below MCLs since January 2004. Pumping tests in the 1990's found the level of TCE increased as the amount of pumping increased. Recently these Wells have been pumped/used and have not shown an increase in TCE concentrations. As a result, there does not remain a significant threat if concentrations maintain their current levels or keep decreasing. However, there remains significant uncertainty whether there remains a source of TCE nearby that may continue to threaten the Fridley Commons Park Well Field.

6. Current and Potential Future Site and Resource Uses

The Site is located within the city of Fridley (Figure 1). The Commons Park Well Field Site is bounded the Fridley Community Center and Fridley High School to the south and the Fridley Middle School and Moore Lake to the East. Residential areas can be found to the north and west. A water filtration plant is also located at the site.

The Commons Park area provides recreational activities for the surrounding schools and has room for expansion of the water treatment facilities. Future uses are expected to remain the same with the exception of the expansion of the water treatment facility.

The City plans to upgrade filtration equipment and provide treatment of its Mount Simon-Hinkley wells for radioactive contamination.

7. Summary of Site Risks

The Chemical of Concern for this site is TCE present in ground water, which until recently had been above the MCL. Breakdown products of TCE are not considered chemicals of concern since they were only sporadically detected at very low concentrations and have been below detection limits for an extended period of time. TCE is a colorless solvent with a slightly sweet odor and is used primarily in industrial processes as a degreaser for metal parts. Since TCE is very volatile, it is not typically found in surface soil or surface water. TCE is a probable human carcinogen. Long-term exposure to high levels of TCE in drinking water can damage the liver, kidney, immune system, and nervous system.

Potential routes of exposure for TCE-impacted water at Fridley include direct contact during activities such as bathing and dish washing, ingestion of drinking water and although the risk is minimal, inhalation of volatilized TCE. However, the Well with the previously highest detected contamination (Well No 9) has been shut off and water from Wells Nos. 6, 7, and 8, which have only been used in the summer months during periods of peak demand, is mixed with water from non-impacted wells to ensure that any TCE is below the MCL. Thus exposure to TCE from the Fridley water system has been minimized and brought within MCL standards.

The vapor intrusion exposure pathway was evaluated consistent with EPA's Draft

Subsurface Vapor Intrusion Guidance (November 2002). Potential exposures to contamination via this pathway, including potential exposure to public water supply workers, is considered negligible because of the following factors: 1) contaminant concentrations in the ground water aquifer are located at depths greater than 125 feet below ground surface; 2) contaminant concentrations are sufficiently low (i.e. below the MCL); and 3) the contaminant concentrations are not found in the uppermost saturated zone.

Because contamination at the site is limited to one contaminant in the ground water, exposure to contamination is limited to uses of the water supply and is regulated under the Safe Drinking Water Act. Contaminant concentrations at the site have been below the established MCL, which is a health-based standard, since January 2004. Therefore, current concentrations of TCE at the site are considered protective of human health. There are no ecological exposures to contamination at this site and therefore ecological risks are not evaluated. Therefore, no CERCLA action is necessary to protect public health and the environment.

If concentrations of TCE in the water supply wells increase above the MCL in the future, future risks may increase for the users of the water supply system. As in the past, if these conditions arise, the City of Fridley minimally will, utilize blending techniques to prevent unacceptable exposures to their users.

There remains a significant uncertainty as to whether a source of TCE remains near the site that could threaten the quality of the water supply in the future. If a significant source of TCE remains near the site, concentrations of TCE in the water supply may increase to unacceptable levels and may require additional characterization efforts or an active remedy. In order to appropriately manage this uncertainty, ground water monitoring will be performed until such time as the MPCA and EPA agree that monitoring is no longer required. However, as a public water supply system, the monitoring requirements of the Safe Drinking Water Act will always apply.

8. Documentation of Significant Changes.

There have been no changes from the Proposed Plan.

