Groundwater and Fen Evaluation Summary Report

Lower Minnesota River Watershed District

Project Name
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prepared for

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Project No. 84167

December 16, 2015

prepared by

Burns & McDonnell Engineering Company, Inc.
Minneapolis-St. Paul, Minnesota

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1.0 INTRODUCTION

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has prepared this *Groundwater and Fen Evaluation Summary Report* on the behalf of Lower Minnesota River Watershed District (District). This report summarizes the data collected, reviewed and evaluated with a focus on three Dakota County calcareous fens located in the District.

1.1 Background

This report details the evaluation of data focusing on three calcareous fens located in the District. Calcareous fens are a rare wetland type that are characterized by discharge of relatively cold, calcium-rich groundwater that sustains unique plant communities adapted to that environment. The fens evaluated in this summary report are formed of peat aprons covering wide areas of river terraces attributable to diffuse discharge of calcareous groundwater.

The District is an approximate 80-square mile region located in the southwest portion of the Minneapolis-St. Paul metropolitan area. The boundary of the District is generally located within the floodplain of the Minnesota River and follows the bluff line. The boundary extends from the City of Carver and Louisville Township in the west to the confluence of the Mississippi River in the east (HDR, 2014).

1.2 Purpose and Scope

The purpose of the groundwater fen evaluation is to develop a comprehensive data set to evaluate long term trends, identify data gaps, and to develop a robust groundwater model that can be used as a tool for planning development in the District. The scope consisted of:

- Compilation and review of existing data from the District and Dakota County Soil and Water Conservation District.
- Collection of publically available studies and reports about the hydrogeology of the Lower Minnesota River watershed fens, the underlying geology and the climatology of the area.
- Review of the collected data and evaluation of data gaps with regard to the fen monitoring program and future development of a groundwater flow model.
- Preparation of this draft summary report presenting the data collected, an evaluation of data trends, a discussion of data gaps, and recommendations for improving the fen monitoring and filling data gaps to develop a groundwater flow model.

1.2.1 Fen Locations

The three fens (Quarry Island Fen, Fort Snelling Fen and Nicols Fen) are located in the lower Minnesota River floodplain in northwest Dakota County Minnesota. All three fens are located partially within Fort Snelling State Park. Quarry Island Fen is located in Section WSE 33, Township 28 North, Range 23 West. Fort Snelling Fen is located in Section W 04, Township 27 North, 23 West. Nicols Fen is located in Section NESW 18, NWSWSW 18, and SWSESW 18, Township 27 North, Range 23 West (HDR, 2014). The general locations of the fens are depicted on **Figure 1.**

1.2.2 Regional Geology

Burns & McDonnell obtained regional geologic information from the Minnesota Geological Survey (MGS) including bedrock and soils information. In addition, Burns and McDonnell reviewed published geologic maps available from the MGS web page and United States Geological Survey (USGS) 7.5-minute topographic map available from MGS.

The unconsolidated sedimentary units that are present in the lower Minnesota River valley area where the fens are located consist of organic deposits, terrace deposits and floodplain alluvium. Organic deposits consisting of peat and organic-rich silt and clay underlie the fens. Terrace deposits are located at the higher elevations bordering the floodplain consisting of sand and gravel. Floodplain alluvial deposits consisting of poorly bedded clayey silt are located at lower elevations near the Minnesota River (Hobbs, Aronow, and Patterson, 1990).

The uppermost bedrock geologic units in the lower Minnesota River valley where the fens are located predominantly consist of Upper Cambrian and Ordovician sedimentary rocks. The uppermost bedrock unit underlies the Quarry Island Fen and consists of the Ordovician period St. Peter Sandstone. The St. Peter Sandstone consists of a fine- to medium-grained friable quartz sandstone in its upper portions with layers of siltstone and coarse sandstone at its base. Underlying the St. Peter Sandstone is the Ordovician period Prairie du Chien Group. The Prairie du Chien Group geologic units are the uppermost bedrock units that underlie Fort Snelling and Nicols fens. The Prairie du Chien Group includes dolostone from the Shakopee and Oneota Formations. The dolostone in the Shakopee Formation is described as commonly thin-bedded and sandy or oolitic with thin beds of sandstone and chert. The dolostone of the Oneota Formation is described as thick-bedded and not oolitic or sandy (Mossler, 1990).

The depth to bedrock in the vicinity of the fens ranges from less than 50 feet below the ground surface (bgs) in the vicinity of Quarry Island Fen to approximately 100 to 150 feet bgs in the vicinity of Fort

Snelling and Nicols fens. A buried bedrock valley is present approximately 1.4 miles northeast of Nicols Fen and is located equidistant of both Nicols Fen and Fort Snelling Fen. At its deepest point between those two fens, the uppermost bedrock units are approximately 350 to 400 feet bgs. The buried valley bisects the northern portion of Dakota County from northwest to southeast and extends into eastern Dakota County (Bloomgren, Hobbs, Mossler and Patterson, 1990). Within the bedrock valley, the uppermost bedrock units extend into Upper Cambrian period sedimentary rocks consisting of the Jordan Sandstone, St. Lawrence and Franconia Formations. The Jordan Sandstone consists of medium and coarse grained friable quartz sandstone. The St. Lawrence Formation is a silty dolomite interbedded with siltstone and shale. The Franconia Formation consists of very fine-grained, glauconitic quartzose sandstone with minor amounts of sandy shale (Mossler, 1990).

According to published geologic information, the regional groundwater flow direction within the unconsolidated deposits in the vicinity of the fens is generally upward and toward the Minnesota River (Palen, 1990).

2.0 DATA SUMMARY

Burns & McDonnell collected and compiled publically available studies and reports regarding the hydrogeology of the Minnesota River watershed and fens, the underlying geology, the land use and climatology of the area. A summary of the findings are presented below.

2.1 Quarry Island Fen

2.1.1 Location and Physical Setting

The Quarry Island Fen is located north of Interstate 494 between Gun Club Lake and Highway 13 (Figure 2). Quarry Island Fen was formerly part of the larger Fort Snelling Fen complex prior to construction of Interstate 494 (Dakota County, 2013).

Quarry Island Fen is a calcareous seepage fen consisting of open wetlands dominated by plant species adapted to the cold and mineral rich groundwater that upwells in the area. The fen is depicted on the Natural Communities and Rare Species of Dakota County map with an approximate area of 27 acres. The area of the fen depicted on the map is irregular shaped, with a length of approximately 3,125 feet north to south. A wide zone in the south is depicted with a width of approximately 1,120 feet with a thinner, tapering portion extending north along the base of the valley escarpment (Minnesota Biological Survey, 1997).

2.1.2 Geology

As described in **Section 1.2.2**, the unconsolidated materials at Quarry Island Fen generally consist of a layer of peat overlying sandy alluvial deposits. Two monitoring wells are located in the fen: P1-S (with a depth of 4 feet bgs) and P-1D (with a depth of 8 feet bgs). A summary of monitoring well construction details is provided in **Table 1** and the location of the monitoring wells is depicted on **Figure 2**. Boring logs for the monitoring wells were not available, however P1-S is described as monitoring the peat layer while P1-D monitors directly below the peat (Dakota, 2013). A cross section depicting the relative depths of the monitoring wells and shallow geology is provided on **Figure 3**.

2.1.3 Hydrogeology

Burns & McDonnell reviewed the available monitoring well elevation data. The groundwater elevations are provided in **Table 2**, and hydrographs depicting the groundwater elevations over time are provided in **Appendix A**. The monitoring well elevation data collected between 2007 and 2013 with additional data collected in 2015 shows a general decrease in the groundwater elevations at P1-S and P1-D with indications of seasonal fluctuation. The overall decline during the monitoring period is approximately 1

foot at P1-S with some apparent recovery in the 2015 data. The decline at P1-D was also about 1 foot, however, the 2015 data shows a continuing decline. The lowest annual groundwater elevations were generally measured in those monitoring wells during September and October of each year (Dakota, 2013). The groundwater flow direction within the unconsolidated materials is generally to the west toward Gun Club Lake with a mostly upward hydraulic gradient between P1-D and P1-S.

Precipitation data was reviewed for the Minneapolis/St. Paul airport weather station between 2006 and 2013. During that time, four out of eight years had total precipitation above the 30-year average (2007, 2010, 2012 and 2013), and the remaining years had total precipitation below average (2006, 2008, 2009, and 2011). There does not appear to be an obvious association between the annual precipitation and the groundwater elevations, since the groundwater elevations showed a general decrease over the period. The period of 2012-2013 had above average precipitation, but that time period also had some of the lowest measured groundwater elevations.

2.1.4 Hydrology

Two surface water features in the vicinity of Quarry Island Fen are the northern portion of Gun Club Lake and a small stream east of the monitoring well cluster. The stream flows north and discharges into Gun Club Lake.

The Minnesota River is located approximately 3/4-mile west-northwest of Fort Snelling Fen. The surface water and groundwater flow direction is generally toward the Minnesota River. The US Geological Survey (USGS) maintains a gauging station (No. 05330920) on the Minnesota River which is located on the left bank at Fort Snelling State Park at mile 3.5 upstream of the Mississippi River. Data from the gauging station available from the USGS indicated the maximum peak stage elevation between 2004 and 2013 was 707.45 feet above mean sea level (msl). The highest annual mean flow was in 2011 at 18,620 cubic feet per second (cfs), and the highest daily mean flow was 68,700 cfs on March 24, 2010. The lowest annual mean flow was in 2009 at 3,530 cfs, and the lowest daily mean flow was 338 cfs on October 5, 2012.

2.1.5 Data Gaps

The Quarry Island Fen has limited data relative to the other fens because only two shallow monitoring wells have been installed in one location. Additional monitoring wells are needed to more fully characterize and monitor the Quarry Island Fen, specifically a deeper monitoring well at the existing well nest that would be completed approximately 20 to 30 feet bgs. It would also be useful to have another

well nest location to the north with monitoring wells completed in the peat and in the sand at the 20 to 30 foot depth.

The cause of the apparent decline in water levels at the Quarry Island Fen is unknown. Additional investigation should be undertaken to identify potential causes for this decline.

The water level data set consists of hand measurements collected on a monthly basis. A more continuous record of water levels would be useful to better evaluate the seasonal and year-to-year fluctuations at the fen. A transducer/datalogger could be installed in one of the deeper monitoring wells completed below the peat layer that would record daily water levels. This would provide a continuous record and allow the other monitoring wells to be measured on a less frequent basis, such as quarterly.

There is an unnamed stream that flows through the fen and likely receives discharge from the fen. Collection of water levels via the installation of a staff gauge would be useful to monitor the fen and to evaluate discharge over time.

2.2 Fort Snelling Fen

2.2.1 Location and Physical Setting

Fort Snelling Fen is located south of Interstate 494 between Highway 13 and Gun Club Lake (Figure 4). The fen is depicted on the Natural Communities and Rare Species of Dakota County map as non-contiguous with an approximate area of 71 acres. The area of the fen depicted on the map is irregular shaped, with a length of approximately 2,800 feet northeast to southwest and 2,200 feet west to east. A smaller fen area depicted with an area of approximately 3.5 acres is located approximately 200 feet south of the primary fen area (Minnesota Biological Survey, 1997).

2.2.2 Geology

The geology at the Fort Snelling Fen consists of a peat layer overlying sandy alluvial deposits. Thirteen (13) monitoring wells are located in the fen. A summary of the monitoring well construction details is provided in **Table 1** and the location of the monitoring wells is depicted on **Figure 4**. Burns & McDonnell obtained boring logs for nine of the monitoring wells from the Minnesota Department of Health County Well Index.

A cross section depicting the site geology and the relative depths of selected monitoring wells is provided on **Figure 5**. Peat deposits range from depths of approximately 20 to 25 feet bgs. The peat is underlain by sand and gravel with some lenses of clay and silt to a depth of approximately 48 feet bgs. Those deposits

are underlain by sand to at least 85 feet bgs. The bedrock surface is present at approximately 100 to 150 feet bgs at Fort Snelling Fen based on geologic mapping (Bloomgren, Hobbs, Mossler and Patterson, 1990), however, none of the monitoring wells encountered bedrock (Almendinger and Leete, 1998).

2.2.3 Hydrogeology

Burns & McDonnell reviewed the monitoring well elevation data for Fort Snelling Fen. The groundwater elevations are provided in **Table 2**, and hydrographs depicting the groundwater elevations over time are provided in **Appendix A**. The available monitoring well elevation data collected between 2007 and 2013 with additional data collected in 2015 shows that the groundwater elevations were relatively stable over the monitoring period. However, two monitoring wells, S1 and S1-USGS, have shown a decrease in elevation over the monitoring period. S1 has declined less than 0.5 feet over the monitoring period. S1-USGS declined approximately 1 foot from 2007 to 2012 and has been relatively stable from 2012 to 2015. Both wells are located near each other and completed in the peat layer, S1in the upper peat and S1-USGS in the lower peat.

In general, the lowest annual groundwater elevations were measured in the monitoring wells in late-summer to early autumn (Dakota, 2013). The monitoring wells W1 through W4 were completed in a nest to assess vertical gradients and range in depths from 12 feet bgs to 77 feet bgs. The data from 2007 through 2015 shows a consistent upward vertical gradient. Groundwater head elevations for a selected date (11/7/2013) are depicted on the cross section **Figure 5**. Groundwater contours for that date illustrate the upward trend of the vertical gradient. The horizontal groundwater flow direction within the unconsolidated materials is generally to the northwest toward Gun Club Lake.

The hydraulic conductivity (K) of the peat and underlying sand deposits were determined using slug tests by Almendinger et al (1998). Caution was recommended by the authors in the use of these K values due to assumptions and variables used during the slug tests. Layering within the peat typically causes the horizontal hydraulic conductivity (K_H) to be much higher than the vertical hydraulic conductivity (K_V). At the Fort Snelling Fen, the values for K_H in the peat layers ranged from 2.1E-05 meters per second (m/s) to 6.0E-06 m/s. The values for K_V in the peat layers ranged from 1.7E-06 m/s to 7.9E-06 m/s. The values of K in the sandy substratum at Fort Snelling Fen ranged from 3.1E-5 m/s to 4.8E-05 m/s.

Maintenance of the unique fen plant communities depends on the influx of groundwater with high concentrations of calcium and low dissolved oxygen near the ground surface of the fen. The unique plant communities are adapted to calcium rich environments and are likely supported by the presence and depth of precipitated calcium carbonate near the fen surface. De-gassing of CO_2 in the near surface peat allows

for precipitation of calcium carbonate. Periodic drops in the water table can result in the formation of a calcium carbonate depleted zone. A low water table that drops below the surface of the peat can cause dissolution of carbonates due to decay of the peat in the unsaturated zone and an increase in CO_2 levels. Past analysis of the groundwater elevations of Fort Snelling fen showed subpeat groundwater heads above the peat surface and water table heads at or slightly below the peat surface. Analysis of the subsurface peat composition showed a carbonate depleted zone below the surface of the peat (Almendinger and Leete, 1998).

Precipitation data was reviewed for the Minneapolis/St. Paul airport weather station between 2006 and 2013. During that time, four out of eight years had total precipitation above the 30-year average (2007, 2010, 2012 and 2013), and the remaining years had total precipitation below average (2006, 2008, 2009, and 2011). There does not appear to be an obvious association between the annual precipitation and the groundwater elevations, since the groundwater elevations showed a general decrease over the period. The period of 2012-2013 had above average precipitation, but that time period also had some of the lowest measured groundwater elevations.

2.2.4 Hydrology

Two significant surface water features in the vicinity of Fort Snelling Fen are Gun Club Lake and a small, unnamed stream that flows through the wetland complex (Almendinger and Leete, 1998). The stream discharges into Gun Club Lake to the north of the fen.

The Minnesota River is located approximately 3/4-mile west-northwest of Fort Snelling Fen. The surface water and groundwater flow direction is generally toward the Minnesota River. The USGS maintains a gauging station (No. 05330920) on the Minnesota River which is located on the left bank at Fort Snelling State Park at mile 3.5 upstream of the Mississippi River. Data from the gauging station available from the USGS indicated the maximum peak stage elevation between 2004 and 2013 was 707.45 msl. The highest annual mean flow was in 2011 at 18,620 cfs, and the highest daily mean flow was 68,700 cfs on March 24, 2010. The lowest annual mean flow was in 2009 at 3,530 cfs, and the lowest daily mean flow was 338 cfs on October 5, 2012.

2.2.5 Data Gaps

The Fort Snelling Fen has an adequate monitoring well network to characterize and monitor the fen. An additional deep monitoring well completed in the sand unit near the existing S3 monitoring wells would be useful to more fully characterize the fen, but it is not essential.

The water level data set consists of hand measurements collected on a monthly basis. A more continuous record of water levels would be useful to better evaluate the seasonal and year-to-year fluctuations at the fen. A transducer/datalogger could be installed in one of the deeper monitoring wells completed below the peat layer that could record daily water levels. This would provide a continuous record and allow the other monitoring wells to be measured on a less frequent basis, such as quarterly.

There is an unnamed stream that flows through the fen and likely receives discharge from the fen. Collection of water levels via the installation of a staff gauge would be useful to monitor the fen and to evaluate discharge over time.

2.3 Nicols Fen

2.3.1 Location and Physical Setting

Nicols Fen is located northeast of TH 77 (Cedar Avenue) and northwest of TH 13. The fen is adjacent to and north of a Chicago and Northwestern railroad line. Nicols Road is located southwest of the fen (Dakota County, 2013). Kennealy Creek borders the fen to the north. The vicinity around Nicols Fen has been disturbed by historical activities including the nearby construction of a railroad flag station, construction of trout ponds on a nearby creek, agricultural activities and dewatering related to construction of the Senica Wastewater Treatment Plant (WSB, 2008).

Nicols Fen is a calcareous seepage fen consisting of open wetlands dominated by plant species adapted to the cold and mineral rich groundwater that upwells in the area. The main fen is depicted on the Natural Communities and Rare Species of Dakota County map with approximate area of 7 acres with additional fen areas mapped to the southwest of Nicols Road that total approximately 14 acres (Minnesota Biological Survey, 1997).

2.3.2 Geology

As described in **Section 1.2.2**, the site geology at Nicols Fen generally consists of a substrate of peat overlying sandy alluvial deposits. Thirteen (13) monitoring wells are located in the fen. A summary of monitoring well construction details is provided in **Table 1** and the location of the monitoring wells is depicted on **Figure 6**. Burns & McDonnell obtained boring logs from nine of those monitoring wells from the Minnesota Department of Health County Well Index. A cross section depicting the relative depths of selected monitoring wells and the site geology is depicted on **Figure 7**.

The monitoring wells appear to be located perpendicular to the horizontal groundwater flow direction, which is to the northwest toward the Minnesota River. Peat deposits described in the monitoring well logs ranged from approximately five to six feet thick. The peat is underlain by organic clays to a depth of approximately 14 feet bgs. Those deposits are underlain by alluvial sands. The bedrock surface has been mapped at approximately 100 to 150 feet bgs at Nicols Fen (Bloomgren, Hobbs, Mossler and Patterson, 1990). No monitoring wells are completed into the bedrock.

2.3.3 Hydrogeology

Burns & McDonnell reviewed the available monitoring well elevation data for Nicols Fen. The groundwater elevations are provided in **Table 2**, and hydrographs depicting the groundwater elevations over time are provided in **Appendix A**. The available monitoring well elevation data collected between 2007 and 2013 with additional data collected in 2015 shows that the groundwater elevations appear to be closely related to precipitation trends (Dakota, 2013). In general, the lowest annual groundwater elevations were measured in the monitoring wells in late-summer with higher groundwater elevations in early spring and summer (Dakota, 2013). The groundwater flow direction within the unconsolidated material s is generally to the northwest toward the Minnesota River.

Two pairs of nested monitoring wells are screened to assess the vertical gradients within the fen. Monitoring wells F1 and F2 are located in the northeast portion of the fen, and monitoring wells F-3 and F-4 are located in the southwest portion of the fen. Monitoring wells F1 and F3 are completed at approximately 75 feet bgs in the alluvial sands. Monitoring wells F2 and F4 are completed just below the organic clay unite at approximately 15 feet bgs and 21 feet bgs, respectively. The data from 2007 through 2013 with additional data collected in 2015 shows a consistent upward vertical gradient at both of those locations with the deep monitoring wells F1 and F3 often flowing at the surface. Monitoring wells WT-1 through WT-5 are completed in the peat and organic clay units at approximately 8 to 9 feet bgs. Water levels in these monitoring wells also indicate a consistent upward hydraulic gradient from the sand unit to the peat and organic clay.

Water level trends in most of the Nicols Fen monitoring wells generally indicate stable water levels with seasonal fluctuations with a few monitoring wells show slight decreasing and increasing trends. Monitoring well WT-1, completed in the peat/organic clay, shows a slight downward trend over the monitoring period with a decline of almost 1 foot. However, monitoring wells WT-2 and WT-3, also completed in the peat/organic clay, show upward trends (Dakota, 2013) with WT-2 increasing over 1 foot and WT-3 increasing about one foot with the 2015 data trending even higher. It is unclear what the cause of this disparity in trends is, but it may have to do with their locations. WT-1 is located on the edge of the

fen, near the railroad line, while WT-2 and WT-3 are located near the center of the fen. Slight increasing trends were also observed in some of the monitoring wells completed in the alluvial sands. Monitoring wells F4, W1-USGS and WN5-USGS all have exhibited an overall increasing trend of 0.5 to more than 1 foot of increase over the monitoring period. All of these wells are located near the southwest end of the Nicols Fen.

Historical disturbances may have had a negative impact on the hydrogeological setting of Nicols Fen. Historical pumping at the Seneca Wastewater Treatment Plant in the vicinity of Nicols Fen may have lowered the water table in the peat (WSB, 2008). Measurements taken in the late-1990s showed the groundwater elevation of the water table were generally below the surface of the peat. As discussed in **Section 2.2.3**, a low water table at an unknown critical depth below the surface of the peat can cause dissolution of carbonates and degradation of the chemical characteristics that support the fen plant community (Almendinger and Leete, 1998).

Precipitation data was reviewed from the Minneapolis/St. Paul airport weather station between 2006 and 2013. During that time, four out of eight years had total precipitation above the 30-year average (2007, 2010, 2012 and 2013), and the remaining years had total precipitation below average (2006, 2008, 2009, and 2011). There does not appear to be an obvious association between the annual precipitation and the groundwater elevations, since the groundwater elevations showed a general decrease over the period. The period of 2012-2013 had above average precipitation, but that time period also had some of the lowest measured groundwater elevations.

2.3.4 Hydrology

Two significant surface water features in the vicinity of Nicols Fen are Kennealy Creek and Harnack Creek. The groundwater that discharges and maintains Nicols Fen likely also discharges to Kennealy and Harnack creeks. The headwaters of the creeks are in the higher elevations south of Nicols Fen. Kennealy Creek is located along the northeast edge of the fen, while Harnack creek is located southwest of the fen (WSB, 2007 and WSB, 2008). Multiple seeps are located along both creeks that discharge groundwater into the creeks. Both Kennealy and Harnack creeks discharge into Black Dog Creek east of Nicols Road. Black Dog Creek flows generally northeast into the Minnesota River (WSB, 2008).

Both creeks have been affected by historical construction in the area. At Kennealy Creek, historical groundwater data might have indicated that groundwater which would have discharged into Kennealy Creek was diverted due to pumping activities at the Seneca Wastewater Treatment Facility (WSB, 2008). Harnack Creek has been disturbed by construction of a storm water retention pond that was completed

along with TH 77/Cedar Avenue. Historically, Harnack Creek flowed into Black Dog Lake, which is located approximately ½-mile southwest of Nicols Fen. With the construction of a storm water retention pond, the creek was apparently altered to flow north into Black Dog Creek which then discharges to the Minnesota River (WSB, 2008).

The Minnesota River is located approximately ½-mile northwest of Nicols Fen. The surface water and groundwater flow direction is generally toward the Minnesota River. The USGS maintains a gauging station (No. 05330920) on the Minnesota River which is located on the left bank at Fort Snelling State Park at mile 3.5 upstream of the Mississippi River. Data from the gauging station is available from the USGS indicated the maximum peak stage elevation between 2004 and 2013 was 707.45 feet msl. The highest annual mean flow was in 2011 at 18,620 cfs, and the highest daily mean flow was 68,700 cfs on March 24, 2010. The lowest annual mean flow was in 2009 at 3,530 cfs, and the lowest daily mean flow was 338 cfs on October 5, 2012.

2.3.5 Data Gaps

The Nicols Fen has an adequate monitoring well network to characterize and monitor the fen.

The water level data set consists of hand measurements collected on a monthly basis. A more continuous record of water levels would be useful to better evaluate the seasonal and year-to-year fluctuations at the fen. A transducer/datalogger could be installed in one of the deeper monitoring wells completed below the peat layer that could record daily water levels. This would provide a continuous record and allow the other monitoring wells to be measured on a less frequent basis, such as quarterly.

There is an unnamed stream that flows through the fen and likely receives discharge from the fen. Collection of water levels via the installation of a staff gauge would be useful to monitor the fen and to evaluate discharge over time.

3.0 CONCLUSIONS AND RECOMENDATIONS

3.1 Conclusions

The three Dakota County fens evaluated are unique physiographic and ecological areas along the Minnesota River. The Quarry Island, Fort Snelling and Nicols Fens are calcareous seepage fens consisting of open wetlands dominated by plant species adapted to the cold and mineral rich groundwater that upwells in the area. All three consist of a peat/organic clay layer underlain by alluvial sands and gravels. An upward vertical hydraulic gradient is present at all three fens with a component of horizontal flow toward surface water lakes and streams. All three also have small streams in or bordering the fens.

There are data gaps related to all three fens and some that are specific to the individual fens.

- All three fens would benefit from more continuous monitoring of at least one of the monitoring wells. The current water level data set consists of hand measurements collected on a monthly basis. A more continuous record of water levels would be useful to better evaluate the seasonal and year-to-year fluctuations. A transducer/datalogger could be installed in one of the deeper monitoring wells completed below the peat layer at each fen. The datalogger could record daily water levels. This would provide a continuous record and allow the other monitoring wells to be measured on a less frequent basis, such as quarterly.
- All three fens have small streams associated with them. Collection of water levels via the installation of a staff gauge would be useful to monitor the fen and to evaluate discharge over time.
- The Quarry Island Fen only has two shallow monitoring wells and needs additional characterization. Both of the monitoring wells have exhibited declining water levels of approximately 1 foot over the monitoring period. The cause of this decline is unknown.
- The Fort Snelling Fen has a monitoring network consisting of 13 wells with adequate characterization. The water levels have been relatively stable during the monitoring period with only two monitoring wells completed in the peat layer exhibiting a slight declining trend (S1 and S1-USGS).
- The Nicols Fen has a monitoring network consisting of 13 wells with adequate characterization. The water levels have been relatively stable or slightly increasing during the monitoring period with several monitoring wells exhibiting slight upward trends (WT-2, WT-3, F4, W1-USGS and W5-USGS) and one monitoring well exhibiting a slight downward trend (WT-1).

3.2 Recommendations

- Install a pressure transducer/data logger in one of the monitoring wells completed in the sand horizon beneath the peat/organic clay at each of the fens.

- After the pressure transducers/data loggers have been installed and successfully tested for two months, reduce hand water level measurements to a quarterly schedule.

- Establish monitoring points in the small streams at each of the fens to monitoring water levels.

- Install three additional monitoring wells at the Quarry Island Fen to better characterize the geology and hydrogeology, and to provide a more robust monitoring well network for long-term monitoring. Specifically, a deeper monitoring well at the existing well nest completed approximately 20 to 30 feet bgs is needed and a second monitoring well nest to the north with monitoring wells completed in the peat and in the sand at the 20 to 30 foot depth. This should be followed by an investigation to identify potential causes of the decline in water levels at the Quarry Island Fen.

- Following completion of the above recommendations, prepare a scope of work and cost to develop a regional groundwater flow model for the Lower Minnesota Watershed based on the existing Metro Model 3.0.

FIGURES

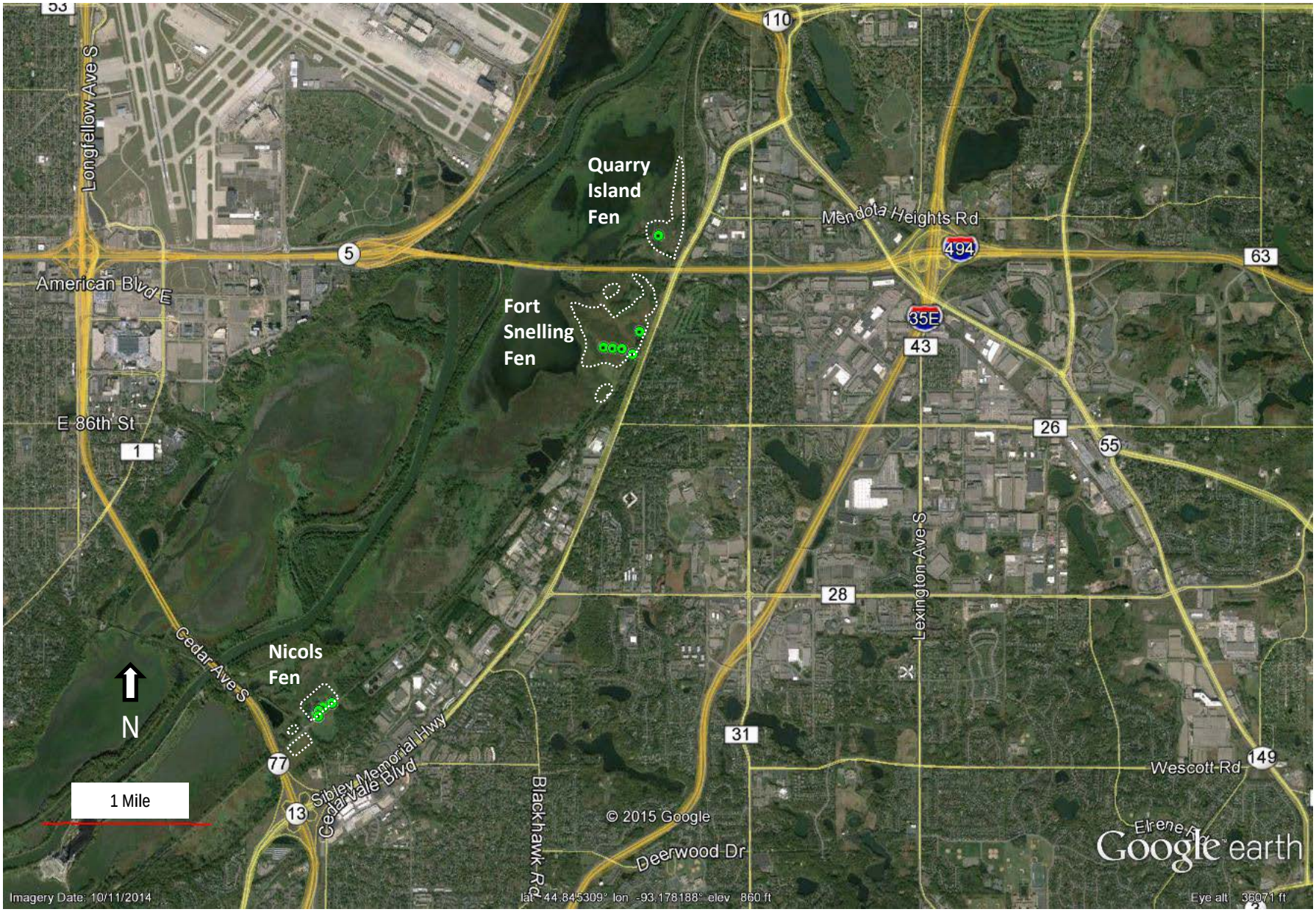


Figure 1 - Fen Locations
Dakota County, Minnesota
Burns & McDonnell Project No. 84167

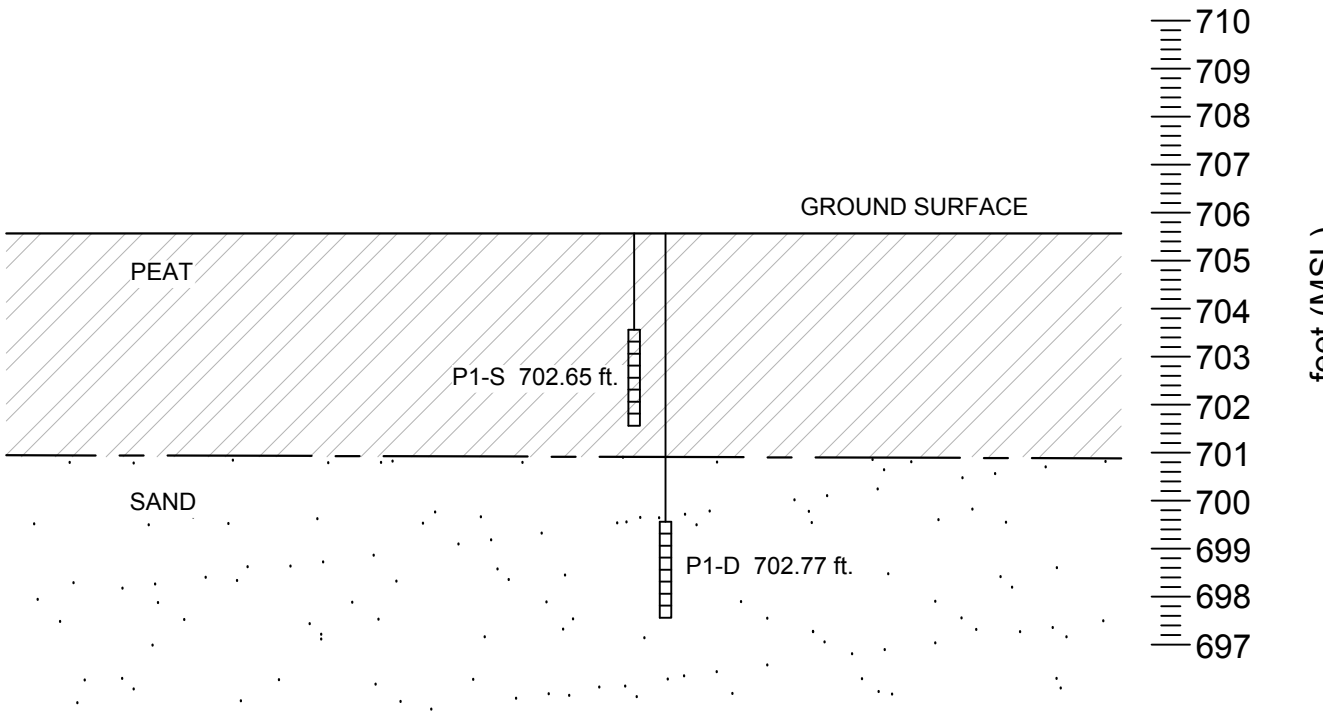
BURNS McDONNELL

Figure 2 - Quarry Island Fen
Dakota County, Minnesota
Burns & McDonnell Project No. 84167

BURNS McDONNELL

A
NW

A'
SE



NOTE:

GROUNDWATER ELEVATION DATA COLLECTED ON NOVEMBER 7, 2013.

SCREENED INTERVALS FOR THESE WELLS ARE UNKNOWN.

HORIZONTAL SCALE: 1"=100'

0 100' 200'

SCALE IN FEET

BURNS McDONNELL

Figure 3
Groundwater and Fen
Evaluation Summary Report
Quarry Island Fen, Cross Section
Dakota County, Minnesota

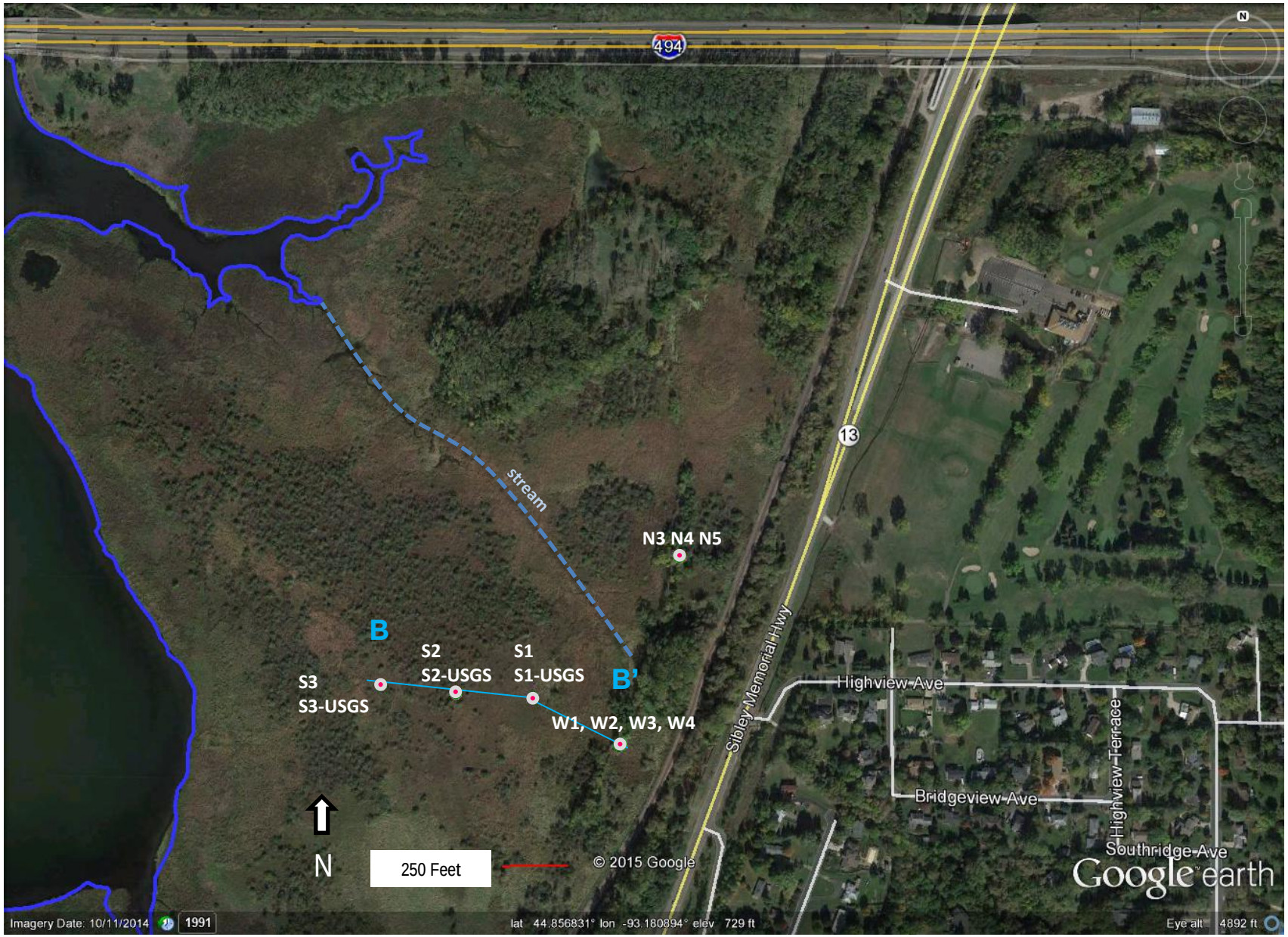
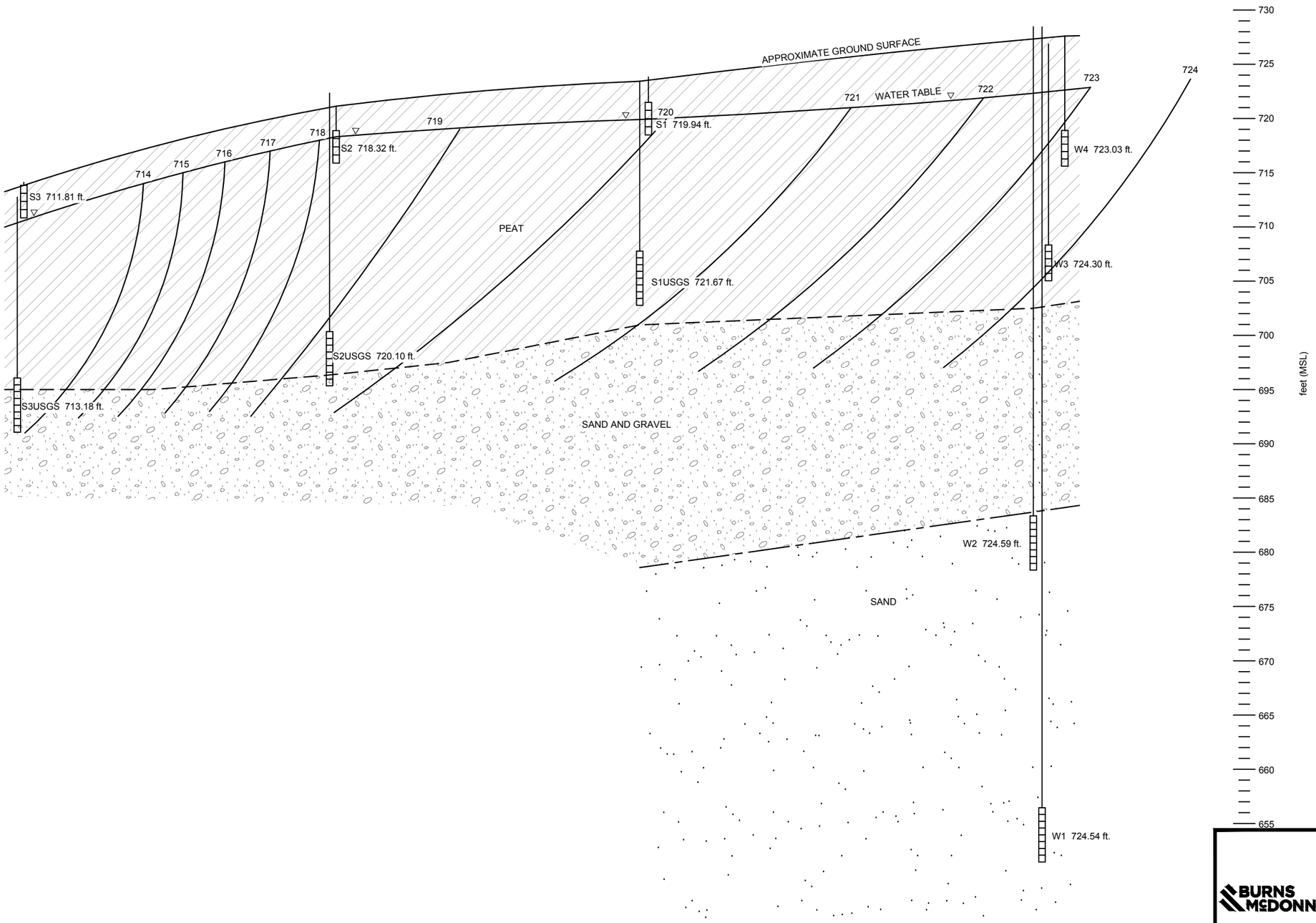


Figure 4 – Fort Snelling Fen
Dakota County, Minnesota
Burns & McDonnell Project No. 84167

BURNS McDONNELL

B
WEST

B'
EAST



NOTE:

GROUNDWATER ELEVATION DATA COLLECTED ON NOVEMBER 7, 2013.