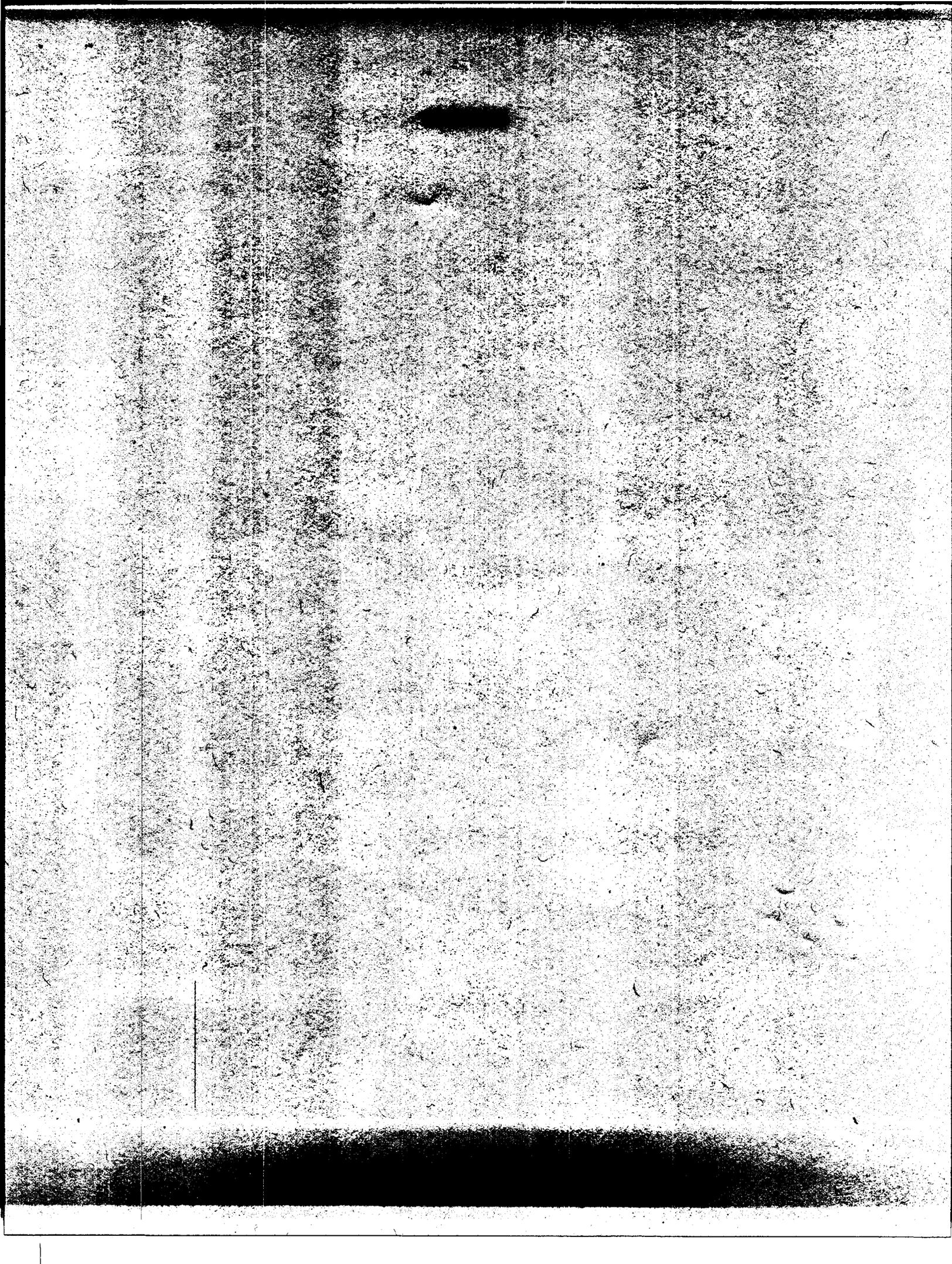
Responsiveness Summary

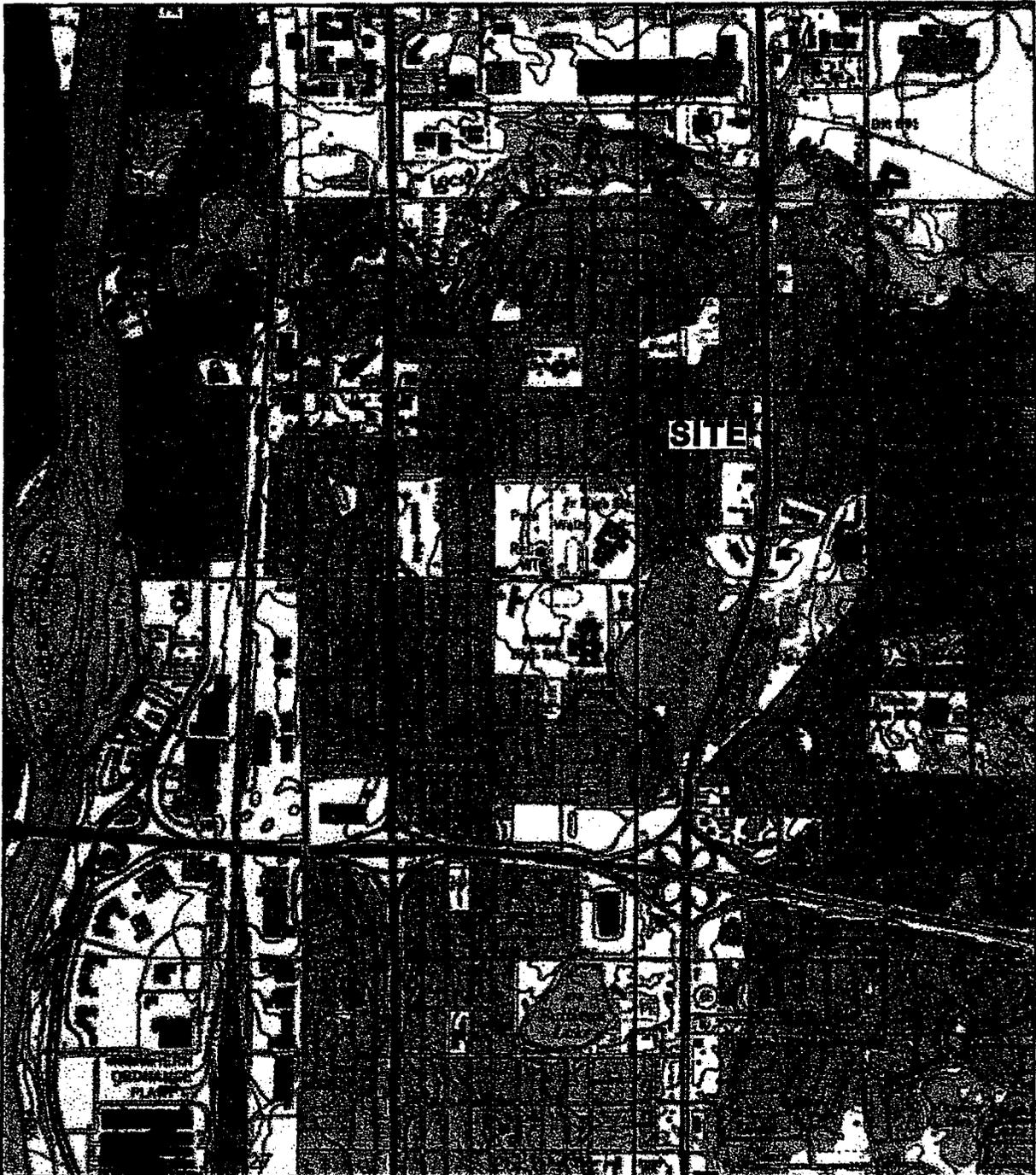
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- The MPCA distributed copies of the Proposed Plan to the community relations mailing list;
- The MPCA held a public meeting on July 21, 2005, at the Fridley City Council Chambers, at which time specifics of the Proposed Plan were presented to the community and verbal and written comments were encouraged; and
- The MPCA made a transcript of the public meeting, which has been made available to the public and placed in the Administrative Record and site repositories.