KEY:

WELL NAME GROUNDWATER ELEVATION ft. (MSL)

HORIZONTAL SCALE: 1"=100'

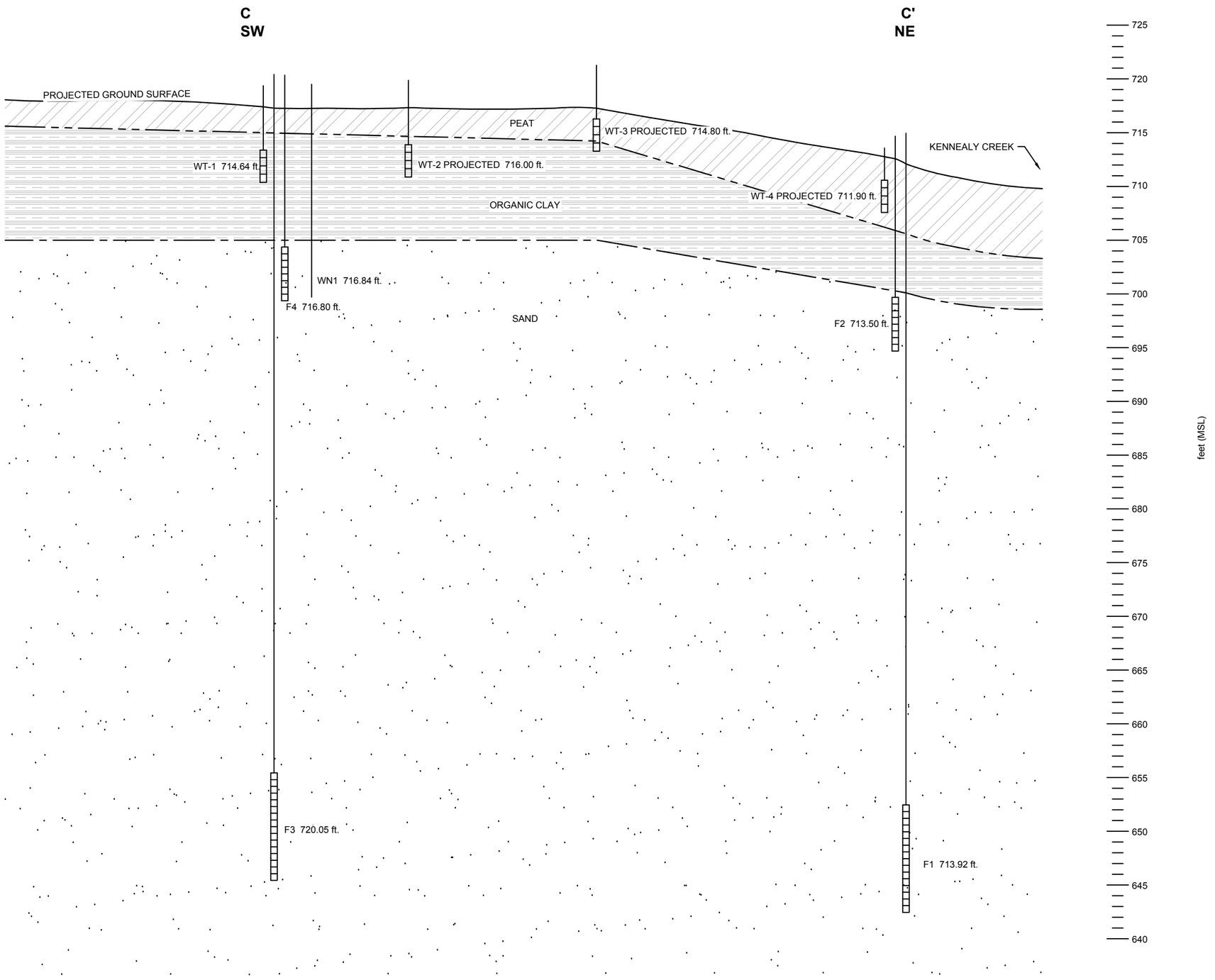
0 50' 100'
SCALE IN FEET

BURNS McDONNELL

Figure 5
Groundwater and Fen
Evaluation Summary Report
Fort Snelling Fen, Cross Section
Dakota County, Minnesota

Figure 6 – Nichols Fen
Dakota County, Minnesota
Burns & McDonnell Project No. 84167

BURNS McDONNELL



NOTE:

GROUNDWATER ELEVATION DATA COLLECTED ON NOVEMBER 7, 2013.

KEY:

WELL NAME GROUNDWATER ELEVATION ft. (MSL)

HORIZONTAL SCALE: 1"=100'

0 50' 100'

SCALE IN FEET

BURNS McDONNELL

Figure 7
Groundwater and Fen Evaluation Summary Report
Nichols Fen, Cross Section
Dakota County, Minnesota

TABLES

Table 1
Well Construction Summary
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167
84167

Fen Name	Well	Date Installed	Well Installer	MDH Unique#	Well Diameter (Inches)	Approximate depth (feet)	Northing (UTM)	Easting (UTM)	Top of Casing Elevation (feet)	Well Log Acquired	Screen Length (Feet)	Notes:
Quarry Is. Fen	P1-S	Unknown	Unknown	P1-S	Unknown	4	243025.4	535925.6	707.29	No	Unknown	Recorded with the MN DNR with the well name as the unique number.
Quarry Is. Fen	P1-D	Unknown	Unknown	P1-D	Unknown	8	243024.2	535925.0	706.98	No	Unknown	Recorded with the MN DNR with the well name as the unique number.
Ft. Snelling Fen	S1	5/12/1992	MN DNR	591981	2	5.35	239502.7	534796.6	723.83	Yes	3.0	
Ft. Snelling Fen	S2	5/12/1992	MN DNR	591982	2	5.25	239518.1	534507.0	721.13	Yes	3.0	
Ft. Snelling Fen	S3	5/12/1992	MN DNR	591983	2	3	239548.3	534222.9	715.06	Yes	3.0	
Ft. Snelling Fen	W1	6/2/1992	Steffl Well Company	482157	2	77	239330.3	535121.9	728.45	Yes	5.0	
Ft. Snelling Fen	W2	6/3/1992	Steffl Well Company	482154	2	50.12	239325.1	535119.2	728.47	Yes	5.0	
Ft. Snelling Fen	W3	6/13/1992	MN DNR	591979	2	21.83	239330.7	535130.5	726.87	Yes	3.3	
Ft. Snelling Fen	W4	6/13/1992	MN DNR	591980	2	12	239333.3	535130.2	727.6	Yes	3.3	
Ft. Snelling Fen	S1-USGS	Unknown	Unknown	S1-USGS	Unknown	20.67	239503.2	534796.5	723.44	No	5.0	Recorded with the MN DNR with the well name as the unique number.
Ft. Snelling Fen	S2-USGS	Unknown	Unknown	S2-USGS	Unknown	27	239519.2	534506.9	722.35	No	5.0	Recorded with the MN DNR with the well name as the unique number.
Ft. Snelling Fen	S3-USGS	Unknown	Unknown	S3-USGS	Unknown	21.68	239547.5	534222.3	713.97	No	5.0	Recorded with the MN DNR with the well name as the unique number.
Ft. Snelling Fen	N3	6/5/1992	Steffl Well Company	484653	2	45.21	240030.6	535345.7	723.87	Yes	5.0	
Ft. Snelling Fen	N4	6/5/1992	Steffl Well Company	482156	8 to 25 ft. 2 to 70 ft.	75.34	240030.5	535349.3	724.27	Yes	5.0	
Ft. Snelling Fen	N5	6/3/1992	Steffl Well Company	482155	3	21.69	240035.5	535347.4	724.06	Yes	5.0	
Nicols Fen	1LN	2/2/1993	Twin City Testing	526701	2	29	226915.8	525306.8	751.59	Yes	2.0	
Nicols Fen	1LS	2/2/1993	Twin City Testing	522299	2	8	226913.4	525308.8	751.43	Yes	5.0	
Nicols Fen	F1	5/22/1989	Twin City Testing	452922	2	74.5	228466.4	525785.0	714.96	Yes	10.0	
Nicols Fen	F2	5/23/1989	Twin City Testing	452923	2	15	228454.9	525794.3	714.68	Yes	5.0	
Nicols Fen	F3	5/25/1989	Twin City Testing	452924	2	75	228058.8	525367.6	720.43	Yes	10.0	
Nicols Fen	F4	5/26/1989	Twin City Testing	452925	2	21	228055.9	525364.7	720.36	Yes	5.0	
Nicols Fen	WN1-USGS	Unknown	Unknown	WN1-USGS	Unknown	19.82	228054.3	525357.3	719.51	No	NA	Recorded with the MN DNR with the well name as the unique number.
Nicols Fen	WN5-USGS	Unknown	Unknown	WN5-USGS	Unknown	16.08	228125.3	525293.5	717.92	No	NA	Recorded with the MN DNR with the well name as the unique number.
Nicols Fen	WT-1	8/21/1989	MN DNR	540952	2	9	228054.7	525356.0	719.37	Yes	3.0	WT-x wells are on the same log
Nicols Fen	WT-2	8/21/1989	MN DNR	540952b	2	9	228222.7	525372.2	719.88	Yes	3.0	WT-x wells are on the same log
Nicols Fen	WT-3	8/21/1989	MN DNR	540952c	2	8	228330.4	525514.2	721.27	Yes	3.0	WT-x wells are on the same log
Nicols Fen	WT-4	8/22/1989	MN DNR	540952d	2	6	228457.4	525783.2	713.58	Yes	3.0	WT-x wells are on the same log
Nicols Fen	WT-5	8/22/1989	MN DNR	540952e	2	7	228126.0	525293.0	720.69	Yes	3.0	WT-x wells are on the same log

KEY to Hydrographs:
Orange line with circle markers = completed in peat or 0-15 feet below ground surface
Green line with triangel markers = completed 15-30 feet below ground surface
Blue line with square markers = completed 30-60 feet below ground surface
Purple line with star markers = completed 60-80 feet below ground surface

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Quarry Island Fens	P1-S	707.29	3/28/2007	-3.26	704.03
Quarry Island Fens	P1-S	707.29	4/26/2007	-3.02	704.27
Quarry Island Fens	P1-S	707.29	5/30/2007	-3.29	704.00
Quarry Island Fens	P1-S	707.29	6/20/2007	-3.87	703.42
Quarry Island Fens	P1-S	707.29	7/13/2007	-4.65	702.64
Quarry Island Fens	P1-S	707.29	8/17/2007	-4.58	702.71
Quarry Island Fens	P1-S	707.29	9/21/2007	-3.94	703.35
Quarry Island Fens	P1-S	707.29	10/11/2007	-3.73	703.56
Quarry Island Fens	P1-S	707.29	11/13/2007	-3.62	703.67
Quarry Island Fens	P1-S	707.29	12/7/2007		
Quarry Island Fens	P1-S	707.29	3/5/2008		
Quarry Island Fens	P1-S	707.29	4/15/2008	-3.64	703.65
Quarry Island Fens	P1-S	707.29	5/12/2008	-3.74	703.55
Quarry Island Fens	P1-S	707.29	6/23/2008	-3.74	703.55
Quarry Island Fens	P1-S	707.29	7/22/2008	-3.75	703.54
Quarry Island Fens	P1-S	707.29	8/19/2008	-3.80	703.49
Quarry Island Fens	P1-S	707.29	9/9/2008	-3.85	703.44
Quarry Island Fens	P1-S	707.29	10/15/2008	-3.91	703.38
Quarry Island Fens	P1-S	707.29	11/26/2008	-3.88	703.41
Quarry Island Fens	P1-S	707.29	12/18/2008		
Quarry Island Fens	P1-S	707.29	3/26/2009		
Quarry Island Fens	P1-S	707.29	4/29/2009	-3.40	703.89
Quarry Island Fens	P1-S	707.29	5/29/2009	-3.51	703.78
Quarry Island Fens	P1-S	707.29	6/17/2009	-4.02	703.27
Quarry Island Fens	P1-S	707.29	7/17/2009	-4.10	703.19
Quarry Island Fens	P1-S	707.29	8/24/2009	-4.08	703.21
Quarry Island Fens	P1-S	707.29	9/25/2009	-4.22	703.07
Quarry Island Fens	P1-S	707.29	10/15/2009	-4.14	703.15
Quarry Island Fens	P1-S	707.29	11/6/2009	-4.03	703.26
Quarry Island Fens	P1-S	707.29	12/8/2009		
Quarry Island Fens	P1-S	707.29	3/2/2010		
Quarry Island Fens	P1-S	707.29	4/27/2010	-3.86	703.43
Quarry Island Fens	P1-S	707.29	5/11/2010	-3.92	703.37
Quarry Island Fens	P1-S	707.29	6/9/2010	-3.99	703.30
Quarry Island Fens	P1-S	707.29	7/26/2010	-4.11	703.18
Quarry Island Fens	P1-S	707.29	8/12/2010	-4.16	703.13
Quarry Island Fens	P1-S	707.29	9/14/2010	-4.20	703.09
Quarry Island Fens	P1-S	707.29	10/18/2010	-4.02	703.27
Quarry Island Fens	P1-S	707.29	11/10/2010	-4.00	703.29
Quarry Island Fens	P1-S	707.29	12/8/2010	-3.94	703.35
Quarry Island Fens	P1-S	707.29	3/4/2011		
Quarry Island Fens	P1-S	707.29	4/29/2011	-3.35	703.94

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen / flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Quarry Island Fens	P1-S	707.29	5/27/2011	-3.64	703.65
Quarry Island Fens	P1-S	707.29	6/28/2011	-3.86	703.43
Quarry Island Fens	P1-S	707.29	7/14/2011	-3.99	703.30
Quarry Island Fens	P1-S	707.29	8/9/2011	-4.05	703.24
Quarry Island Fens	P1-S	707.29	9/9/2011	-4.28	703.01
Quarry Island Fens	P1-S	707.29	10/13/2011	-4.55	702.74
Quarry Island Fens	P1-S	707.29	11/23/2011	-4.40	702.89
Quarry Island Fens	P1-S	707.29	12/14/2011	-4.32	702.97
Quarry Island Fens	P1-S	707.29	3/30/2012	-4.29	703.00
Quarry Island Fens	P1-S	707.29	4/26/2012	-4.20	703.09
Quarry Island Fens	P1-S	707.29	5/17/2012	-4.21	703.08
Quarry Island Fens	P1-S	707.29	6/8/2012	-4.28	703.01
Quarry Island Fens	P1-S	707.29	7/27/2012	-4.61	702.68
Quarry Island Fens	P1-S	707.29	8/31/2012	-4.79	702.50
Quarry Island Fens	P1-S	707.29	9/21/2012	-5.22	702.07
Quarry Island Fens	P1-S	707.29	10/8/2012	-5.54	701.75
Quarry Island Fens	P1-S	707.29	11/15/2012	-5.02	702.27
Quarry Island Fens	P1-S	707.29	12/4/2012	-4.84	702.45
Quarry Island Fens	P1-S	707.29	3/22/2013		
Quarry Island Fens	P1-S	707.29	4/8/2013		
Quarry Island Fens	P1-S	707.29	5/6/2013		
Quarry Island Fens	P1-S	707.29	6/3/2013	-4.49	702.80
Quarry Island Fens	P1-S	707.29	7/2/2013	-4.58	702.71
Quarry Island Fens	P1-S	707.29	8/1/2013	-5.05	702.24
Quarry Island Fens	P1-S	707.29	9/3/2013	-5.29	702.00
Quarry Island Fens	P1-S	707.29	10/9/2013	-4.76	702.53
Quarry Island Fens	P1-S	707.29	11/7/2013	-4.64	702.65
Quarry Island Fens	P1-S	707.29	12/2/2013	-4.79	702.50
Quarry Island Fens	P1-S	707.29	3/13/2015		
Quarry Island Fens	P1-S	707.29	4/3/2015	-4.45	702.84
Quarry Island Fens	P1-S	707.29	5/8/2015	-4.15	703.14
Quarry Island Fens	P1-S	707.29	6/2/2015	-4.48	702.81
Quarry Island Fens	P1-S	707.29	7/9/2015	-4.18	703.11
Quarry Island Fens	P1-S	707.29	8/10/2015	-4.36	702.93
Quarry Island Fens	P1-S	707.29	9/9/2015	-4.54	702.75
Quarry Island Fens	P1-D	706.98	3/28/2007	-2.72	704.26
Quarry Island Fens	P1-D	706.98	4/26/2007	-2.72	704.26
Quarry Island Fens	P1-D	706.98	5/30/2007	-2.89	704.09
Quarry Island Fens	P1-D	706.98	6/20/2007	-3.02	703.96
Quarry Island Fens	P1-D	706.98	7/13/2007	-3.37	703.61

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Quarry Island Fens	P1-D	706.98	8/17/2007	-3.56	703.42
Quarry Island Fens	P1-D	706.98	9/21/2007	-3.40	703.58
Quarry Island Fens	P1-D	706.98	10/11/2007	-3.31	703.67
Quarry Island Fens	P1-D	706.98	11/13/2007	-3.17	703.81
Quarry Island Fens	P1-D	706.98	12/7/2007		
Quarry Island Fens	P1-D	706.98	3/5/2008		
Quarry Island Fens	P1-D	706.98	4/15/2008		
Quarry Island Fens	P1-D	706.98	5/12/2008	-3.44	703.54
Quarry Island Fens	P1-D	706.98	6/23/2008	-3.36	703.62
Quarry Island Fens	P1-D	706.98	7/22/2008	-3.36	703.62
Quarry Island Fens	P1-D	706.98	8/19/2008	-3.37	703.61
Quarry Island Fens	P1-D	706.98	9/9/2008	-3.38	703.60
Quarry Island Fens	P1-D	706.98	10/15/2008	-3.37	703.61
Quarry Island Fens	P1-D	706.98	11/26/2008		
Quarry Island Fens	P1-D	706.98	12/18/2008		
Quarry Island Fens	P1-D	706.98	3/26/2009		
Quarry Island Fens	P1-D	706.98	4/29/2009	-3.70	703.28
Quarry Island Fens	P1-D	706.98	5/29/2009	-4.05	702.93
Quarry Island Fens	P1-D	706.98	6/17/2009	-3.50	703.48
Quarry Island Fens	P1-D	706.98	7/17/2009	-3.60	703.38
Quarry Island Fens	P1-D	706.98	8/24/2009	-3.58	703.40
Quarry Island Fens	P1-D	706.98	9/25/2009	-3.65	703.33
Quarry Island Fens	P1-D	706.98	10/15/2009	-3.65	703.33
Quarry Island Fens	P1-D	706.98	11/6/2009	-3.62	703.36
Quarry Island Fens	P1-D	706.98	12/8/2009		
Quarry Island Fens	P1-D	706.98	3/2/2010		
Quarry Island Fens	P1-D	706.98	4/27/2010	-3.97	703.01
Quarry Island Fens	P1-D	706.98	5/11/2010	-3.98	703.00
Quarry Island Fens	P1-D	706.98	6/9/2010	-3.93	703.05
Quarry Island Fens	P1-D	706.98	7/26/2010	-3.91	703.07
Quarry Island Fens	P1-D	706.98	8/12/2010	-3.92	703.06
Quarry Island Fens	P1-D	706.98	9/14/2010	-3.91	703.07
Quarry Island Fens	P1-D	706.98	10/18/2010	-3.84	703.14
Quarry Island Fens	P1-D	706.98	11/10/2010	-3.81	703.17
Quarry Island Fens	P1-D	706.98	12/8/2010	-3.80	703.18
Quarry Island Fens	P1-D	706.98	3/4/2011		
Quarry Island Fens	P1-D	706.98	4/29/2011	-3.46	703.52
Quarry Island Fens	P1-D	706.98	5/27/2011	-3.50	703.48
Quarry Island Fens	P1-D	706.98	6/28/2011	-3.52	703.46
Quarry Island Fens	P1-D	706.98	7/14/2011	-3.54	703.44
Quarry Island Fens	P1-D	706.98	8/9/2011	-3.57	703.41
Quarry Island Fens	P1-D	706.98	9/9/2011	-3.65	703.33

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Quarry Island Fens	P1-D	706.98	10/13/2011	-3.71	703.27
Quarry Island Fens	P1-D	706.98	11/23/2011	-3.79	703.19
Quarry Island Fens	P1-D	706.98	12/14/2011	-3.79	703.19
Quarry Island Fens	P1-D	706.98	3/30/2012	-4.11	702.87
Quarry Island Fens	P1-D	706.98	4/26/2012	-4.01	702.97
Quarry Island Fens	P1-D	706.98	5/17/2012	-3.99	702.99
Quarry Island Fens	P1-D	706.98	6/8/2012	-3.99	702.99
Quarry Island Fens	P1-D	706.98	7/27/2012	-4.05	702.93
Quarry Island Fens	P1-D	706.98	8/31/2012	-4.13	702.85
Quarry Island Fens	P1-D	706.98	9/21/2012	-4.42	702.56
Quarry Island Fens	P1-D	706.98	10/8/2012	-4.58	702.40
Quarry Island Fens	P1-D	706.98	11/15/2012	-4.58	702.40
Quarry Island Fens	P1-D	706.98	12/4/2012	-4.52	702.46
Quarry Island Fens	P1-D	706.98	3/22/2013		
Quarry Island Fens	P1-D	706.98	4/8/2013		
Quarry Island Fens	P1-D	706.98	5/6/2013		
Quarry Island Fens	P1-D	706.98	6/3/2013	-4.40	702.58
Quarry Island Fens	P1-D	706.98	7/2/2013	-4.34	702.64
Quarry Island Fens	P1-D	706.98	8/1/2013	-4.36	702.62
Quarry Island Fens	P1-D	706.98	9/3/2013	-4.33	702.65
Quarry Island Fens	P1-D	706.98	10/9/2013	-4.21	702.77
Quarry Island Fens	P1-D	706.98	11/7/2013	-4.21	702.77
Quarry Island Fens	P1-D	706.98	12/2/2013	-4.21	702.77
Quarry Island Fens	P1-D	706.98	3/13/2015		
Quarry Island Fens	P1-D	706.98	4/3/2015	-3.81	703.17
Quarry Island Fens	P1-D	706.98	5/8/2015	-3.97	703.01
Quarry Island Fens	P1-D	706.98	6/2/2015	-4.06	702.92
Quarry Island Fens	P1-D	706.98	7/9/2015	-4.50	702.48
Quarry Island Fens	P1-D	706.98	8/10/2015	-5.18	701.80
Quarry Island Fens	P1-D	706.98	9/9/2015	-4.74	702.24
Fort Snelling Fens	N3	723.87	3/28/2007	-2.45	721.42
Fort Snelling Fens	N3	723.87	4/26/2007	-2.40	721.47
Fort Snelling Fens	N3	723.87	5/30/2007	-2.78	721.09
Fort Snelling Fens	N3	723.87	6/20/2007	-3.07	720.80
Fort Snelling Fens	N3	723.87	7/13/2007	-3.44	720.43
Fort Snelling Fens	N3	723.87	8/17/2007	-3.43	720.44
Fort Snelling Fens	N3	723.87	9/21/2007	-3.07	720.80
Fort Snelling Fens	N3	723.87	10/11/2007	-3.04	720.83
Fort Snelling Fens	N3	723.87	11/13/2007	-2.83	721.04
Fort Snelling Fens	N3	723.87	12/7/2007	-2.82	721.05

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	N3	723.87	3/5/2008		
Fort Snelling Fens	N3	723.87	4/16/2008	-2.57	721.30
Fort Snelling Fens	N3	723.87	5/12/2008	-2.71	721.16
Fort Snelling Fens	N3	723.87	6/26/2008	-3.12	720.75
Fort Snelling Fens	N3	723.87	7/22/2008	-3.34	720.53
Fort Snelling Fens	N3	723.87	8/19/2008	-3.47	720.40
Fort Snelling Fens	N3	723.87	9/9/2008	-3.48	720.39
Fort Snelling Fens	N3	723.87	10/15/2008	-3.11	720.76
Fort Snelling Fens	N3	723.87	11/26/2008	-3.97	719.90
Fort Snelling Fens	N3	723.87	12/18/2008	-2.97	720.90
Fort Snelling Fens	N3	723.87	3/26/2009	-2.81	721.06
Fort Snelling Fens	N3	723.87	4/29/2009	-3.05	720.82
Fort Snelling Fens	N3	723.87	5/29/2009	-3.16	720.71
Fort Snelling Fens	N3	723.87	6/17/2009	-3.14	720.73
Fort Snelling Fens	N3	723.87	7/17/2009	-3.42	720.45
Fort Snelling Fens	N3	723.87	8/24/2009	-3.13	720.74
Fort Snelling Fens	N3	723.87	9/25/2009	-3.37	720.50
Fort Snelling Fens	N3	723.87	10/15/2009	-2.97	720.90
Fort Snelling Fens	N3	723.87	11/6/2009	-2.79	721.08
Fort Snelling Fens	N3	723.87	12/8/2009	-2.84	721.03
Fort Snelling Fens	N3	723.87	3/2/2010		
Fort Snelling Fens	N3	723.87	4/27/2010	-3.00	720.87
Fort Snelling Fens	N3	723.87	5/11/2010	-3.03	720.84
Fort Snelling Fens	N3	723.87	6/9/2010	-3.09	720.78
Fort Snelling Fens	N3	723.87	7/26/2010	-3.12	720.75
Fort Snelling Fens	N3	723.87	8/12/2010	-3.12	720.75
Fort Snelling Fens	N3	723.87	9/14/2010	-3.20	720.67
Fort Snelling Fens	N3	723.87	10/18/2010	-3.11	720.76
Fort Snelling Fens	N3	723.87	11/10/2010	-2.92	720.95
Fort Snelling Fens	N3	723.87	12/8/2010	-2.87	721.00
Fort Snelling Fens	N3	723.87	3/4/2011		
Fort Snelling Fens	N3	723.87	4/29/2011	-2.75	721.12
Fort Snelling Fens	N3	723.87	5/27/2011	-2.88	720.99
Fort Snelling Fens	N3	723.87	6/28/2011	-2.84	721.03
Fort Snelling Fens	N3	723.87	7/14/2011	-3.07	720.80
Fort Snelling Fens	N3	723.87	8/9/2011	-3.13	720.74
Fort Snelling Fens	N3	723.87	9/9/2011	-3.38	720.49
Fort Snelling Fens	N3	723.87	10/13/2011	-3.21	720.66
Fort Snelling Fens	N3	723.87	11/23/2011	-2.95	720.92
Fort Snelling Fens	N3	723.87	12/14/2011	-2.79	721.08
Fort Snelling Fens	N3	723.87	3/30/2012	-2.59	721.28
Fort Snelling Fens	N3	723.87	4/26/2012	-2.69	721.18

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	N3	723.87	5/17/2012	-2.69	721.18
Fort Snelling Fens	N3	723.87	6/8/2012	-2.88	720.99
Fort Snelling Fens	N3	723.87	7/27/2012	-3.24	720.63
Fort Snelling Fens	N3	723.87	8/31/2012	-3.35	720.52
Fort Snelling Fens	N3	723.87	9/21/2012	-3.39	720.48
Fort Snelling Fens	N3	723.87	10/8/2012	-3.39	720.48
Fort Snelling Fens	N3	723.87	11/15/2012	-3.13	720.74
Fort Snelling Fens	N3	723.87	12/4/2012	-3.04	720.83
Fort Snelling Fens	N3	723.87	3/22/2013		
Fort Snelling Fens	N3	723.87	4/8/2013	-2.57	721.30
Fort Snelling Fens	N3	723.87	5/6/2013	-2.61	721.26
Fort Snelling Fens	N3	723.87	6/3/2013	-2.70	721.17
Fort Snelling Fens	N3	723.87	7/2/2013	-2.79	721.08
Fort Snelling Fens	N3	723.87	8/1/2013	-3.18	720.69
Fort Snelling Fens	N3	723.87	9/3/2013	-3.41	720.46
Fort Snelling Fens	N3	723.87	10/9/2013	-3.33	720.54
Fort Snelling Fens	N3	723.87	11/7/2013	-3.12	720.75
Fort Snelling Fens	N3	723.87	12/2/2013	-2.94	720.93
Fort Snelling Fens	N3	723.87	3/13/2015	-2.62	721.25
Fort Snelling Fens	N3	723.87	4/3/2015	-2.72	721.15
Fort Snelling Fens	N3	723.87	5/8/2015	-2.74	721.13
Fort Snelling Fens	N3	723.87	6/2/2015	-2.78	721.09
Fort Snelling Fens	N3	723.87	7/9/2015	-2.80	721.07
Fort Snelling Fens	N3	723.87	8/10/2015	-3.05	720.82
Fort Snelling Fens	N3	723.87	9/9/2015	-2.90	720.97
Fort Snelling Fens	N4	724.27	5/30/2007	-1.06	723.21
Fort Snelling Fens	N4	724.27	6/20/2007	-1.49	722.78
Fort Snelling Fens	N4	724.27	7/13/2007	-2.83	721.44
Fort Snelling Fens	N4	724.27	8/17/2007	-2.87	721.40
Fort Snelling Fens	N4	724.27	9/21/2007	-1.47	722.80
Fort Snelling Fens	N4	724.27	10/11/2007	-1.44	722.83
Fort Snelling Fens	N4	724.27	11/13/2007	-1.16	723.11
Fort Snelling Fens	N4	724.27	12/7/2007		
Fort Snelling Fens	N4	724.27	3/5/2008		
Fort Snelling Fens	N4	724.27	4/16/2008	-0.09	724.19
Fort Snelling Fens	N4	724.27	5/12/2008	-1.03	723.24
Fort Snelling Fens	N4	724.27	6/26/2008	-1.46	722.81
Fort Snelling Fens	N4	724.27	7/22/2008	-1.74	722.53
Fort Snelling Fens	N4	724.27	8/19/2008	-1.89	722.38
Fort Snelling Fens	N4	724.27	9/9/2008	-1.92	722.35

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	N4	724.27	10/15/2008	-1.52	722.75
Fort Snelling Fens	N4	724.27	11/26/2008		
Fort Snelling Fens	N4	724.27	12/18/2008		
Fort Snelling Fens	N4	724.27	3/26/2009	-1.10	723.17
Fort Snelling Fens	N4	724.27	4/29/2009	-2.35	721.92
Fort Snelling Fens	N4	724.27	5/29/2009	-1.58	722.69
Fort Snelling Fens	N4	724.27	6/17/2009	-1.57	722.70
Fort Snelling Fens	N4	724.27	7/17/2009	-1.86	722.41
Fort Snelling Fens	N4	724.27	8/24/2009	-1.57	722.70
Fort Snelling Fens	N4	724.27	9/25/2009	-1.80	722.47
Fort Snelling Fens	N4	724.27	10/15/2009	-1.40	722.87
Fort Snelling Fens	N4	724.27	11/6/2009	-1.15	723.12
Fort Snelling Fens	N4	724.27	12/8/2009		
Fort Snelling Fens	N4	724.27	3/2/2010		
Fort Snelling Fens	N4	724.27	4/27/2010	-1.38	722.89
Fort Snelling Fens	N4	724.27	5/11/2010	-1.44	722.83
Fort Snelling Fens	N4	724.27	6/9/2010	-1.51	722.76
Fort Snelling Fens	N4	724.27	7/26/2010	-1.51	722.76
Fort Snelling Fens	N4	724.27	8/12/2010	-1.51	722.76
Fort Snelling Fens	N4	724.27	9/14/2010	-1.61	722.66
Fort Snelling Fens	N4	724.27	10/18/2010	-1.51	722.76
Fort Snelling Fens	N4	724.27	11/10/2010	-1.31	722.96
Fort Snelling Fens	N4	724.27	12/8/2010		
Fort Snelling Fens	N4	724.27	3/4/2011		
Fort Snelling Fens	N4	724.27	4/29/2011	-1.09	723.18
Fort Snelling Fens	N4	724.27	5/27/2011	-1.22	723.05
Fort Snelling Fens	N4	724.27	6/28/2011	-1.21	723.06
Fort Snelling Fens	N4	724.27	7/14/2011	-1.45	722.82
Fort Snelling Fens	N4	724.27	8/9/2011	-1.51	722.76
Fort Snelling Fens	N4	724.27	9/9/2011	-1.80	722.47
Fort Snelling Fens	N4	724.27	10/13/2011	-1.62	722.65
Fort Snelling Fens	N4	724.27	11/23/2011	-1.38	722.89
Fort Snelling Fens	N4	724.27	12/14/2011	-1.17	723.10
Fort Snelling Fens	N4	724.27	3/30/2012	-0.92	723.35
Fort Snelling Fens	N4	724.27	4/26/2012	-1.02	723.25
Fort Snelling Fens	N4	724.27	5/17/2012	-0.99	723.28
Fort Snelling Fens	N4	724.27	6/8/2012	-1.23	723.04
Fort Snelling Fens	N4	724.27	7/27/2012	-1.68	722.59
Fort Snelling Fens	N4	724.27	8/31/2012	-1.80	722.47
Fort Snelling Fens	N4	724.27	9/21/2012	-1.83	722.44
Fort Snelling Fens	N4	724.27	10/8/2012	-1.83	722.44
Fort Snelling Fens	N4	724.27	11/15/2012	-1.58	722.69

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	N4	724.27	12/4/2012	-1.50	722.77
Fort Snelling Fens	N4	724.27	3/22/2013		
Fort Snelling Fens	N4	724.27	4/8/2013	-0.91	723.36
Fort Snelling Fens	N4	724.27	5/6/2013	-0.93	723.34
Fort Snelling Fens	N4	724.27	6/3/2013	-1.20	723.07
Fort Snelling Fens	N4	724.27	7/2/2013	-1.15	723.12
Fort Snelling Fens	N4	724.27	8/1/2013	-1.57	722.70
Fort Snelling Fens	N4	724.27	9/3/2013	-1.84	722.43
Fort Snelling Fens	N4	724.27	10/9/2013	-1.81	722.46
Fort Snelling Fens	N4	724.27	11/7/2013	-1.57	722.70
Fort Snelling Fens	N4	724.27	12/2/2013		
Fort Snelling Fens	N4	724.27	3/13/2015	-0.96	723.31
Fort Snelling Fens	N4	724.27	4/3/2015	-1.10	723.17
Fort Snelling Fens	N4	724.27	5/8/2015	-1.11	723.16
Fort Snelling Fens	N4	724.27	6/2/2015	-1.12	723.15
Fort Snelling Fens	N4	724.27	7/9/2015	-1.15	723.12
Fort Snelling Fens	N4	724.27	8/10/2015	-1.43	722.84
Fort Snelling Fens	N4	724.27	9/9/2015	-1.27	723.00
Fort Snelling Fens	N5	724.06	3/28/2007	-2.67	721.39
Fort Snelling Fens	N5	724.06	4/26/2007	-2.70	721.36
Fort Snelling Fens	N5	724.06	5/30/2007	-3.06	721.00
Fort Snelling Fens	N5	724.06	6/20/2007	-3.45	720.61
Fort Snelling Fens	N5	724.06	7/13/2007	-3.42	720.64
Fort Snelling Fens	N5	724.06	8/17/2007	-3.67	720.39
Fort Snelling Fens	N5	724.06	9/21/2007	-3.31	720.75
Fort Snelling Fens	N5	724.06	10/11/2007	-3.29	720.77
Fort Snelling Fens	N5	724.06	11/13/2007	-3.11	720.95
Fort Snelling Fens	N5	724.06	12/7/2007	-3.08	720.98
Fort Snelling Fens	N5	724.06	3/5/2008		
Fort Snelling Fens	N5	724.06	4/16/2008	-2.86	721.20
Fort Snelling Fens	N5	724.06	5/12/2008	-2.98	721.08
Fort Snelling Fens	N5	724.06	6/26/2008	-3.38	720.68
Fort Snelling Fens	N5	724.06	7/22/2008	-3.61	720.45
Fort Snelling Fens	N5	724.06	8/19/2008	-3.74	720.32
Fort Snelling Fens	N5	724.06	9/9/2008	-3.75	720.31
Fort Snelling Fens	N5	724.06	10/15/2008	-3.37	720.69
Fort Snelling Fens	N5	724.06	11/26/2008	-3.23	720.83
Fort Snelling Fens	N5	724.06	12/18/2008	-2.21	721.85
Fort Snelling Fens	N5	724.06	3/26/2009	-1.95	722.11
Fort Snelling Fens	N5	724.06	4/29/2009	-3.22	720.84

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	N5	724.06	5/29/2009	-3.43	720.63
Fort Snelling Fens	N5	724.06	6/17/2009	-3.40	720.66
Fort Snelling Fens	N5	724.06	7/17/2009	-3.68	720.38
Fort Snelling Fens	N5	724.06	8/24/2009	-3.38	720.68
Fort Snelling Fens	N5	724.06	9/25/2009	-3.62	720.44
Fort Snelling Fens	N5	724.06	10/15/2009	-3.23	720.83
Fort Snelling Fens	N5	724.06	11/6/2009	-3.05	721.01
Fort Snelling Fens	N5	724.06	12/8/2009	-3.09	720.97
Fort Snelling Fens	N5	724.06	3/2/2010		
Fort Snelling Fens	N5	724.06	4/27/2010	-3.22	720.84
Fort Snelling Fens	N5	724.06	5/11/2010	-3.26	720.80
Fort Snelling Fens	N5	724.06	6/9/2010	-3.35	720.71
Fort Snelling Fens	N5	724.06	7/26/2010	-3.38	720.68
Fort Snelling Fens	N5	724.06	8/12/2010	-3.37	720.69
Fort Snelling Fens	N5	724.06	9/14/2010	-3.47	720.59
Fort Snelling Fens	N5	724.06	10/18/2010	-3.36	720.70
Fort Snelling Fens	N5	724.06	11/10/2010	-3.19	720.87
Fort Snelling Fens	N5	724.06	12/8/2010	-3.11	720.95
Fort Snelling Fens	N5	724.06	3/4/2011		
Fort Snelling Fens	N5	724.06	4/29/2011	-3.00	721.06
Fort Snelling Fens	N5	724.06	5/27/2011	-3.12	720.94
Fort Snelling Fens	N5	724.06	6/28/2011	-3.10	720.96
Fort Snelling Fens	N5	724.06	7/14/2011	-3.34	720.72
Fort Snelling Fens	N5	724.06	8/9/2011	-3.40	720.66
Fort Snelling Fens	N5	724.06	9/9/2011	-3.64	720.42
Fort Snelling Fens	N5	724.06	10/13/2011	-3.45	720.61
Fort Snelling Fens	N5	724.06	11/23/2011	-3.20	720.86
Fort Snelling Fens	N5	724.06	12/14/2011	-3.05	721.01
Fort Snelling Fens	N5	724.06	3/30/2012	-2.86	721.20
Fort Snelling Fens	N5	724.06	4/26/2012	-3.95	720.11
Fort Snelling Fens	N5	724.06	5/17/2012	-2.96	721.10
Fort Snelling Fens	N5	724.06	6/8/2012	-3.14	720.92
Fort Snelling Fens	N5	724.06	7/27/2012	-3.50	720.56
Fort Snelling Fens	N5	724.06	8/31/2012	-3.62	720.44
Fort Snelling Fens	N5	724.06	9/21/2012	-3.65	720.41
Fort Snelling Fens	N5	724.06	10/8/2012	-3.64	720.42
Fort Snelling Fens	N5	724.06	11/15/2012	-3.35	720.71
Fort Snelling Fens	N5	724.06	12/4/2012	-3.27	720.79
Fort Snelling Fens	N5	724.06	3/22/2013		
Fort Snelling Fens	N5	724.06	4/8/2013	-2.81	721.25
Fort Snelling Fens	N5	724.06	5/6/2013	-2.86	721.20
Fort Snelling Fens	N5	724.06	6/3/2013	-2.94	721.12

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	N5	724.06	7/2/2013	-3.03	721.03
Fort Snelling Fens	N5	724.06	8/1/2013	-3.41	720.65
Fort Snelling Fens	N5	724.06	9/3/2013	-3.65	720.41
Fort Snelling Fens	N5	724.06	10/9/2013	-3.57	720.49
Fort Snelling Fens	N5	724.06	11/7/2013	-3.34	720.72
Fort Snelling Fens	N5	724.06	12/2/2013	-3.17	720.89
Fort Snelling Fens	N5	724.06	3/13/2015	-2.86	721.20
Fort Snelling Fens	N5	724.06	4/3/2015	-2.95	721.11
Fort Snelling Fens	N5	724.06	5/8/2015	-2.97	721.09
Fort Snelling Fens	N5	724.06	6/2/2015	-3.02	721.04
Fort Snelling Fens	N5	724.06	7/9/2015	-3.04	721.02
Fort Snelling Fens	N5	724.06	8/10/2015	-1.31	722.75
Fort Snelling Fens	N5	724.06	9/9/2015	-3.14	720.92
Fort Snelling Fens	W2	728.47	3/28/2007	-2.90	725.57
Fort Snelling Fens	W2	728.47	4/26/2007	-1.99	726.48
Fort Snelling Fens	W2	728.47	5/30/2007	-3.29	725.18
Fort Snelling Fens	W2	728.47	6/20/2007	-3.78	724.69
Fort Snelling Fens	W2	728.47	7/13/2007	-4.11	724.36
Fort Snelling Fens	W2	728.47	8/17/2007	-4.18	724.29
Fort Snelling Fens	W2	728.47	9/21/2007	-3.76	724.71
Fort Snelling Fens	W2	728.47	10/11/2007	-3.75	724.72
Fort Snelling Fens	W2	728.47	11/13/2007	-3.39	725.08
Fort Snelling Fens	W2	728.47	12/7/2007	-3.43	725.04
Fort Snelling Fens	W2	728.47	3/5/2008		
Fort Snelling Fens	W2	728.47	4/16/2008	-3.39	725.08
Fort Snelling Fens	W2	728.47	5/12/2008	-3.27	725.20
Fort Snelling Fens	W2	728.47	6/26/2008	-2.74	725.73
Fort Snelling Fens	W2	728.47	7/22/2008	-4.05	724.42
Fort Snelling Fens	W2	728.47	8/19/2008	-4.23	724.24
Fort Snelling Fens	W2	728.47	9/9/2008	-4.25	724.22
Fort Snelling Fens	W2	728.47	10/15/2008	-3.81	724.66
Fort Snelling Fens	W2	728.47	11/26/2008	-3.60	724.87
Fort Snelling Fens	W2	728.47	12/18/2008		
Fort Snelling Fens	W2	728.47	3/26/2009	-3.40	725.07
Fort Snelling Fens	W2	728.47	4/29/2009	-3.61	724.86
Fort Snelling Fens	W2	728.47	5/29/2009	-3.89	724.58
Fort Snelling Fens	W2	728.47	6/17/2009	-3.86	724.61
Fort Snelling Fens	W2	728.47	7/17/2009	-4.19	724.28
Fort Snelling Fens	W2	728.47	8/24/2009	-3.88	724.59
Fort Snelling Fens	W2	728.47	9/25/2009	-4.12	724.35

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W2	728.47	10/15/2009	-3.69	724.78
Fort Snelling Fens	W2	728.47	11/6/2009	-3.38	725.09
Fort Snelling Fens	W2	728.47	12/8/2009	-3.42	725.05
Fort Snelling Fens	W2	728.47	3/2/2010		
Fort Snelling Fens	W2	728.47	4/27/2010	-3.64	724.83
Fort Snelling Fens	W2	728.47	5/11/2010	-3.71	724.76
Fort Snelling Fens	W2	728.47	6/9/2010	-3.81	724.66
Fort Snelling Fens	W2	728.47	7/26/2010	-3.80	724.67
Fort Snelling Fens	W2	728.47	8/12/2010	-3.81	724.66
Fort Snelling Fens	W2	728.47	9/14/2010	-3.91	724.56
Fort Snelling Fens	W2	728.47	10/18/2010	-3.80	724.67
Fort Snelling Fens	W2	728.47	11/10/2010	-3.58	724.89
Fort Snelling Fens	W2	728.47	12/8/2010	-3.51	724.96
Fort Snelling Fens	W2	728.47	3/4/2011		
Fort Snelling Fens	W2	728.47	4/29/2011	-3.35	725.12
Fort Snelling Fens	W2	728.47	5/27/2011	-3.49	724.98
Fort Snelling Fens	W2	728.47	6/28/2011	-3.50	724.97
Fort Snelling Fens	W2	728.47	7/14/2011	-3.72	724.75
Fort Snelling Fens	W2	728.47	8/9/2011	-3.81	724.66
Fort Snelling Fens	W2	728.47	9/9/2011	-4.13	724.34
Fort Snelling Fens	W2	728.47	10/13/2011	-3.92	724.55
Fort Snelling Fens	W2	728.47	11/23/2011	-3.61	724.86
Fort Snelling Fens	W2	728.47	12/14/2011	-3.37	725.10
Fort Snelling Fens	W2	728.47	3/30/2012	-3.11	725.36
Fort Snelling Fens	W2	728.47	4/26/2012	-3.25	725.22
Fort Snelling Fens	W2	728.47	5/17/2012	-3.20	725.27
Fort Snelling Fens	W2	728.47	6/8/2012	-3.48	724.99
Fort Snelling Fens	W2	728.47	7/27/2012	-4.02	724.45
Fort Snelling Fens	W2	728.47	8/31/2012	-4.12	724.35
Fort Snelling Fens	W2	728.47	9/21/2012	-4.13	724.34
Fort Snelling Fens	W2	728.47	10/8/2012	-4.16	724.31
Fort Snelling Fens	W2	728.47	11/15/2012	-3.88	724.59
Fort Snelling Fens	W2	728.47	12/4/2012	-3.79	724.68
Fort Snelling Fens	W2	728.47	3/22/2013		
Fort Snelling Fens	W2	728.47	4/8/2013		
Fort Snelling Fens	W2	728.47	5/6/2013	-3.15	725.32
Fort Snelling Fens	W2	728.47	6/3/2013	-3.28	725.19
Fort Snelling Fens	W2	728.47	7/2/2013	-3.44	725.03
Fort Snelling Fens	W2	728.47	8/1/2013	-3.86	724.61
Fort Snelling Fens	W2	728.47	9/3/2013	-4.19	724.28
Fort Snelling Fens	W2	728.47	10/9/2013	-4.16	724.31
Fort Snelling Fens	W2	728.47	11/7/2013	-3.88	724.59