There were no verbal or written comments received during the public meeting. Additionally, no significant comments were received during the 30-day public comment period. Therefore, a summary of responses to comments is not required.





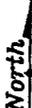
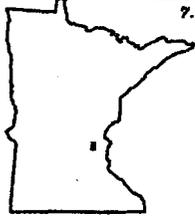
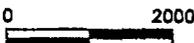
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|---|--|----------------|---|-----------------------|
|   QUADRANGLE LOCATION | MINNEAPOLIS NORTH, MINNESOTA 7.5 MINUTE SERIES (TOPOGRAPHIC) | | FIGURE 1 SITE LOCATION MAP FRIDLEY COMMONS PARK WELL FIELD FRIDLEY, MINNESOTA | |
| |  SCALE IN FEET | | PROJECT NO. A001-103 | PREPARED BY GS SJR |
| | | DATE 3/5/01 |  | |

Figure 1

Figure 2

TCE Concentrations vs. Time
Well 8 and Well 9

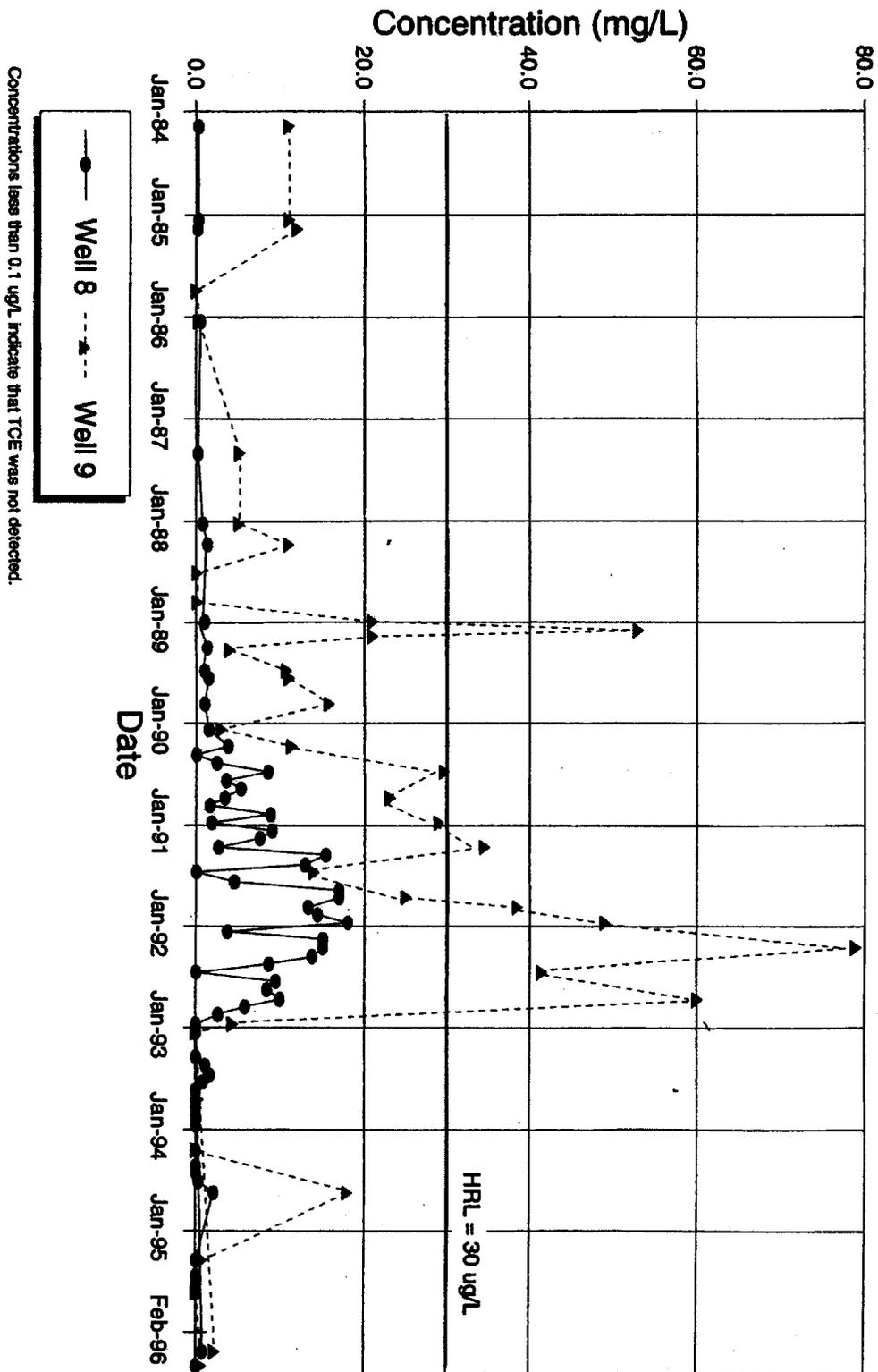


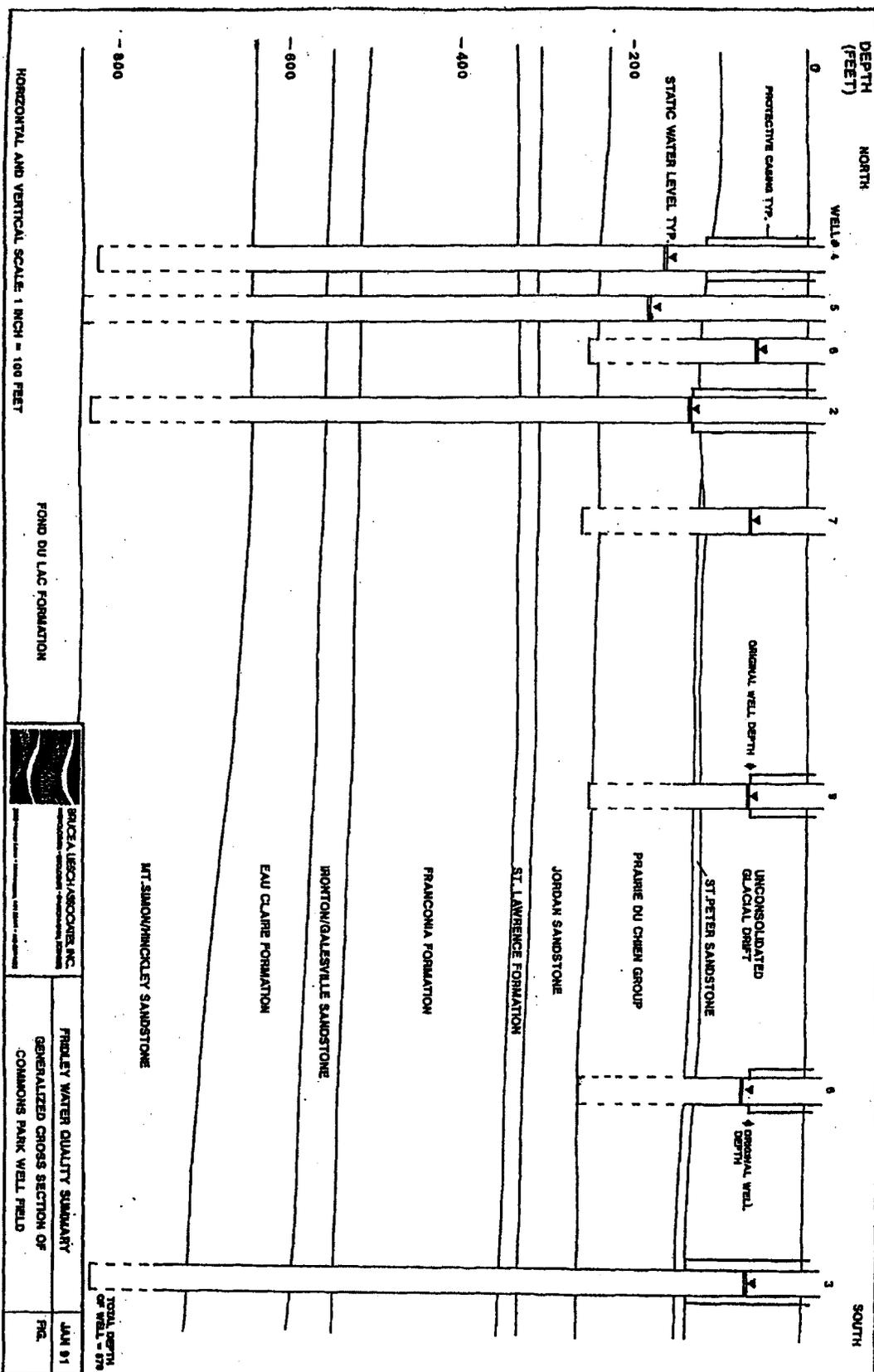
Figure 3

| System | Rock Unit | Approx. thickness (in feet) | General Description | Graphic Column | Water - Bearing Characteristic | |
|------------|---|-----------------------------|--|--|--|---|
| Quaternary | Undifferentiated glacial deposits | 0-500 | Glacial till, outwash, and valley train sand and gravel, lake deposits, and alluvium of several ages and several provenances; vertical and horizontal distribution of units is complex | | Distribution of aquifers and confining beds is poorly known; sand and gravel aquifers that yield moderate to large amounts of water are common in buried bedrock valleys | |