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W2	728.47	12/2/2013	-3.59	724.88
Fort Snelling Fens	W2	728.47	3/13/2015		
Fort Snelling Fens	W2	728.47	4/3/2015		
Fort Snelling Fens	W2	728.47	5/8/2015	-3.38	725.09
Fort Snelling Fens	W2	728.47	6/2/2015	-3.36	725.11
Fort Snelling Fens	W2	728.47	7/9/2015	-3.46	725.01
Fort Snelling Fens	W2	728.47	8/10/2015	-3.76	724.71
Fort Snelling Fens	W2	728.47	9/9/2015	-3.58	724.89
Fort Snelling Fens	W1	728.45	3/28/2007	-2.88	725.57
Fort Snelling Fens	W1	728.45	4/26/2007	-1.79	726.66
Fort Snelling Fens	W1	728.45	5/30/2007	-3.29	725.16
Fort Snelling Fens	W1	728.45	6/20/2007	-3.79	724.66
Fort Snelling Fens	W1	728.45	7/13/2007	-4.13	724.32
Fort Snelling Fens	W1	728.45	8/17/2007	-4.20	724.25
Fort Snelling Fens	W1	728.45	9/21/2007	-3.77	724.68
Fort Snelling Fens	W1	728.45	10/11/2007	-3.77	724.68
Fort Snelling Fens	W1	728.45	11/13/2007	-3.40	725.05
Fort Snelling Fens	W1	728.45	12/7/2007	-3.43	725.02
Fort Snelling Fens	W1	728.45	3/5/2008		
Fort Snelling Fens	W1	728.45	4/16/2008	-2.07	726.38
Fort Snelling Fens	W1	728.45	5/12/2008	-3.28	725.17
Fort Snelling Fens	W1	728.45	6/26/2008	-3.75	724.70
Fort Snelling Fens	W1	728.45	7/22/2008	-4.07	724.38
Fort Snelling Fens	W1	728.45	8/19/2008	-4.24	724.21
Fort Snelling Fens	W1	728.45	9/9/2008	-4.27	724.18
Fort Snelling Fens	W1	728.45	10/15/2008	-3.82	724.63
Fort Snelling Fens	W1	728.45	11/26/2008	-3.62	724.83
Fort Snelling Fens	W1	728.45	12/18/2008		
Fort Snelling Fens	W1	728.45	3/26/2009	-3.35	725.10
Fort Snelling Fens	W1	728.45	4/29/2009	-3.61	724.84
Fort Snelling Fens	W1	728.45	5/29/2009	-3.90	724.55
Fort Snelling Fens	W1	728.45	6/17/2009	-3.90	724.55
Fort Snelling Fens	W1	728.45	7/17/2009	-4.19	724.26
Fort Snelling Fens	W1	728.45	8/24/2009	-3.90	724.55
Fort Snelling Fens	W1	728.45	9/25/2009	-4.19	724.26
Fort Snelling Fens	W1	728.45	10/15/2009	-3.70	724.75
Fort Snelling Fens	W1	728.45	11/6/2009	-3.38	725.07
Fort Snelling Fens	W1	728.45	12/8/2009	-3.44	725.01
Fort Snelling Fens	W1	728.45	3/2/2010		
Fort Snelling Fens	W1	728.45	4/27/2010	-3.63	724.82

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W1	728.45	5/11/2010	-3.71	724.74
Fort Snelling Fens	W1	728.45	6/9/2010	-3.82	724.63
Fort Snelling Fens	W1	728.45	7/26/2010	-3.82	724.63
Fort Snelling Fens	W1	728.45	8/12/2010	-3.81	724.64
Fort Snelling Fens	W1	728.45	9/14/2010	-3.92	724.53
Fort Snelling Fens	W1	728.45	10/18/2010	-3.80	724.65
Fort Snelling Fens	W1	728.45	11/10/2010	-3.58	724.87
Fort Snelling Fens	W1	728.45	12/8/2010	-3.52	724.93
Fort Snelling Fens	W1	728.45	3/4/2011		
Fort Snelling Fens	W1	728.45	4/29/2011	-3.36	725.09
Fort Snelling Fens	W1	728.45	5/27/2011	-3.51	724.94
Fort Snelling Fens	W1	728.45	6/28/2011	-3.52	724.93
Fort Snelling Fens	W1	728.45	7/14/2011	-3.73	724.72
Fort Snelling Fens	W1	728.45	8/9/2011	-3.83	724.62
Fort Snelling Fens	W1	728.45	9/9/2011	-4.15	724.30
Fort Snelling Fens	W1	728.45	10/13/2011	-3.94	724.51
Fort Snelling Fens	W1	728.45	11/23/2011	-3.62	724.83
Fort Snelling Fens	W1	728.45	12/14/2011	-3.38	725.07
Fort Snelling Fens	W1	728.45	3/30/2012	-3.14	725.31
Fort Snelling Fens	W1	728.45	4/26/2012	-3.26	725.19
Fort Snelling Fens	W1	728.45	5/17/2012	-3.22	725.23
Fort Snelling Fens	W1	728.45	6/8/2012	-3.49	724.96
Fort Snelling Fens	W1	728.45	7/27/2012	-4.03	724.42
Fort Snelling Fens	W1	728.45	8/31/2012	-4.14	724.31
Fort Snelling Fens	W1	728.45	9/21/2012	-4.16	724.29
Fort Snelling Fens	W1	728.45	10/8/2012	-4.18	724.27
Fort Snelling Fens	W1	728.45	11/15/2012	-3.89	724.56
Fort Snelling Fens	W1	728.45	12/4/2012	-3.81	724.64
Fort Snelling Fens	W1	728.45	3/22/2013		
Fort Snelling Fens	W1	728.45	4/8/2013	-4.57	723.88
Fort Snelling Fens	W1	728.45	5/6/2013	-3.16	725.29
Fort Snelling Fens	W1	728.45	6/3/2013	-3.28	725.17
Fort Snelling Fens	W1	728.45	7/2/2013	-3.46	724.99
Fort Snelling Fens	W1	728.45	8/1/2013	-3.88	724.57
Fort Snelling Fens	W1	728.45	9/3/2013	-4.21	724.24
Fort Snelling Fens	W1	728.45	10/9/2013	-4.17	724.28
Fort Snelling Fens	W1	728.45	11/7/2013	-3.91	724.54
Fort Snelling Fens	W1	728.45	12/2/2013	-3.63	724.82
Fort Snelling Fens	W1	728.45	3/13/2015		
Fort Snelling Fens	W1	728.45	4/3/2015	-3.38	725.07
Fort Snelling Fens	W1	728.45	5/8/2015	-3.39	725.06
Fort Snelling Fens	W1	728.45	6/2/2015	-2.36	726.09

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W1	728.45	7/9/2015	-3.46	724.99
Fort Snelling Fens	W1	728.45	8/10/2015	-3.84	724.61
Fort Snelling Fens	W1	728.45	9/9/2015	-3.58	724.87
Fort Snelling Fens	W4	727.60	2/8/2007	-5.42	722.18
Fort Snelling Fens	W4	727.60	4/26/2007	-4.62	722.98
Fort Snelling Fens	W4	727.60	5/30/2007	-5.09	722.51
Fort Snelling Fens	W4	727.60	6/20/2007	-6.28	721.32
Fort Snelling Fens	W4	727.60	7/13/2007	-5.79	721.81
Fort Snelling Fens	W4	727.60	8/17/2007	-5.15	722.45
Fort Snelling Fens	W4	727.60	9/21/2007	-4.70	722.90
Fort Snelling Fens	W4	727.60	10/11/2007	-4.71	722.89
Fort Snelling Fens	W4	727.60	11/13/2007	-4.73	722.87
Fort Snelling Fens	W4	727.60	12/7/2007	-4.92	722.68
Fort Snelling Fens	W4	727.60	3/5/2008		
Fort Snelling Fens	W4	727.60	4/16/2008	-4.52	723.08
Fort Snelling Fens	W4	727.60	5/12/2008	-4.73	722.87
Fort Snelling Fens	W4	727.60	6/26/2008	-5.90	721.70
Fort Snelling Fens	W4	727.60	7/22/2008	-5.10	722.50
Fort Snelling Fens	W4	727.60	8/19/2008	-5.23	722.37
Fort Snelling Fens	W4	727.60	9/9/2008	-5.71	721.89
Fort Snelling Fens	W4	727.60	10/15/2008	-4.89	722.71
Fort Snelling Fens	W4	727.60	11/26/2008	-5.11	722.49
Fort Snelling Fens	W4	727.60	12/18/2008	-4.74	722.86
Fort Snelling Fens	W4	727.60	3/26/2009		
Fort Snelling Fens	W4	727.60	4/29/2009	-4.73	722.87
Fort Snelling Fens	W4	727.60	5/29/2009	-5.11	722.49
Fort Snelling Fens	W4	727.60	6/17/2009	-4.85	722.75
Fort Snelling Fens	W4	727.60	7/17/2009	-5.88	721.72
Fort Snelling Fens	W4	727.60	8/24/2009	-4.90	722.70
Fort Snelling Fens	W4	727.60	9/25/2009	-6.25	721.35
Fort Snelling Fens	W4	727.60	10/15/2009	-4.80	722.80
Fort Snelling Fens	W4	727.60	11/6/2009	-4.82	722.78
Fort Snelling Fens	W4	727.60	12/8/2009	-5.11	722.49
Fort Snelling Fens	W4	727.60	3/2/2010	-4.85	722.75
Fort Snelling Fens	W4	727.60	4/27/2010	-4.79	722.81
Fort Snelling Fens	W4	727.60	5/11/2010	-4.70	722.90
Fort Snelling Fens	W4	727.60	6/9/2010	-4.77	722.83
Fort Snelling Fens	W4	727.60	7/26/2010	-4.95	722.65
Fort Snelling Fens	W4	727.60	8/12/2010	-4.82	722.78
Fort Snelling Fens	W4	727.60	9/14/2010	-5.49	722.11

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W4	727.60	10/18/2010	-5.22	722.38
Fort Snelling Fens	W4	727.60	11/10/2010	-4.87	722.73
Fort Snelling Fens	W4	727.60	12/8/2010	-4.71	722.89
Fort Snelling Fens	W4	727.60	3/4/2011	-4.79	722.81
Fort Snelling Fens	W4	727.60	4/29/2011	-4.69	722.91
Fort Snelling Fens	W4	727.60	5/27/2011	-4.79	722.81
Fort Snelling Fens	W4	727.60	6/28/2011	-4.94	722.66
Fort Snelling Fens	W4	727.60	7/14/2011	-5.19	722.41
Fort Snelling Fens	W4	727.60	8/9/2011	-5.48	722.12
Fort Snelling Fens	W4	727.60	9/9/2011	-6.23	721.37
Fort Snelling Fens	W4	727.60	10/13/2011	-5.03	722.57
Fort Snelling Fens	W4	727.60	11/23/2011	-2.29	725.31
Fort Snelling Fens	W4	727.60	12/14/2011	-4.68	722.92
Fort Snelling Fens	W4	727.60	3/30/2012	-4.71	722.89
Fort Snelling Fens	W4	727.60	4/26/2012	-4.87	722.73
Fort Snelling Fens	W4	727.60	5/17/2012	-5.21	722.39
Fort Snelling Fens	W4	727.60	6/8/2012	-4.76	722.84
Fort Snelling Fens	W4	727.60	7/27/2012	-4.61	722.99
Fort Snelling Fens	W4	727.60	8/31/2012	-4.76	722.84
Fort Snelling Fens	W4	727.60	9/21/2012	-4.72	722.88
Fort Snelling Fens	W4	727.60	10/8/2012	-4.69	722.91
Fort Snelling Fens	W4	727.60	11/15/2012	-4.61	722.99
Fort Snelling Fens	W4	727.60	12/4/2012	-4.64	722.96
Fort Snelling Fens	W4	727.60	3/22/2013		
Fort Snelling Fens	W4	727.60	4/8/2013		
Fort Snelling Fens	W4	727.60	5/6/2013	-4.60	723.00
Fort Snelling Fens	W4	727.60	6/3/2013	-4.58	723.02
Fort Snelling Fens	W4	727.60	7/2/2013	-4.55	723.05
Fort Snelling Fens	W4	727.60	8/1/2013	-4.70	722.90
Fort Snelling Fens	W4	727.60	9/3/2013	-4.73	722.87
Fort Snelling Fens	W4	727.60	10/9/2013	-4.64	722.96
Fort Snelling Fens	W4	727.60	11/7/2013	-4.57	723.03
Fort Snelling Fens	W4	727.60	12/2/2013	-4.40	723.20
Fort Snelling Fens	W4	727.60	3/13/2015		
Fort Snelling Fens	W4	727.60	4/3/2015		
Fort Snelling Fens	W4	727.60	5/8/2015	-4.62	722.98
Fort Snelling Fens	W4	727.60	6/2/2015	-4.68	722.92
Fort Snelling Fens	W4	727.60	7/9/2015	-4.68	722.92
Fort Snelling Fens	W4	727.60	8/10/2015	-4.46	723.14
Fort Snelling Fens	W4	727.60	9/9/2015	-5.86	721.74

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W3	726.87	3/28/2007	-1.63	725.24
Fort Snelling Fens	W3	726.87	4/26/2007	-1.53	725.34
Fort Snelling Fens	W3	726.87	5/30/2007	-2.04	724.83
Fort Snelling Fens	W3	726.87	6/20/2007	-2.52	724.35
Fort Snelling Fens	W3	726.87	7/13/2007	-2.84	724.03
Fort Snelling Fens	W3	726.87	8/17/2007	-3.86	723.01
Fort Snelling Fens	W3	726.87	9/21/2007	-2.43	724.44
Fort Snelling Fens	W3	726.87	10/11/2007	-2.42	724.45
Fort Snelling Fens	W3	726.87	11/13/2007	-2.15	724.72
Fort Snelling Fens	W3	726.87	12/7/2007		
Fort Snelling Fens	W3	726.87	3/5/2008		
Fort Snelling Fens	W3	726.87	4/16/2008	-1.76	725.11
Fort Snelling Fens	W3	726.87	5/12/2008	-1.97	724.90
Fort Snelling Fens	W3	726.87	6/26/2008	-2.46	724.41
Fort Snelling Fens	W3	726.87	7/22/2008	-2.74	724.13
Fort Snelling Fens	W3	726.87	8/19/2008	-2.91	723.96
Fort Snelling Fens	W3	726.87	9/9/2008	-2.94	723.93
Fort Snelling Fens	W3	726.87	10/15/2008	-2.49	724.38
Fort Snelling Fens	W3	726.87	11/26/2008		
Fort Snelling Fens	W3	726.87	12/18/2008		
Fort Snelling Fens	W3	726.87	3/26/2009	-2.05	724.82
Fort Snelling Fens	W3	726.87	4/29/2009	-2.29	724.58
Fort Snelling Fens	W3	726.87	5/29/2009	-2.58	724.29
Fort Snelling Fens	W3	726.87	6/17/2009	-2.56	724.31
Fort Snelling Fens	W3	726.87	7/17/2009	-2.89	723.98
Fort Snelling Fens	W3	726.87	8/24/2009	-2.56	724.31
Fort Snelling Fens	W3	726.87	9/25/2009	-2.83	724.04
Fort Snelling Fens	W3	726.87	10/15/2009	-2.37	724.50
Fort Snelling Fens	W3	726.87	11/6/2009	-2.07	724.80
Fort Snelling Fens	W3	726.87	12/8/2009		
Fort Snelling Fens	W3	726.87	3/2/2010		
Fort Snelling Fens	W3	726.87	4/27/2010	-2.28	724.59
Fort Snelling Fens	W3	726.87	5/11/2010	-2.37	724.50
Fort Snelling Fens	W3	726.87	6/9/2010	-2.50	724.37
Fort Snelling Fens	W3	726.87	7/26/2010	-2.49	724.38
Fort Snelling Fens	W3	726.87	8/12/2010	-2.50	724.37
Fort Snelling Fens	W3	726.87	9/14/2010	-2.60	724.27
Fort Snelling Fens	W3	726.87	10/18/2010	-2.48	724.39
Fort Snelling Fens	W3	726.87	11/10/2010	-2.26	724.61
Fort Snelling Fens	W3	726.87	12/8/2010		
Fort Snelling Fens	W3	726.87	3/4/2011		
Fort Snelling Fens	W3	726.87	4/29/2011	-2.01	724.86

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	W3	726.87	5/27/2011	-2.17	724.70
Fort Snelling Fens	W3	726.87	6/28/2011	-2.17	724.70
Fort Snelling Fens	W3	726.87	7/14/2011	-2.43	724.44
Fort Snelling Fens	W3	726.87	8/9/2011	-2.51	724.36
Fort Snelling Fens	W3	726.87	9/9/2011	-2.84	724.03
Fort Snelling Fens	W3	726.87	10/13/2011	-2.61	724.26
Fort Snelling Fens	W3	726.87	11/23/2011	-4.93	721.94
Fort Snelling Fens	W3	726.87	12/14/2011	-2.08	724.79
Fort Snelling Fens	W3	726.87	3/30/2012	-1.82	725.05
Fort Snelling Fens	W3	726.87	4/26/2012	-1.95	724.92
Fort Snelling Fens	W3	726.87	5/17/2012	-1.93	724.94
Fort Snelling Fens	W3	726.87	6/8/2012	-2.19	724.68
Fort Snelling Fens	W3	726.87	7/27/2012	-3.67	723.20
Fort Snelling Fens	W3	726.87	8/31/2012	-2.81	724.06
Fort Snelling Fens	W3	726.87	9/21/2012	-2.85	724.02
Fort Snelling Fens	W3	726.87	10/8/2012	-2.85	724.02
Fort Snelling Fens	W3	726.87	11/15/2012	-2.53	724.34
Fort Snelling Fens	W3	726.87	12/4/2012	-2.46	724.41
Fort Snelling Fens	W3	726.87	3/22/2013		
Fort Snelling Fens	W3	726.87	4/8/2013	-1.82	725.05
Fort Snelling Fens	W3	726.87	5/6/2013	-1.85	725.02
Fort Snelling Fens	W3	726.87	6/3/2013	-1.97	724.90
Fort Snelling Fens	W3	726.87	7/2/2013	-2.16	724.71
Fort Snelling Fens	W3	726.87	8/1/2013	-2.57	724.30
Fort Snelling Fens	W3	726.87	9/3/2013	-2.89	723.98
Fort Snelling Fens	W3	726.87	10/9/2013	-2.84	724.03
Fort Snelling Fens	W3	726.87	11/7/2013	-2.57	724.30
Fort Snelling Fens	W3	726.87	12/2/2013		
Fort Snelling Fens	W3	726.87	3/13/2015		
Fort Snelling Fens	W3	726.87	4/3/2015	-2.12	724.75
Fort Snelling Fens	W3	726.87	5/8/2015	-2.14	724.73
Fort Snelling Fens	W3	726.87	6/2/2015	-2.11	724.76
Fort Snelling Fens	W3	726.87	7/9/2015	-2.21	724.66
Fort Snelling Fens	W3	726.87	8/10/2015	-2.54	724.33
Fort Snelling Fens	W3	726.87	9/9/2015	-2.33	724.54
Fort Snelling Fens	S1-USGS	723.44	3/28/2007	-0.96	722.48
Fort Snelling Fens	S1-USGS	723.44	4/26/2007	-0.94	722.50
Fort Snelling Fens	S1-USGS	723.44	5/30/2007	-0.88	722.56
Fort Snelling Fens	S1-USGS	723.44	6/20/2007	-0.94	722.50
Fort Snelling Fens	S1-USGS	723.44	7/13/2007	-2.00	721.44

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S1-USGS	723.44	8/17/2007	-0.60	722.84
Fort Snelling Fens	S1-USGS	723.44	9/21/2007	-0.12	723.32
Fort Snelling Fens	S1-USGS	723.44	10/11/2007	-0.11	723.33
Fort Snelling Fens	S1-USGS	723.44	11/13/2007	-0.48	722.96
Fort Snelling Fens	S1-USGS	723.44	12/7/2007		
Fort Snelling Fens	S1-USGS	723.44	3/5/2008		
Fort Snelling Fens	S1-USGS	723.44	4/15/2008	-0.93	722.51
Fort Snelling Fens	S1-USGS	723.44	5/12/2008	-1.01	722.43
Fort Snelling Fens	S1-USGS	723.44	6/23/2008	-1.07	722.37
Fort Snelling Fens	S1-USGS	723.44	7/22/2008	-1.11	722.33
Fort Snelling Fens	S1-USGS	723.44	8/19/2008	-1.16	722.28
Fort Snelling Fens	S1-USGS	723.44	9/9/2008	-1.18	722.26
Fort Snelling Fens	S1-USGS	723.44	10/15/2008	-1.14	722.30
Fort Snelling Fens	S1-USGS	723.44	11/26/2008		
Fort Snelling Fens	S1-USGS	723.44	12/18/2008		
Fort Snelling Fens	S1-USGS	723.44	3/26/2009		
Fort Snelling Fens	S1-USGS	723.44	4/29/2009	-1.42	722.02
Fort Snelling Fens	S1-USGS	723.44	5/29/2009	-1.35	722.09
Fort Snelling Fens	S1-USGS	723.44	6/17/2009	-1.36	722.08
Fort Snelling Fens	S1-USGS	723.44	7/17/2009	-1.40	722.04
Fort Snelling Fens	S1-USGS	723.44	8/24/2009	-1.40	722.04
Fort Snelling Fens	S1-USGS	723.44	9/25/2009	-1.41	722.03
Fort Snelling Fens	S1-USGS	723.44	10/15/2009	-1.40	722.04
Fort Snelling Fens	S1-USGS	723.44	11/6/2009	-1.37	722.07
Fort Snelling Fens	S1-USGS	723.44	12/8/2009		
Fort Snelling Fens	S1-USGS	723.44	3/2/2010		
Fort Snelling Fens	S1-USGS	723.44	4/27/2010	-1.55	721.89
Fort Snelling Fens	S1-USGS	723.44	5/11/2010	-1.55	721.89
Fort Snelling Fens	S1-USGS	723.44	6/9/2010	-1.56	721.88
Fort Snelling Fens	S1-USGS	723.44	7/26/2010	-1.55	721.89
Fort Snelling Fens	S1-USGS	723.44	8/12/2010	-1.55	721.89
Fort Snelling Fens	S1-USGS	723.44	9/14/2010	-1.55	721.89
Fort Snelling Fens	S1-USGS	723.44	10/18/2010	-1.58	721.86
Fort Snelling Fens	S1-USGS	723.44	11/10/2010	-1.56	721.88
Fort Snelling Fens	S1-USGS	723.44	12/8/2010		
Fort Snelling Fens	S1-USGS	723.44	3/4/2011		
Fort Snelling Fens	S1-USGS	723.44	4/29/2011	-1.79	721.65
Fort Snelling Fens	S1-USGS	723.44	5/27/2011	-1.80	721.64
Fort Snelling Fens	S1-USGS	723.44	6/28/2011	-1.80	721.64
Fort Snelling Fens	S1-USGS	723.44	7/14/2011	-1.81	721.63
Fort Snelling Fens	S1-USGS	723.44	8/9/2011	-1.82	721.62
Fort Snelling Fens	S1-USGS	723.44	9/9/2011	-1.80	721.64