| Ordovician | Decorah Shale | Absent from Site | Shale, greenish-gray, fissile to blocky; includes thin discontinuous lenses of fossiliferous limestone that increase in abundance upward | | Aquifer: Low yields from fractures in shale and soil cavities in dolostone | |
| | Platteville Formation | | Dolostone, light-gray to buff, thin- to med.-bedded, shaly | | Confining bed | |
| | Glenwood Formation | | Shale, greenish-gray, fissile, sandy | | Aquifer: moderate yields | |
| | St. Peter Sandstone | 150 | Sandstone, light-gray, massively bedded, well sorted, med.-gr., poorly cemented, quartzose; approx. 20-ft.-thick silty to shaly bed near base | | Confining bed | |
| | Prairie du Chien Group | Shakopee Formation | 50 | | Dolostone, buff, thin- to thick-bedded, silt- and sand-rich, med.-gr. thin sandstone beds near base | Aquifer: high yields from fractures in dolostone and in poorly cemented sandstone; principal aquifer of the Twin City basin |
| | | Onecota Dolomite | 100 | | Dolostone, buff, thin- to thick-bedded, vuggy, med.-gr., silt-size dolomite matrix | |
| Cambrian | Jordan Sandstone | 90 | Sandstone, light-gray, massively bedded, med.- to coarse-gr., well sorted, poorly cemented, quartzose | Confining bed | | |
| | St. Lawrence Formation | 50 | Dolostone, gray to tan, silty or sandy, argillaceous; glauconitic in upper part | Aquifer: low yields | | |
| | Franconia Formation | 155 | Sandstone, greenish-gray, thin-bedded, fine- to coarse-gr., silty to dolomitic; commonly glauconitic; an upper aquifer (Reno) is a fine-gr. sandstone | Confining bed | | |
| | Ironton Sandstone | 30 | Sandstone, light-gray, poorly to well sorted, med.-gr., silt-rich, quartzose | Aquifer: moderate to high yields | | |
| | Galesville Sandstone | 35 | Sandstone, light-gray, well sorted, fine- to med.-gr., quartzose | Confining bed | | |
| | Eau Claire Formation | to 130 | Sandstone, red, fine- to med.-gr., silty, glauconitic; interbedded with grayish-green to red, fissile shale | Aquifer: moderate to high yields; second most important aquifer of Twin City basin | | |
| | Mt. Simon Sandstone | 160 | Sandstone, light-gray, fine- to coarse-gr., quartzose; thin shale beds in upper part | Confining bed | | |
| Keeweenaw | Hinckley Sandstone | 75 | Sandstone, tan, med.- to coarse-gr., arkosic | Aquifer: moderate to high yields; second most important aquifer of Twin City basin | | |
| | Fond du Lac Formation and older sedimentary rocks | to 4,000 | Sandstone and siltstone, fine-gr., well cemented, arkosic; interbedded with red to green micaceous shale | Confining bed | | |
| | Metamorphic and Igneous Rocks | to 20,000 | Mostly mafic, lava flows with thin interflow sediments | | | |

(Hogberg, 1972)

Description of Hydrogeologic Units

Figure 4



Administrative Record for Fridley Park Commons Municipal Well Field.