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S1-USGS	723.44	10/13/2011	-1.84	721.60
Fort Snelling Fens	S1-USGS	723.44	11/23/2011	-1.84	721.60
Fort Snelling Fens	S1-USGS	723.44	12/14/2011		
Fort Snelling Fens	S1-USGS	723.44	3/30/2012	-2.03	721.41
Fort Snelling Fens	S1-USGS	723.44	4/26/2012	-1.94	721.50
Fort Snelling Fens	S1-USGS	723.44	5/17/2012	-1.94	721.50
Fort Snelling Fens	S1-USGS	723.44	6/8/2012	-1.88	721.56
Fort Snelling Fens	S1-USGS	723.44	7/27/2012	-1.86	721.58
Fort Snelling Fens	S1-USGS	723.44	8/31/2012	-1.85	721.59
Fort Snelling Fens	S1-USGS	723.44	9/21/2012	-1.87	721.57
Fort Snelling Fens	S1-USGS	723.44	10/8/2012	-1.88	721.56
Fort Snelling Fens	S1-USGS	723.44	11/15/2012	-1.81	721.63
Fort Snelling Fens	S1-USGS	723.44	12/4/2012	-1.82	721.62
Fort Snelling Fens	S1-USGS	723.44	3/22/2013		
Fort Snelling Fens	S1-USGS	723.44	4/8/2013		
Fort Snelling Fens	S1-USGS	723.44	5/6/2013	-1.96	721.48
Fort Snelling Fens	S1-USGS	723.44	6/3/2013	-1.87	721.57
Fort Snelling Fens	S1-USGS	723.44	7/2/2013	-1.82	721.62
Fort Snelling Fens	S1-USGS	723.44	8/1/2013	-1.84	721.60
Fort Snelling Fens	S1-USGS	723.44	9/3/2013	-1.83	721.61
Fort Snelling Fens	S1-USGS	723.44	10/9/2013	-1.84	721.60
Fort Snelling Fens	S1-USGS	723.44	11/7/2013	-1.77	721.67
Fort Snelling Fens	S1-USGS	723.44	12/2/2013		
Fort Snelling Fens	S1-USGS	723.44	3/13/2015		
Fort Snelling Fens	S1-USGS	723.44	4/3/2015	-1.99	721.45
Fort Snelling Fens	S1-USGS	723.44	5/8/2015	-1.96	721.48
Fort Snelling Fens	S1-USGS	723.44	6/2/2015	-1.89	721.55
Fort Snelling Fens	S1-USGS	723.44	7/9/2015	-1.85	721.59
Fort Snelling Fens	S1-USGS	723.44	8/10/2015	-1.92	721.52
Fort Snelling Fens	S1-USGS	723.44	9/9/2015	-1.90	721.54
Fort Snelling Fens	S1	723.83	3/28/2007	-3.08	720.75
Fort Snelling Fens	S1	723.83	4/26/2007	-3.18	720.65
Fort Snelling Fens	S1	723.83	5/30/2007	-3.54	720.29
Fort Snelling Fens	S1	723.83	6/20/2007	-4.53	719.30
Fort Snelling Fens	S1	723.83	7/13/2007	-4.84	718.99
Fort Snelling Fens	S1	723.83	8/17/2007	-3.84	719.99
Fort Snelling Fens	S1	723.83	9/21/2007	-3.33	720.50
Fort Snelling Fens	S1	723.83	10/11/2007	-3.39	720.44
Fort Snelling Fens	S1	723.83	11/13/2007	-3.49	720.34
Fort Snelling Fens	S1	723.83	12/7/2007		

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S1	723.83	3/5/2008		
Fort Snelling Fens	S1	723.83	4/15/2008	-3.36	720.47
Fort Snelling Fens	S1	723.83	5/12/2008	-3.38	720.45
Fort Snelling Fens	S1	723.83	6/23/2008	-4.05	719.78
Fort Snelling Fens	S1	723.83	7/22/2008	-4.20	719.63
Fort Snelling Fens	S1	723.83	8/19/2008	-4.64	719.19
Fort Snelling Fens	S1	723.83	9/9/2008	-4.45	719.38
Fort Snelling Fens	S1	723.83	10/15/2008	-3.63	720.20
Fort Snelling Fens	S1	723.83	11/26/2008	-3.59	720.24
Fort Snelling Fens	S1	723.83	12/18/2008		
Fort Snelling Fens	S1	723.83	3/26/2009		
Fort Snelling Fens	S1	723.83	4/29/2009	-3.54	720.29
Fort Snelling Fens	S1	723.83	5/29/2009	-3.85	719.98
Fort Snelling Fens	S1	723.83	6/17/2009	-3.68	720.15
Fort Snelling Fens	S1	723.83	7/17/2009	-4.59	719.24
Fort Snelling Fens	S1	723.83	8/24/2009	-3.68	720.15
Fort Snelling Fens	S1	723.83	9/25/2009	-4.28	719.55
Fort Snelling Fens	S1	723.83	10/15/2009	-3.50	720.33
Fort Snelling Fens	S1	723.83	11/6/2009	-3.57	720.26
Fort Snelling Fens	S1	723.83	12/8/2009		
Fort Snelling Fens	S1	723.83	3/2/2010		
Fort Snelling Fens	S1	723.83	4/27/2010	-3.56	720.27
Fort Snelling Fens	S1	723.83	5/11/2010	-3.41	720.42
Fort Snelling Fens	S1	723.83	6/9/2010	-3.70	720.13
Fort Snelling Fens	S1	723.83	7/26/2010	-3.84	719.99
Fort Snelling Fens	S1	723.83	8/12/2010	-3.86	719.97
Fort Snelling Fens	S1	723.83	9/14/2010	-4.24	719.59
Fort Snelling Fens	S1	723.83	10/18/2010	-3.74	720.09
Fort Snelling Fens	S1	723.83	11/10/2010	-3.56	720.27
Fort Snelling Fens	S1	723.83	12/8/2010		
Fort Snelling Fens	S1	723.83	3/4/2011		
Fort Snelling Fens	S1	723.83	4/29/2011	-3.46	720.37
Fort Snelling Fens	S1	723.83	5/27/2011	-3.57	720.26
Fort Snelling Fens	S1	723.83	6/28/2011	-3.59	720.24
Fort Snelling Fens	S1	723.83	7/14/2011	-3.81	720.02
Fort Snelling Fens	S1	723.83	8/9/2011	-3.90	719.93
Fort Snelling Fens	S1	723.83	9/9/2011	-4.36	719.47
Fort Snelling Fens	S1	723.83	10/13/2011	-3.90	719.93
Fort Snelling Fens	S1	723.83	11/23/2011	-3.58	720.25
Fort Snelling Fens	S1	723.83	12/14/2011	-3.55	720.28
Fort Snelling Fens	S1	723.83	3/30/2012	-3.51	720.32
Fort Snelling Fens	S1	723.83	4/26/2012	-3.61	720.22

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S1	723.83	5/17/2012	-3.74	720.09
Fort Snelling Fens	S1	723.83	6/8/2012	-3.72	720.11
Fort Snelling Fens	S1	723.83	7/27/2012	-3.99	719.84
Fort Snelling Fens	S1	723.83	8/31/2012	-4.65	719.18
Fort Snelling Fens	S1	723.83	9/21/2012	-4.85	718.98
Fort Snelling Fens	S1	723.83	10/8/2012	-4.70	719.13
Fort Snelling Fens	S1	723.83	11/15/2012	-3.84	719.99
Fort Snelling Fens	S1	723.83	12/4/2012	-3.81	720.02
Fort Snelling Fens	S1	723.83	3/22/2013		
Fort Snelling Fens	S1	723.83	4/8/2013	-3.44	720.39
Fort Snelling Fens	S1	723.83	5/6/2013	-3.63	720.20
Fort Snelling Fens	S1	723.83	6/3/2013	-3.71	720.12
Fort Snelling Fens	S1	723.83	7/2/2013	-4.01	719.82
Fort Snelling Fens	S1	723.83	8/1/2013	-4.51	719.32
Fort Snelling Fens	S1	723.83	9/3/2013	-5.00	718.83
Fort Snelling Fens	S1	723.83	10/9/2013	-4.40	719.43
Fort Snelling Fens	S1	723.83	11/7/2013	-3.89	719.94
Fort Snelling Fens	S1	723.83	12/2/2013	-4.02	719.81
Fort Snelling Fens	S1	723.83	3/13/2015		
Fort Snelling Fens	S1	723.83	4/3/2015	-3.80	720.03
Fort Snelling Fens	S1	723.83	5/8/2015	-3.76	720.07
Fort Snelling Fens	S1	723.83	6/2/2015	-4.18	719.65
Fort Snelling Fens	S1	723.83	7/9/2015	-4.11	719.72
Fort Snelling Fens	S1	723.83	8/10/2015	-4.64	719.19
Fort Snelling Fens	S1	723.83	9/9/2015	-4.35	719.48
Fort Snelling Fens	S2-USGS	722.35	3/28/2007	-1.23	721.12
Fort Snelling Fens	S2-USGS	722.35	4/26/2007	-1.19	721.16
Fort Snelling Fens	S2-USGS	722.35	5/30/2007	-1.57	720.78
Fort Snelling Fens	S2-USGS	722.35	6/20/2007	-1.97	720.38
Fort Snelling Fens	S2-USGS	722.35	7/13/2007	-2.24	720.11
Fort Snelling Fens	S2-USGS	722.35	8/17/2007	-3.14	719.21
Fort Snelling Fens	S2-USGS	722.35	9/21/2007	-1.90	720.45
Fort Snelling Fens	S2-USGS	722.35	10/11/2007	-1.87	720.48
Fort Snelling Fens	S2-USGS	722.35	11/13/2007	-1.65	720.70
Fort Snelling Fens	S2-USGS	722.35	12/7/2007		
Fort Snelling Fens	S2-USGS	722.35	3/5/2008		
Fort Snelling Fens	S2-USGS	722.35	4/15/2008	-1.41	720.94
Fort Snelling Fens	S2-USGS	722.35	5/12/2008	-1.54	720.81
Fort Snelling Fens	S2-USGS	722.35	6/23/2008	-1.89	720.46
Fort Snelling Fens	S2-USGS	722.35	7/22/2008	-2.15	720.20

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S2-USGS	722.35	8/19/2008	-2.30	720.05
Fort Snelling Fens	S2-USGS	722.35	9/9/2008	-2.31	720.04
Fort Snelling Fens	S2-USGS	722.35	10/15/2008	-1.92	720.43
Fort Snelling Fens	S2-USGS	722.35	11/26/2008	-1.78	720.57
Fort Snelling Fens	S2-USGS	722.35	12/18/2008		
Fort Snelling Fens	S2-USGS	722.35	3/26/2009	-1.55	720.80
Fort Snelling Fens	S2-USGS	722.35	4/29/2009	-1.78	720.57
Fort Snelling Fens	S2-USGS	722.35	5/29/2009	-1.98	720.37
Fort Snelling Fens	S2-USGS	722.35	6/17/2009	-1.97	720.38
Fort Snelling Fens	S2-USGS	722.35	7/17/2009	-2.22	720.13
Fort Snelling Fens	S2-USGS	722.35	8/24/2009	-1.96	720.39
Fort Snelling Fens	S2-USGS	722.35	9/25/2009	-2.07	720.28
Fort Snelling Fens	S2-USGS	722.35	10/15/2009	-1.81	720.54
Fort Snelling Fens	S2-USGS	722.35	11/6/2009	-1.61	720.74
Fort Snelling Fens	S2-USGS	722.35	12/8/2009		
Fort Snelling Fens	S2-USGS	722.35	3/2/2010		
Fort Snelling Fens	S2-USGS	722.35	4/27/2010	-1.85	720.50
Fort Snelling Fens	S2-USGS	722.35	5/11/2010	-1.89	720.46
Fort Snelling Fens	S2-USGS	722.35	6/9/2010	-1.96	720.39
Fort Snelling Fens	S2-USGS	722.35	7/26/2010	-1.95	720.40
Fort Snelling Fens	S2-USGS	722.35	8/12/2010	-1.97	720.38
Fort Snelling Fens	S2-USGS	722.35	9/14/2010	-2.05	720.30
Fort Snelling Fens	S2-USGS	722.35	10/18/2010	-1.97	720.38
Fort Snelling Fens	S2-USGS	722.35	11/10/2010	-1.79	720.56
Fort Snelling Fens	S2-USGS	722.35	12/8/2010		
Fort Snelling Fens	S2-USGS	722.35	3/4/2011		
Fort Snelling Fens	S2-USGS	722.35	4/29/2011	-1.63	720.72
Fort Snelling Fens	S2-USGS	722.35	5/27/2011	-1.75	720.60
Fort Snelling Fens	S2-USGS	722.35	6/28/2011	-1.73	720.62
Fort Snelling Fens	S2-USGS	722.35	7/14/2011	-1.94	720.41
Fort Snelling Fens	S2-USGS	722.35	8/9/2011	-1.99	720.36
Fort Snelling Fens	S2-USGS	722.35	9/9/2011	-2.21	720.14
Fort Snelling Fens	S2-USGS	722.35	10/13/2011	-2.09	720.26
Fort Snelling Fens	S2-USGS	722.35	11/23/2011	-1.86	720.49
Fort Snelling Fens	S2-USGS	722.35	12/14/2011	-1.72	720.63
Fort Snelling Fens	S2-USGS	722.35	3/30/2012	-1.44	720.91
Fort Snelling Fens	S2-USGS	722.35	4/26/2012	-1.36	720.99
Fort Snelling Fens	S2-USGS	722.35	5/17/2012	-1.55	720.80
Fort Snelling Fens	S2-USGS	722.35	6/8/2012	-1.73	720.62
Fort Snelling Fens	S2-USGS	722.35	7/27/2012	-2.11	720.24
Fort Snelling Fens	S2-USGS	722.35	8/31/2012	-2.21	720.14
Fort Snelling Fens	S2-USGS	722.35	9/21/2012	-2.25	720.10

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S2-USGS	722.35	10/8/2012	-2.18	720.17
Fort Snelling Fens	S2-USGS	722.35	11/15/2012	-1.83	720.52
Fort Snelling Fens	S2-USGS	722.35	12/4/2012	-1.93	720.42
Fort Snelling Fens	S2-USGS	722.35	3/22/2013		
Fort Snelling Fens	S2-USGS	722.35	4/8/2013	-1.38	720.97
Fort Snelling Fens	S2-USGS	722.35	5/6/2013	-1.48	720.87
Fort Snelling Fens	S2-USGS	722.35	6/3/2013	-1.58	720.77
Fort Snelling Fens	S2-USGS	722.35	7/2/2013	-1.65	720.70
Fort Snelling Fens	S2-USGS	722.35	8/1/2013	-2.04	720.31
Fort Snelling Fens	S2-USGS	722.35	9/3/2013	-2.28	720.07
Fort Snelling Fens	S2-USGS	722.35	10/9/2013	-2.25	720.10
Fort Snelling Fens	S2-USGS	722.35	11/7/2013	-1.92	720.43
Fort Snelling Fens	S2-USGS	722.35	12/2/2013		
Fort Snelling Fens	S2-USGS	722.35	3/13/2015		
Fort Snelling Fens	S2-USGS	722.35	4/3/2015	-1.62	720.73
Fort Snelling Fens	S2-USGS	722.35	5/8/2015	-1.54	720.81
Fort Snelling Fens	S2-USGS	722.35	6/2/2015	-2.84	719.51
Fort Snelling Fens	S2-USGS	722.35	7/9/2015	-1.42	720.93
Fort Snelling Fens	S2-USGS	722.35	8/10/2015	-1.96	720.39
Fort Snelling Fens	S2-USGS	722.35	9/9/2015	-2.10	720.25
Fort Snelling Fens	S2	721.13	3/28/2007	-2.37	718.76
Fort Snelling Fens	S2	721.13	4/26/2007	-2.47	718.66
Fort Snelling Fens	S2	721.13	5/30/2007	-2.70	718.43
Fort Snelling Fens	S2	721.13	6/20/2007	-3.26	717.87
Fort Snelling Fens	S2	721.13	7/13/2007	-3.55	717.58
Fort Snelling Fens	S2	721.13	8/17/2007	-2.25	718.88
Fort Snelling Fens	S2	721.13	9/21/2007	-2.69	718.44
Fort Snelling Fens	S2	721.13	10/11/2007	-2.66	718.47
Fort Snelling Fens	S2	721.13	11/13/2007	-2.67	718.46
Fort Snelling Fens	S2	721.13	12/7/2007	-2.62	718.51
Fort Snelling Fens	S2	721.13	3/5/2008		
Fort Snelling Fens	S2	721.13	4/15/2008	-2.62	718.51
Fort Snelling Fens	S2	721.13	5/12/2008	-2.66	718.47
Fort Snelling Fens	S2	721.13	6/23/2008	-2.97	718.16
Fort Snelling Fens	S2	721.13	7/22/2008	-3.21	717.92
Fort Snelling Fens	S2	721.13	8/19/2008	-3.52	717.61
Fort Snelling Fens	S2	721.13	9/9/2008	-3.44	717.69
Fort Snelling Fens	S2	721.13	10/15/2008	-2.94	718.19
Fort Snelling Fens	S2	721.13	11/26/2008	-2.83	718.30
Fort Snelling Fens	S2	721.13	12/18/2008		

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S2	721.13	3/26/2009	-2.40	718.73
Fort Snelling Fens	S2	721.13	4/29/2009	-2.75	718.38
Fort Snelling Fens	S2	721.13	5/29/2009	-2.93	718.20
Fort Snelling Fens	S2	721.13	6/17/2009	-2.79	718.34
Fort Snelling Fens	S2	721.13	7/17/2009	-3.27	717.86
Fort Snelling Fens	S2	721.13	8/24/2009	-2.84	718.29
Fort Snelling Fens	S2	721.13	9/25/2009	-3.04	718.09
Fort Snelling Fens	S2	721.13	10/15/2009	-2.69	718.44
Fort Snelling Fens	S2	721.13	11/6/2009	-2.71	718.42
Fort Snelling Fens	S2	721.13	12/8/2009	-2.75	718.38
Fort Snelling Fens	S2	721.13	3/2/2010		
Fort Snelling Fens	S2	721.13	4/27/2010	-2.70	718.43
Fort Snelling Fens	S2	721.13	5/11/2010	-2.65	718.48
Fort Snelling Fens	S2	721.13	6/9/2010	-2.81	718.32
Fort Snelling Fens	S2	721.13	7/26/2010	-2.86	718.27
Fort Snelling Fens	S2	721.13	8/12/2010	-2.90	718.23
Fort Snelling Fens	S2	721.13	9/14/2010	-3.11	718.02
Fort Snelling Fens	S2	721.13	10/18/2010	-2.77	718.36
Fort Snelling Fens	S2	721.13	11/10/2010	-2.68	718.45
Fort Snelling Fens	S2	721.13	12/8/2010	-2.54	718.59
Fort Snelling Fens	S2	721.13	3/4/2011		
Fort Snelling Fens	S2	721.13	4/29/2011	-2.58	718.55
Fort Snelling Fens	S2	721.13	5/27/2011	-2.64	718.49
Fort Snelling Fens	S2	721.13	6/28/2011	-2.67	718.46
Fort Snelling Fens	S2	721.13	7/14/2011	-2.89	718.24
Fort Snelling Fens	S2	721.13	8/9/2011	-2.98	718.15
Fort Snelling Fens	S2	721.13	9/9/2011	-3.28	717.85
Fort Snelling Fens	S2	721.13	10/13/2011	-3.04	718.09
Fort Snelling Fens	S2	721.13	11/23/2011	-2.77	718.36
Fort Snelling Fens	S2	721.13	12/14/2011	-2.72	718.41
Fort Snelling Fens	S2	721.13	3/30/2012	-2.69	718.44
Fort Snelling Fens	S2	721.13	4/26/2012	-2.75	718.38
Fort Snelling Fens	S2	721.13	5/17/2012	-2.81	718.32
Fort Snelling Fens	S2	721.13	6/8/2012	-2.83	718.30
Fort Snelling Fens	S2	721.13	7/27/2012	-2.98	718.15
Fort Snelling Fens	S2	721.13	8/31/2012	-3.35	717.78
Fort Snelling Fens	S2	721.13	9/21/2012	-3.51	717.62
Fort Snelling Fens	S2	721.13	10/8/2012	-3.42	717.71
Fort Snelling Fens	S2	721.13	11/15/2012	-2.91	718.22
Fort Snelling Fens	S2	721.13	12/4/2012	-2.82	718.31
Fort Snelling Fens	S2	721.13	3/22/2013		
Fort Snelling Fens	S2	721.13	4/8/2013	-2.52	718.61