- 1) Evaluation of Ground Water Contamination. Fridley Commons Park Well Field prepared for the Minnesota Pollution Control Agency by Barr Engineering. March 1997.
- 2) Fridley Well Field Data. City of Fridley Monitoring Data. 1966- 1999.
- 3) Fridley Water Quality Summary for 1994. Prepared for City of Fridley by Liesch Associates. May 1995.
- 4) Aquifer Testing Procedures and Analysis at Commons Park By Liesch Associates. September 1993 revised January 1994.
- 5) Water quality Data Letter. Liesch Associates. July 8, 1992.
- 6) Fridley Well Field Data. Liesch Associates. July 1992.
- 7) Fridley Water Quality Summary for 1991. Liesch Associates. January 1992.
- 8) Fridley Monitoring Well Installation report for City of Fridley by Liesch Associates. October 1990.
- 9) Fridley Water Quality Summary for 1990, prepared for City of Fridley by Liesch Associates. January 1991.
- 10) Fridley Water Quality Study. Appendices I Through IV. For City of Fridley. Liesch Associates. January 1990.
- 11) Fridley Water Quality Study for City of Fridley. Liesch Associates. January 1990.
- 12) Fridley Well Field Data. VOC-MDH. 1989-1990
- 13) MDH private well samples. 1987
- 14) Fridley Well Field Data 1965-1997
- 15) Fridley Wellfield Well Inventory. 1995
- 16) Fridley Park Commons Park Wellfield Preliminary Assessment. December 1991
- 17) Site Investigation Report. Fridley Commons Park Well Field. MND985701309. 1991.

- 18) Expanded Site Investigation Report. Fridley Commons Park Well Field. MND985701309. 1995.
- 19) Fridley Water Quality Summary for 1994. Prepared for City of Fridley by Liesch. May 1995.
- 20) Fridley Well Field Data wells 6-9. VOC Data 2004-2005.
- 21) Screening Site Inspection Report. Fridley Commons Park Well Field. MND985701309. MPCA June 29, 1992.
- 22) Permanent List of Priorities Board Item. June 1998.
- 23) Initial Public Health Assessment for Fridley Commons Park Well Field. Fridley, Anoka County, Mn. Cerclis No. MND985701309. September 1999 by ATSDR.
- 24) Public Health Assessment for Fridley Commons Park Well Field. Fridley, Anoka County, Mn. Cerclis No. MND985701309. October 2000, by ATSDR.
- 25) Sampling and Analysis Plan Fridley Commons Park Well Field Fridley, Mn. Prepared for the MPCA by Delta Environmental Consultants. September 2002.
- 26) Feasibility Study Report Fridley Commons Park Well Field Fridley, Mn. Prepared for the MPCA by Delta Environmental Consultants. December 2003.
- 27) Limited Remedial Investigation Report Fridley Commons Park Well Field Fridley, Mn. Prepared for the MPCA by Delta Environmental Consultants. September 2002.
- 28) Limited Remedial Investigation Work Plan. Prepared for the MPCA by Delta Environmental Consultants. March 22, 2001
- 29) Fridley Commons Municipal Well Field Site, Fridley, Mn. Superfund Community Relations Plan. April 2001.
- 30) Technical Memo, Staff July 14, 2005
- 31) Fridley Commons Park Municipal Well Field : Proposed Plan. MPCA. July 11, 2005.
- 32) Transcript of Proceedings 7/21/05, State of Minnesota, Pollution Control Agency- Public Hearing, Fridley Park Commons Well Field Thursday July 21, 2005.