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen, flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S2	721.13	5/6/2013	-2.73	718.40
Fort Snelling Fens	S2	721.13	6/3/2013	-2.79	718.34
Fort Snelling Fens	S2	721.13	7/2/2013	-2.89	718.24
Fort Snelling Fens	S2	721.13	8/1/2013	-3.18	717.95
Fort Snelling Fens	S2	721.13	9/3/2013	-3.47	717.66
Fort Snelling Fens	S2	721.13	10/9/2013	-3.11	718.02
Fort Snelling Fens	S2	721.13	11/7/2013	-2.81	718.32
Fort Snelling Fens	S2	721.13	12/2/2013	-2.85	718.28
Fort Snelling Fens	S2	721.13	3/13/2015		
Fort Snelling Fens	S2	721.13	4/3/2015	-2.70	718.43
Fort Snelling Fens	S2	721.13	5/8/2015	-2.71	718.42
Fort Snelling Fens	S2	721.13	6/2/2015	-1.95	719.18
Fort Snelling Fens	S2	721.13	7/9/2015	-2.87	718.26
Fort Snelling Fens	S2	721.13	8/10/2015	-3.19	717.94
Fort Snelling Fens	S2	721.13	9/9/2015	-3.39	717.74
Fort Snelling Fens	S3-USGS	713.97	3/28/2007	-0.30	713.67
Fort Snelling Fens	S3-USGS	713.97	4/26/2007	-0.36	713.61
Fort Snelling Fens	S3-USGS	713.97	5/30/2007	-0.61	713.36
Fort Snelling Fens	S3-USGS	713.97	6/20/2007	-1.06	712.91
Fort Snelling Fens	S3-USGS	713.97	7/13/2007	-2.28	711.69
Fort Snelling Fens	S3-USGS	713.97	8/17/2007	-1.03	712.94
Fort Snelling Fens	S3-USGS	713.97	9/21/2007	-0.79	713.18
Fort Snelling Fens	S3-USGS	713.97	10/11/2007	-0.70	713.27
Fort Snelling Fens	S3-USGS	713.97	11/13/2007	-0.71	713.26
Fort Snelling Fens	S3-USGS	713.97	12/7/2007		
Fort Snelling Fens	S3-USGS	713.97	3/5/2008		
Fort Snelling Fens	S3-USGS	713.97	4/15/2008	-0.50	713.47
Fort Snelling Fens	S3-USGS	713.97	5/12/2008	-0.56	713.41
Fort Snelling Fens	S3-USGS	713.97	6/23/2008	-0.92	713.05
Fort Snelling Fens	S3-USGS	713.97	7/22/2008	-1.07	712.90
Fort Snelling Fens	S3-USGS	713.97	8/19/2008	-1.21	712.76
Fort Snelling Fens	S3-USGS	713.97	9/9/2008	-1.20	712.77
Fort Snelling Fens	S3-USGS	713.97	10/15/2008	-0.84	713.13
Fort Snelling Fens	S3-USGS	713.97	11/26/2008	-0.74	713.23
Fort Snelling Fens	S3-USGS	713.97	12/18/2008		
Fort Snelling Fens	S3-USGS	713.97	3/26/2009	-0.46	713.51
Fort Snelling Fens	S3-USGS	713.97	4/29/2009	-0.60	713.37
Fort Snelling Fens	S3-USGS	713.97	5/29/2009	-0.82	713.15
Fort Snelling Fens	S3-USGS	713.97	6/17/2009	-0.82	713.15
Fort Snelling Fens	S3-USGS	713.97	7/17/2009	-1.08	712.89

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S3-USGS	713.97	8/24/2009	-0.72	713.25
Fort Snelling Fens	S3-USGS	713.97	9/25/2009	-1.05	712.92
Fort Snelling Fens	S3-USGS	713.97	10/15/2009	-0.69	713.28
Fort Snelling Fens	S3-USGS	713.97	11/6/2009	-0.61	713.36
Fort Snelling Fens	S3-USGS	713.97	12/8/2009		
Fort Snelling Fens	S3-USGS	713.97	3/2/2010		
Fort Snelling Fens	S3-USGS	713.97	4/27/2010	-0.61	713.36
Fort Snelling Fens	S3-USGS	713.97	5/11/2010	-0.61	713.36
Fort Snelling Fens	S3-USGS	713.97	6/9/2010	-0.72	713.25
Fort Snelling Fens	S3-USGS	713.97	7/26/2010	-0.76	713.21
Fort Snelling Fens	S3-USGS	713.97	8/12/2010	-0.87	713.10
Fort Snelling Fens	S3-USGS	713.97	9/14/2010	-0.92	713.05
Fort Snelling Fens	S3-USGS	713.97	10/18/2010	-0.75	713.22
Fort Snelling Fens	S3-USGS	713.97	11/10/2010	-0.66	713.31
Fort Snelling Fens	S3-USGS	713.97	12/8/2010		
Fort Snelling Fens	S3-USGS	713.97	3/4/2011		
Fort Snelling Fens	S3-USGS	713.97	4/29/2011	-0.51	713.46
Fort Snelling Fens	S3-USGS	713.97	5/27/2011	-0.60	713.37
Fort Snelling Fens	S3-USGS	713.97	6/28/2011	-0.60	713.37
Fort Snelling Fens	S3-USGS	713.97	7/14/2011	-0.87	713.10
Fort Snelling Fens	S3-USGS	713.97	8/9/2011	-0.89	713.08
Fort Snelling Fens	S3-USGS	713.97	9/9/2011	-1.12	712.85
Fort Snelling Fens	S3-USGS	713.97	10/13/2011	-0.98	712.99
Fort Snelling Fens	S3-USGS	713.97	11/23/2011	-0.69	713.28
Fort Snelling Fens	S3-USGS	713.97	12/14/2011	-0.60	713.37
Fort Snelling Fens	S3-USGS	713.97	3/30/2012	-0.49	713.48
Fort Snelling Fens	S3-USGS	713.97	4/26/2012	-0.50	713.47
Fort Snelling Fens	S3-USGS	713.97	5/17/2012	-0.61	713.36
Fort Snelling Fens	S3-USGS	713.97	6/8/2012	-0.70	713.27
Fort Snelling Fens	S3-USGS	713.97	7/27/2012	-0.91	713.06
Fort Snelling Fens	S3-USGS	713.97	8/31/2012	-1.11	712.86
Fort Snelling Fens	S3-USGS	713.97	9/21/2012	-1.28	712.69
Fort Snelling Fens	S3-USGS	713.97	10/8/2012	-1.19	712.78
Fort Snelling Fens	S3-USGS	713.97	11/15/2012	-0.76	713.21
Fort Snelling Fens	S3-USGS	713.97	12/4/2012	-0.74	713.23
Fort Snelling Fens	S3-USGS	713.97	3/22/2013		
Fort Snelling Fens	S3-USGS	713.97	4/8/2013		
Fort Snelling Fens	S3-USGS	713.97	5/6/2013		
Fort Snelling Fens	S3-USGS	713.97	6/18/2013	-0.63	713.34
Fort Snelling Fens	S3-USGS	713.97	7/2/2013	-0.67	713.30
Fort Snelling Fens	S3-USGS	713.97	8/1/2013	-1.00	712.97
Fort Snelling Fens	S3-USGS	713.97	9/3/2013	-1.36	712.61

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S3-USGS	713.97	10/9/2013	-0.97	713.00
Fort Snelling Fens	S3-USGS	713.97	11/7/2013	-0.79	713.18
Fort Snelling Fens	S3-USGS	713.97	12/2/2013	-0.80	713.17
Fort Snelling Fens	S3-USGS	713.97	3/13/2015		
Fort Snelling Fens	S3-USGS	713.97	4/3/2015	-0.52	713.45
Fort Snelling Fens	S3-USGS	713.97	5/8/2015	-0.83	713.14
Fort Snelling Fens	S3-USGS	713.97	6/2/2015	-0.62	713.35
Fort Snelling Fens	S3-USGS	713.97	7/9/2015	-0.63	713.34
Fort Snelling Fens	S3-USGS	713.97	8/10/2015	-0.86	713.11
Fort Snelling Fens	S3-USGS	713.97	9/9/2015	-0.89	713.08
Fort Snelling Fens	S3	715.06	3/28/2007	-3.18	711.88
Fort Snelling Fens	S3	715.06	4/26/2007	-3.12	711.94
Fort Snelling Fens	S3	715.06	5/30/2007	-3.29	711.77
Fort Snelling Fens	S3	715.06	6/20/2007	-3.65	711.41
Fort Snelling Fens	S3	715.06	7/13/2007	-3.68	711.38
Fort Snelling Fens	S3	715.06	8/17/2007	-3.47	711.59
Fort Snelling Fens	S3	715.06	9/21/2007	-3.24	711.82
Fort Snelling Fens	S3	715.06	10/11/2007	-3.30	711.76
Fort Snelling Fens	S3	715.06	11/13/2007	-2.31	712.75
Fort Snelling Fens	S3	715.06	12/7/2007		
Fort Snelling Fens	S3	715.06	3/5/2008		
Fort Snelling Fens	S3	715.06	4/15/2008	-3.26	711.80
Fort Snelling Fens	S3	715.06	5/12/2008	-3.27	711.79
Fort Snelling Fens	S3	715.06	6/23/2008	-3.59	711.47
Fort Snelling Fens	S3	715.06	7/22/2008	-3.49	711.57
Fort Snelling Fens	S3	715.06	8/19/2008	-3.60	711.46
Fort Snelling Fens	S3	715.06	9/9/2008	-3.57	711.49
Fort Snelling Fens	S3	715.06	10/15/2008	-3.32	711.74
Fort Snelling Fens	S3	715.06	11/26/2008	-3.17	711.89
Fort Snelling Fens	S3	715.06	12/18/2008		
Fort Snelling Fens	S3	715.06	3/26/2009	-3.20	711.86
Fort Snelling Fens	S3	715.06	4/29/2009	-3.27	711.79
Fort Snelling Fens	S3	715.06	5/29/2009	-3.33	711.73
Fort Snelling Fens	S3	715.06	6/17/2009	-3.25	711.81
Fort Snelling Fens	S3	715.06	7/17/2009	-3.59	711.47
Fort Snelling Fens	S3	715.06	8/24/2009	-3.28	711.78
Fort Snelling Fens	S3	715.06	9/25/2009	-3.35	711.71
Fort Snelling Fens	S3	715.06	10/15/2009	-3.20	711.86
Fort Snelling Fens	S3	715.06	11/6/2009	-3.22	711.84
Fort Snelling Fens	S3	715.06	12/8/2009	-3.21	711.85

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S3	715.06	3/2/2010		
Fort Snelling Fens	S3	715.06	4/27/2010	-3.24	711.82
Fort Snelling Fens	S3	715.06	5/11/2010	-3.20	711.86
Fort Snelling Fens	S3	715.06	6/9/2010	-3.24	711.82
Fort Snelling Fens	S3	715.06	7/26/2010	-3.31	711.75
Fort Snelling Fens	S3	715.06	8/12/2010	-3.30	711.76
Fort Snelling Fens	S3	715.06	9/14/2010	-3.37	711.69
Fort Snelling Fens	S3	715.06	10/18/2010	-3.32	711.74
Fort Snelling Fens	S3	715.06	11/10/2010	-3.21	711.85
Fort Snelling Fens	S3	715.06	12/8/2010	-3.12	711.94
Fort Snelling Fens	S3	715.06	3/4/2011		
Fort Snelling Fens	S3	715.06	4/29/2011	-3.26	711.80
Fort Snelling Fens	S3	715.06	5/27/2011	-3.22	711.84
Fort Snelling Fens	S3	715.06	6/28/2011	-3.25	711.81
Fort Snelling Fens	S3	715.06	7/14/2011	-3.30	711.76
Fort Snelling Fens	S3	715.06	8/9/2011	-3.40	711.66
Fort Snelling Fens	S3	715.06	9/9/2011	-3.51	711.55
Fort Snelling Fens	S3	715.06	10/13/2011	-3.26	711.80
Fort Snelling Fens	S3	715.06	11/23/2011	-3.18	711.88
Fort Snelling Fens	S3	715.06	12/14/2011	-3.18	711.88
Fort Snelling Fens	S3	715.06	3/30/2012	-3.19	711.87
Fort Snelling Fens	S3	715.06	4/26/2012	-3.25	711.81
Fort Snelling Fens	S3	715.06	5/17/2012	-3.30	711.76
Fort Snelling Fens	S3	715.06	6/8/2012	-3.31	711.75
Fort Snelling Fens	S3	715.06	7/27/2012	-3.41	711.65
Fort Snelling Fens	S3	715.06	8/31/2012	-3.55	711.51
Fort Snelling Fens	S3	715.06	9/21/2012	-3.51	711.55
Fort Snelling Fens	S3	715.06	10/8/2012	-3.38	711.68
Fort Snelling Fens	S3	715.06	11/15/2012	-3.27	711.79
Fort Snelling Fens	S3	715.06	12/4/2012	-3.21	711.85
Fort Snelling Fens	S3	715.06	3/22/2013		
Fort Snelling Fens	S3	715.06	4/8/2013	-3.11	711.95
Fort Snelling Fens	S3	715.06	5/6/2013	-3.17	711.89
Fort Snelling Fens	S3	715.06	6/3/2013	-3.24	711.82
Fort Snelling Fens	S3	715.06	7/2/2013	-3.33	711.73
Fort Snelling Fens	S3	715.06	8/1/2013	-3.47	711.59
Fort Snelling Fens	S3	715.06	9/3/2013	-3.65	711.41
Fort Snelling Fens	S3	715.06	10/9/2013	-3.36	711.70
Fort Snelling Fens	S3	715.06	11/7/2013	-3.25	711.81
Fort Snelling Fens	S3	715.06	12/2/2013	-3.21	711.85
Fort Snelling Fens	S3	715.06	3/13/2015		
Fort Snelling Fens	S3	715.06	4/3/2015	-3.23	711.83

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Fort Snelling Fens	S3	715.06	5/8/2015	-3.17	711.89
Fort Snelling Fens	S3	715.06	6/2/2015	-3.16	711.90
Fort Snelling Fens	S3	715.06	7/9/2015	-3.33	711.73
Fort Snelling Fens	S3	715.06	8/10/2015	-3.42	711.64
Fort Snelling Fens	S3	715.06	9/9/2015	-3.32	711.74
Nicols Fens	1LN	751.59	3/28/2007	-0.76	750.83
Nicols Fens	1LN	751.59	4/26/2007	-0.80	750.79
Nicols Fens	1LN	751.59	5/30/2007	-1.01	750.58
Nicols Fens	1LN	751.59	6/20/2007	-1.17	750.42
Nicols Fens	1LN	751.59	7/13/2007	-2.32	749.27
Nicols Fens	1LN	751.59	8/17/2007	-1.14	750.45
Nicols Fens	1LN	751.59	9/21/2007	-0.88	750.71
Nicols Fens	1LN	751.59	10/11/2007	-0.78	750.81
Nicols Fens	1LN	751.59	11/13/2007	-0.79	750.80
Nicols Fens	1LN	751.59	12/7/2007		
Nicols Fens	1LN	751.59	3/5/2008		
Nicols Fens	1LN	751.59	4/15/2008	-0.86	750.73
Nicols Fens	1LN	751.59	5/12/2008	-0.69	750.90
Nicols Fens	1LN	751.59	6/23/2008	-0.86	750.73
Nicols Fens	1LN	751.59	7/22/2008	-1.02	750.57
Nicols Fens	1LN	751.59	8/19/2008	-1.20	750.39
Nicols Fens	1LN	751.59	9/9/2008	-1.22	750.37
Nicols Fens	1LN	751.59	10/15/2008	-1.16	750.43
Nicols Fens	1LN	751.59	11/26/2008		
Nicols Fens	1LN	751.59	12/18/2008		
Nicols Fens	1LN	751.59	3/26/2009	-0.90	750.69
Nicols Fens	1LN	751.59	4/29/2009	-1.05	750.54
Nicols Fens	1LN	751.59	5/29/2009	-1.20	750.39
Nicols Fens	1LN	751.59	6/17/2009	-1.18	750.41
Nicols Fens	1LN	751.59	7/17/2009	-1.31	750.28
Nicols Fens	1LN	751.59	8/24/2009	-1.01	750.58
Nicols Fens	1LN	751.59	9/25/2009	-1.28	750.31
Nicols Fens	1LN	751.59	10/15/2009	-1.01	750.58
Nicols Fens	1LN	751.59	11/6/2009	-1.01	750.58
Nicols Fens	1LN	751.59	12/8/2009		
Nicols Fens	1LN	751.59	3/2/2010		
Nicols Fens	1LN	751.59	4/27/2010	-0.93	750.66
Nicols Fens	1LN	751.59	5/11/2010	-0.92	750.67
Nicols Fens	1LN	751.59	6/9/2010	-1.15	750.44
Nicols Fens	1LN	751.59	7/26/2010	-1.06	750.53

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen, flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	1LN	751.59	8/12/2010	-1.11	750.48
Nicols Fens	1LN	751.59	9/14/2010	-1.11	750.48
Nicols Fens	1LN	751.59	10/18/2010	-1.04	750.55
Nicols Fens	1LN	751.59	11/10/2010	-1.10	750.49
Nicols Fens	1LN	751.59	12/8/2010		
Nicols Fens	1LN	751.59	3/4/2011		
Nicols Fens	1LN	751.59	4/29/2011	-0.66	750.93
Nicols Fens	1LN	751.59	5/27/2011	-0.58	751.01
Nicols Fens	1LN	751.59	6/28/2011	-0.61	750.98
Nicols Fens	1LN	751.59	7/14/2011	-0.87	750.72
Nicols Fens	1LN	751.59	8/9/2011	-0.85	750.74
Nicols Fens	1LN	751.59	9/9/2011	-1.02	750.57
Nicols Fens	1LN	751.59	10/13/2011	-1.05	750.54
Nicols Fens	1LN	751.59	11/23/2011	-1.03	750.56
Nicols Fens	1LN	751.59	12/14/2011	-1.04	750.55
Nicols Fens	1LN	751.59	3/30/2012	-0.98	750.61
Nicols Fens	1LN	751.59	4/26/2012	-1.01	750.58
Nicols Fens	1LN	751.59	5/17/2012	-0.90	750.69
Nicols Fens	1LN	751.59	6/8/2012	-0.74	750.85
Nicols Fens	1LN	751.59	7/27/2012	-0.95	750.64
Nicols Fens	1LN	751.59	8/31/2012	-1.16	750.43
Nicols Fens	1LN	751.59	9/21/2012	-1.34	750.25
Nicols Fens	1LN	751.59	10/8/2012	-1.35	750.24
Nicols Fens	1LN	751.59	11/15/2012	-1.37	750.22
Nicols Fens	1LN	751.59	12/4/2012	-1.38	750.21
Nicols Fens	1LN	751.59	3/22/2013		
Nicols Fens	1LN	751.59	4/8/2013	-0.87	750.72
Nicols Fens	1LN	751.59	5/6/2013	-0.82	750.77
Nicols Fens	1LN	751.59	6/3/2013	-0.72	750.87
Nicols Fens	1LN	751.59	7/2/2013	-0.80	750.79
Nicols Fens	1LN	751.59	8/1/2013	-0.89	750.70
Nicols Fens	1LN	751.59	9/3/2013	-1.08	750.51
Nicols Fens	1LN	751.59	10/9/2013	-1.14	750.45
Nicols Fens	1LN	751.59	11/7/2013	-1.08	750.51
Nicols Fens	1LN	751.59	12/2/2013		
Nicols Fens	1LN	751.59	7/9/2015	-0.83	750.76
Nicols Fens	1LN	751.59	8/10/2015	-0.91	750.68
Nicols Fens	1LN	751.59	9/9/2015	-0.92	750.67
Nicols Fens	1LS	751.43	2/8/2007	-4.39	747.04
Nicols Fens	1LS	751.43	3/28/2007	-2.84	748.59

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	1LS	751.43	4/26/2007	-3.62	747.81
Nicols Fens	1LS	751.43	5/30/2007	-4.61	746.82
Nicols Fens	1LS	751.43	6/20/2007	-6.58	744.85
Nicols Fens	1LS	751.43	7/13/2007	-7.68	743.75
Nicols Fens	1LS	751.43	8/17/2007	-4.96	746.47
Nicols Fens	1LS	751.43	9/21/2007	-3.85	747.58
Nicols Fens	1LS	751.43	10/11/2007	-3.78	747.65
Nicols Fens	1LS	751.43	11/13/2007	-4.16	747.27
Nicols Fens	1LS	751.43	12/7/2007	-4.11	747.32
Nicols Fens	1LS	751.43	3/5/2008	-4.16	747.27
Nicols Fens	1LS	751.43	4/15/2008	-3.39	748.04
Nicols Fens	1LS	751.43	5/12/2008	-3.63	747.80
Nicols Fens	1LS	751.43	6/23/2008	-4.99	746.44
Nicols Fens	1LS	751.43	7/22/2008	-6.06	745.37
Nicols Fens	1LS	751.43	8/19/2008	-7.15	744.28
Nicols Fens	1LS	751.43	9/9/2008	-6.70	744.73
Nicols Fens	1LS	751.43	10/15/2008	-4.54	746.89
Nicols Fens	1LS	751.43	11/26/2008	-4.32	747.11
Nicols Fens	1LS	751.43	12/18/2008	-4.36	747.07
Nicols Fens	1LS	751.43	3/26/2009	-3.45	747.98
Nicols Fens	1LS	751.43	4/29/2009	-3.67	747.76
Nicols Fens	1LS	751.43	5/29/2009	-5.01	746.42
Nicols Fens	1LS	751.43	6/17/2009	-4.36	747.07
Nicols Fens	1LS	751.43	7/17/2009	-6.67	744.76
Nicols Fens	1LS	751.43	8/24/2009	-4.09	747.34
Nicols Fens	1LS	751.43	9/25/2009	-5.72	745.71
Nicols Fens	1LS	751.43	10/15/2009	-3.56	747.87
Nicols Fens	1LS	751.43	11/6/2009	-3.84	747.59
Nicols Fens	1LS	751.43	12/8/2009	-4.23	747.20
Nicols Fens	1LS	751.43	3/2/2010	-3.98	747.45
Nicols Fens	1LS	751.43	4/27/2010	-3.79	747.64
Nicols Fens	1LS	751.43	5/11/2010	-3.33	748.10
Nicols Fens	1LS	751.43	6/9/2010	-4.31	747.12
Nicols Fens	1LS	751.43	7/26/2010	-4.44	746.99
Nicols Fens	1LS	751.43	8/12/2010	-4.40	747.03
Nicols Fens	1LS	751.43	9/14/2010	-5.61	745.82
Nicols Fens	1LS	751.43	10/18/2010	-4.53	746.90
Nicols Fens	1LS	751.43	11/10/2010	-4.10	747.33
Nicols Fens	1LS	751.43	12/8/2010	-3.84	747.59
Nicols Fens	1LS	751.43	3/4/2011	-3.75	747.68
Nicols Fens	1LS	751.43	4/29/2011	-3.27	748.16
Nicols Fens	1LS	751.43	5/27/2011	-3.64	747.79

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen / flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	1LS	751.43	6/28/2011	-3.90	747.53
Nicols Fens	1LS	751.43	7/14/2011	-5.49	745.94
Nicols Fens	1LS	751.43	8/9/2011	-5.71	745.72
Nicols Fens	1LS	751.43	9/9/2011	-6.79	744.64
Nicols Fens	1LS	751.43	10/13/2011	-5.85	745.58
Nicols Fens	1LS	751.43	11/23/2011	-4.32	747.11
Nicols Fens	1LS	751.43	12/14/2011	-4.08	747.35
Nicols Fens	1LS	751.43	3/30/2012	-3.71	747.72
Nicols Fens	1LS	751.43	4/26/2012	-4.04	747.39
Nicols Fens	1LS	751.43	5/17/2012	-4.42	747.01
Nicols Fens	1LS	751.43	6/8/2012	-4.70	746.73
Nicols Fens	1LS	751.43	7/27/2012	-5.99	745.44
Nicols Fens	1LS	751.43	8/31/2012	-6.75	744.68
Nicols Fens	1LS	751.43	9/21/2012	-7.28	744.15
Nicols Fens	1LS	751.43	10/8/2012	-6.30	745.13
Nicols Fens	1LS	751.43	11/15/2012	-4.36	747.07
Nicols Fens	1LS	751.43	12/4/2012	-4.28	747.15
Nicols Fens	1LS	751.43	3/22/2013	-4.03	747.40
Nicols Fens	1LS	751.43	4/8/2013	-3.17	748.26
Nicols Fens	1LS	751.43	5/6/2013	-3.57	747.86
Nicols Fens	1LS	751.43	6/3/2013	-3.78	747.65
Nicols Fens	1LS	751.43	7/2/2013	-4.41	747.02
Nicols Fens	1LS	751.43	8/1/2013	-5.67	745.76
Nicols Fens	1LS	751.43	9/3/2013	-6.28	745.15
Nicols Fens	1LS	751.43	10/9/2013	-5.44	745.99
Nicols Fens	1LS	751.43	11/7/2013	-4.12	747.31
Nicols Fens	1LS	751.43	12/2/2013	-4.26	747.17
Nicols Fens	1LS	751.43	3/13/2015	-4.05	747.38
Nicols Fens	1LS	751.43	4/3/2015	-3.37	748.06
Nicols Fens	1LS	751.43	5/8/2015	-3.21	748.22
Nicols Fens	1LS	751.43	6/2/2015	-4.04	747.39
Nicols Fens	1LS	751.43	7/9/2015	-3.62	747.81
Nicols Fens	1LS	751.43	8/10/2015	-5.05	746.38
Nicols Fens	1LS	751.43	9/9/2015	-4.60	746.83
Nicols Fens	F3	720.43	3/28/2007	-0.69	719.74
Nicols Fens	F3	720.43	4/26/2007	-0.60	719.83
Nicols Fens	F3	720.43	5/30/2007	-1.53	718.90
Nicols Fens	F3	720.43	6/20/2007	-2.00	718.43
Nicols Fens	F3	720.43	7/13/2007	-2.34	718.09
Nicols Fens	F3	720.43	8/17/2007	-1.40	719.03

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen, flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F3	720.43	9/21/2007	-1.03	719.40
Nicols Fens	F3	720.43	10/11/2007	-1.09	719.34
Nicols Fens	F3	720.43	11/13/2007	-1.09	719.34
Nicols Fens	F3	720.43	12/7/2007		
Nicols Fens	F3	720.43	3/5/2008		
Nicols Fens	F3	720.43	4/16/2008	-0.88	719.55
Nicols Fens	F3	720.43	5/12/2008	-0.84	719.59
Nicols Fens	F3	720.43	6/26/2008	-1.12	719.31
Nicols Fens	F3	720.43	7/22/2008	-1.21	719.22
Nicols Fens	F3	720.43	8/19/2008	-1.31	719.12
Nicols Fens	F3	720.43	9/9/2008	-1.31	719.12
Nicols Fens	F3	720.43	10/15/2008	-0.95	719.48
Nicols Fens	F3	720.43	11/26/2008		
Nicols Fens	F3	720.43	12/18/2008		
Nicols Fens	F3	720.43	3/26/2009	-0.70	719.73
Nicols Fens	F3	720.43	4/29/2009	-0.72	719.71
Nicols Fens	F3	720.43	5/29/2009	-0.94	719.49
Nicols Fens	F3	720.43	6/17/2009	-0.84	719.59
Nicols Fens	F3	720.43	7/17/2009	-1.12	719.31
Nicols Fens	F3	720.43	8/24/2009	-0.84	719.59
Nicols Fens	F3	720.43	9/25/2009	-1.13	719.30
Nicols Fens	F3	720.43	10/15/2009	-1.71	718.72
Nicols Fens	F3	720.43	11/6/2009	-1.98	718.45
Nicols Fens	F3	720.43	12/8/2009		
Nicols Fens	F3	720.43	3/2/2010		
Nicols Fens	F3	720.43	4/27/2010	-1.71	718.72
Nicols Fens	F3	720.43	5/11/2010	-1.78	718.65
Nicols Fens	F3	720.43	6/9/2010	-1.12	719.31
Nicols Fens	F3	720.43	7/26/2010	-2.05	718.38
Nicols Fens	F3	720.43	8/12/2010	-2.17	718.26
Nicols Fens	F3	720.43	9/14/2010	-1.26	719.17
Nicols Fens	F3	720.43	10/18/2010	-0.60	719.83
Nicols Fens	F3	720.43	11/10/2010	-0.40	720.03
Nicols Fens	F3	720.43	12/8/2010		
Nicols Fens	F3	720.43	3/4/2011		
Nicols Fens	F3	720.43	4/29/2011		
Nicols Fens	F3	720.43	5/27/2011		
Nicols Fens	F3	720.43	6/28/2011		
Nicols Fens	F3	720.43	7/14/2011		
Nicols Fens	F3	720.43	8/9/2011	-0.20	720.23
Nicols Fens	F3	720.43	10/13/2011	-0.35	720.08
Nicols Fens	F3	720.43	12/14/2011		

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F3	720.43	3/30/2012	-0.28	720.15
Nicols Fens	F3	720.43	4/26/2012	-0.49	719.94
Nicols Fens	F3	720.43	5/17/2012	-0.29	720.14
Nicols Fens	F3	720.43	6/8/2012	-0.23	720.20
Nicols Fens	F3	720.43	7/27/2012	-1.04	719.39
Nicols Fens	F3	720.43	8/31/2012	-0.86	719.57
Nicols Fens	F3	720.43	9/21/2012	-1.57	718.86
Nicols Fens	F3	720.43	10/8/2012	-1.20	719.23
Nicols Fens	F3	720.43	11/15/2012	-1.49	718.94
Nicols Fens	F3	720.43	12/4/2012	-1.50	718.93
Nicols Fens	F3	720.43	3/22/2013		
Nicols Fens	F3	720.43	4/8/2013		
Nicols Fens	F3	720.43	5/6/2013		
Nicols Fens	F3	720.43	6/3/2013		
Nicols Fens	F3	720.43	7/2/2013		
Nicols Fens	F3	720.43	8/1/2013		
Nicols Fens	F3	720.43	9/3/2013		
Nicols Fens	F3	720.43	10/9/2013	-0.38	720.05
Nicols Fens	F3	720.43	11/7/2013		
Nicols Fens	F3	720.43	12/2/2013		
Nicols Fens	F3	720.43	10/9/2013	-0.67	719.76
Nicols Fens	F3	720.43	4/3/2015	-0.91	719.52
Nicols Fens	F3	720.43	5/8/2015	-0.43	720.00
Nicols Fens	F3	720.43	6/2/2015	-1.24	719.19
Nicols Fens	F3	720.43	7/9/2015	-0.27	720.16
Nicols Fens	F3	720.43	8/10/2015	-0.45	719.98
Nicols Fens	F3	720.43	9/9/2015	-0.40	720.03
Nicols Fens	F4	720.36	3/28/2007	-3.47	716.89
Nicols Fens	F4	720.36	4/26/2007	-3.49	716.87
Nicols Fens	F4	720.36	5/30/2007	-4.10	716.26
Nicols Fens	F4	720.36	6/20/2007	-4.57	715.79
Nicols Fens	F4	720.36	7/13/2007	-4.86	715.50
Nicols Fens	F4	720.36	8/17/2007	-4.23	716.13
Nicols Fens	F4	720.36	9/21/2007	-3.87	716.49
Nicols Fens	F4	720.36	10/11/2007	-3.86	716.50
Nicols Fens	F4	720.36	11/13/2007	-3.98	716.38
Nicols Fens	F4	720.36	12/7/2007	-4.06	716.30
Nicols Fens	F4	720.36	3/5/2008	-4.07	716.29
Nicols Fens	F4	720.36	4/16/2008	-3.61	716.75
Nicols Fens	F4	720.36	5/12/2008	-3.66	716.70

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen / flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F4	720.36	6/26/2008	-4.12	716.24
Nicols Fens	F4	720.36	7/22/2008	-4.16	716.20
Nicols Fens	F4	720.36	8/19/2008	-4.20	716.16
Nicols Fens	F4	720.36	9/9/2008	-4.11	716.25
Nicols Fens	F4	720.36	10/15/2008	-3.88	716.48
Nicols Fens	F4	720.36	11/26/2008	-3.94	716.42
Nicols Fens	F4	720.36	12/18/2008	-3.99	716.37
Nicols Fens	F4	720.36	3/26/2009	-3.55	716.81
Nicols Fens	F4	720.36	4/29/2009	-3.62	716.74
Nicols Fens	F4	720.36	5/29/2009	-3.91	716.45
Nicols Fens	F4	720.36	6/17/2009	-3.77	716.59
Nicols Fens	F4	720.36	7/17/2009	-4.21	716.15
Nicols Fens	F4	720.36	8/24/2009	-3.78	716.58
Nicols Fens	F4	720.36	9/25/2009	-4.15	716.21
Nicols Fens	F4	720.36	10/15/2009	-3.96	716.40
Nicols Fens	F4	720.36	11/6/2009	-4.12	716.24
Nicols Fens	F4	720.36	12/8/2009	-4.43	715.93
Nicols Fens	F4	720.36	3/2/2010	-3.90	716.46
Nicols Fens	F4	720.36	4/27/2010	-3.96	716.40
Nicols Fens	F4	720.36	5/11/2010	-3.92	716.44
Nicols Fens	F4	720.36	6/9/2010	-3.94	716.42
Nicols Fens	F4	720.36	7/26/2010	-4.25	716.11
Nicols Fens	F4	720.36	8/12/2010	-4.31	716.05
Nicols Fens	F4	720.36	9/14/2010	-4.23	716.13
Nicols Fens	F4	720.36	10/18/2010	-3.84	716.52
Nicols Fens	F4	720.36	11/10/2010	-3.65	716.71
Nicols Fens	F4	720.36	12/8/2010	-3.50	716.86
Nicols Fens	F4	720.36	3/4/2011	-3.38	716.98
Nicols Fens	F4	720.36	4/29/2011	-3.09	717.27
Nicols Fens	F4	720.36	5/27/2011	-3.14	717.22
Nicols Fens	F4	720.36	6/28/2011	-3.25	717.11
Nicols Fens	F4	720.36	7/14/2011	-3.58	716.78
Nicols Fens	F4	720.36	8/9/2011	-3.65	716.71
Nicols Fens	F4	720.36	10/13/2011	-3.67	716.69
Nicols Fens	F4	720.36	11/23/2011	-3.61	716.75
Nicols Fens	F4	720.36	12/14/2011	-3.60	716.76
Nicols Fens	F4	720.36	3/30/2012	-3.34	717.02
Nicols Fens	F4	720.36	4/26/2012	-3.47	716.89
Nicols Fens	F4	720.36	5/17/2012	-3.51	716.85
Nicols Fens	F4	720.36	6/8/2012	-3.56	716.80
Nicols Fens	F4	720.36	7/27/2012	-3.96	716.40
Nicols Fens	F4	720.36	8/31/2012	-4.03	716.33

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: frozen, flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F4	720.36	9/21/2012	-4.30	716.06
Nicols Fens	F4	720.36	10/8/2012	-4.14	716.22
Nicols Fens	F4	720.36	11/15/2012	-4.02	716.34
Nicols Fens	F4	720.36	12/4/2012	-4.04	716.32
Nicols Fens	F4	720.36	3/22/2013	-3.57	716.79
Nicols Fens	F4	720.36	4/8/2013	-3.22	717.14
Nicols Fens	F4	720.36	5/6/2013	-3.24	717.12
Nicols Fens	F4	720.36	6/3/2013	-3.25	717.11
Nicols Fens	F4	720.36	7/2/2013	-3.36	717.00
Nicols Fens	F4	720.36	8/1/2013	-3.53	716.83
Nicols Fens	F4	720.36	9/3/2013	-3.61	716.75
Nicols Fens	F4	720.36	10/9/2013	-3.56	716.80
Nicols Fens	F4	720.36	11/7/2013	-3.34	717.02
Nicols Fens	F4	720.36	12/2/2013	-2.41	717.95
Nicols Fens	F4	720.36	12/2/2013	-3.63	716.73
Nicols Fens	F4	720.36	4/3/2015	-3.38	716.98
Nicols Fens	F4	720.36	5/8/2015	-3.17	717.19
Nicols Fens	F4	720.36	6/2/2015	-3.35	717.01
Nicols Fens	F4	720.36	7/9/2015	-3.35	717.01
Nicols Fens	F4	720.36	8/10/2015	-3.61	716.75
Nicols Fens	F4	720.36	9/9/2015	-3.61	716.75
Nicols Fens	WN1-USGS	719.51	3/28/2007	-2.59	716.92
Nicols Fens	WN1-USGS	719.51	4/26/2007	-2.49	717.02
Nicols Fens	WN1-USGS	719.51	5/30/2007	-3.12	716.39
Nicols Fens	WN1-USGS	719.51	6/20/2007	-3.62	715.89
Nicols Fens	WN1-USGS	719.51	7/13/2007	-3.87	715.64
Nicols Fens	WN1-USGS	719.51	8/17/2007	-3.33	716.18
Nicols Fens	WN1-USGS	719.51	9/21/2007	-3.68	715.83
Nicols Fens	WN1-USGS	719.51	10/11/2007	-2.86	716.65
Nicols Fens	WN1-USGS	719.51	11/13/2007	-2.98	716.53
Nicols Fens	WN1-USGS	719.51	12/7/2007	-3.05	716.46
Nicols Fens	WN1-USGS	719.51	3/5/2008		
Nicols Fens	WN1-USGS	719.51	4/15/2008		
Nicols Fens	WN1-USGS	719.51	5/12/2008	-2.74	716.77
Nicols Fens	WN1-USGS	719.51	6/23/2008	-3.13	716.38
Nicols Fens	WN1-USGS	719.51	7/22/2008	-3.25	716.26
Nicols Fens	WN1-USGS	719.51	8/19/2008	-3.29	716.22
Nicols Fens	WN1-USGS	719.51	9/9/2008	-3.20	716.31
Nicols Fens	WN1-USGS	719.51	10/15/2008	-2.95	716.56
Nicols Fens	WN1-USGS	719.51	11/26/2008	-3.02	716.49

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WN1-USGS	719.51	12/18/2008	-3.08	716.43
Nicols Fens	WN1-USGS	719.51	3/26/2009		
Nicols Fens	WN1-USGS	719.51	4/29/2009	-2.65	716.86
Nicols Fens	WN1-USGS	719.51	5/29/2009	-3.00	716.51
Nicols Fens	WN1-USGS	719.51	6/17/2009	-2.86	716.65
Nicols Fens	WN1-USGS	719.51	7/17/2009	-3.33	716.18
Nicols Fens	WN1-USGS	719.51	8/24/2009	-2.86	716.65
Nicols Fens	WN1-USGS	719.51	9/25/2009	-3.22	716.29
Nicols Fens	WN1-USGS	719.51	10/15/2009	-3.06	716.45
Nicols Fens	WN1-USGS	719.51	11/6/2009	-3.18	716.33
Nicols Fens	WN1-USGS	719.51	12/8/2009	-3.45	716.06
Nicols Fens	WN1-USGS	719.51	3/2/2010	-3.01	716.50
Nicols Fens	WN1-USGS	719.51	4/27/2010	-3.04	716.47
Nicols Fens	WN1-USGS	719.51	5/11/2010	-2.99	716.52
Nicols Fens	WN1-USGS	719.51	6/9/2010	-3.04	716.47
Nicols Fens	WN1-USGS	719.51	7/26/2010	-3.36	716.15
Nicols Fens	WN1-USGS	719.51	8/12/2010	-3.31	716.20
Nicols Fens	WN1-USGS	719.51	9/14/2010	-3.30	716.21
Nicols Fens	WN1-USGS	719.51	10/18/2010	-2.90	716.61
Nicols Fens	WN1-USGS	719.51	11/10/2010	-2.72	716.79
Nicols Fens	WN1-USGS	719.51	12/8/2010	-2.56	716.95
Nicols Fens	WN1-USGS	719.51	3/4/2011		
Nicols Fens	WN1-USGS	719.51	4/29/2011	-2.16	717.35
Nicols Fens	WN1-USGS	719.51	5/27/2011	-2.20	717.31
Nicols Fens	WN1-USGS	719.51	6/28/2011	-2.32	717.19
Nicols Fens	WN1-USGS	719.51	7/14/2011	-2.65	716.86
Nicols Fens	WN1-USGS	719.51	8/9/2011	-2.73	716.78
Nicols Fens	WN1-USGS	719.51	9/9/2011	-2.84	716.67
Nicols Fens	WN1-USGS	719.51	10/13/2011	-2.73	716.78
Nicols Fens	WN1-USGS	719.51	11/23/2011	-2.68	716.83
Nicols Fens	WN1-USGS	719.51	12/14/2011	-2.65	716.86
Nicols Fens	WN1-USGS	719.51	3/30/2012	-2.41	717.10
Nicols Fens	WN1-USGS	719.51	4/26/2012	-2.56	716.95
Nicols Fens	WN1-USGS	719.51	5/17/2012	-2.59	716.92
Nicols Fens	WN1-USGS	719.51	6/8/2012	-2.65	716.86
Nicols Fens	WN1-USGS	719.51	7/27/2012	-3.04	716.47
Nicols Fens	WN1-USGS	719.51	8/31/2012	-3.11	716.40
Nicols Fens	WN1-USGS	719.51	9/21/2012	-3.39	716.12
Nicols Fens	WN1-USGS	719.51	10/8/2012	-3.22	716.29
Nicols Fens	WN1-USGS	719.51	11/15/2012	-3.09	716.42
Nicols Fens	WN1-USGS	719.51	12/4/2012	-3.11	716.40
Nicols Fens	WN1-USGS	719.51	3/22/2013		

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WN1-USGS	719.51	4/8/2013		
Nicols Fens	WN1-USGS	719.51	5/6/2013	-2.33	717.18
Nicols Fens	WN1-USGS	719.51	6/3/2013	-2.35	717.16
Nicols Fens	WN1-USGS	719.51	7/2/2013	-2.47	717.04
Nicols Fens	WN1-USGS	719.51	8/1/2013	-2.62	716.89
Nicols Fens	WN1-USGS	719.51	9/3/2013	-2.72	716.79
Nicols Fens	WN1-USGS	719.51	10/9/2013	-2.67	716.84
Nicols Fens	WN1-USGS	719.51	11/7/2013	-2.43	717.08
Nicols Fens	WN1-USGS	719.51	12/2/2013	-2.51	717.00
Nicols Fens	WN1-USGS	719.51	3/13/2015		
Nicols Fens	WN1-USGS	719.51	4/3/2015	-2.52	716.99
Nicols Fens	WN1-USGS	719.51	5/8/2015	-3.31	716.20
Nicols Fens	WN1-USGS	719.51	6/2/2015	-2.55	716.96
Nicols Fens	WN1-USGS	719.51	7/9/2015	-2.55	716.96
Nicols Fens	WN1-USGS	719.51	8/10/2015	-2.80	716.71
Nicols Fens	WN1-USGS	719.51	9/9/2015	-2.70	716.81
Nicols Fens	WT-1	719.37	2/8/2007	-4.28	715.09
Nicols Fens	WT-1	719.37	3/28/2007	-2.48	716.89
Nicols Fens	WT-1	719.37	4/26/2007	-3.19	716.18
Nicols Fens	WT-1	719.37	5/30/2007	-4.03	715.34
Nicols Fens	WT-1	719.37	6/20/2007	-5.25	714.12
Nicols Fens	WT-1	719.37	7/13/2007	-5.81	713.56
Nicols Fens	WT-1	719.37	8/17/2007	-4.59	714.78
Nicols Fens	WT-1	719.37	9/21/2007	-2.87	716.50
Nicols Fens	WT-1	719.37	10/11/2007	-3.54	715.83
Nicols Fens	WT-1	719.37	11/13/2007	-3.96	715.41
Nicols Fens	WT-1	719.37	12/7/2007	-4.11	715.26
Nicols Fens	WT-1	719.37	3/5/2008	-4.39	714.98
Nicols Fens	WT-1	719.37	4/16/2008	-3.24	716.13
Nicols Fens	WT-1	719.37	5/12/2008	-3.55	715.82
Nicols Fens	WT-1	719.37	6/23/2008	-4.53	714.84
Nicols Fens	WT-1	719.37	7/22/2008	-5.10	714.27
Nicols Fens	WT-1	719.37	8/19/2008	-5.63	713.74
Nicols Fens	WT-1	719.37	9/9/2008	-5.24	714.13
Nicols Fens	WT-1	719.37	10/15/2008	-4.12	715.25
Nicols Fens	WT-1	719.37	11/26/2008	-4.15	715.22
Nicols Fens	WT-1	719.37	12/18/2008	-4.41	714.96
Nicols Fens	WT-1	719.37	3/26/2009	-3.58	715.79
Nicols Fens	WT-1	719.37	4/29/2009	-3.55	715.82
Nicols Fens	WT-1	719.37	5/29/2009	-4.37	715.00

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-1	719.37	6/17/2009	-3.92	715.45
Nicols Fens	WT-1	719.37	7/17/2009	-5.40	713.97
Nicols Fens	WT-1	719.37	8/24/2009	-3.86	715.51
Nicols Fens	WT-1	719.37	9/25/2009	-5.11	714.26
Nicols Fens	WT-1	719.37	10/15/2009	-3.45	715.92
Nicols Fens	WT-1	719.37	11/6/2009	-3.80	715.57
Nicols Fens	WT-1	719.37	12/8/2009	-4.44	714.93
Nicols Fens	WT-1	719.37	3/2/2010	-4.24	715.13
Nicols Fens	WT-1	719.37	4/27/2010	-3.72	715.65
Nicols Fens	WT-1	719.37	5/11/2010	-3.50	715.87
Nicols Fens	WT-1	719.37	6/9/2010	-4.21	715.16
Nicols Fens	WT-1	719.37	7/26/2010	-4.32	715.05
Nicols Fens	WT-1	719.37	8/12/2010	-4.41	714.96
Nicols Fens	WT-1	719.37	9/14/2010	-5.10	714.27
Nicols Fens	WT-1	719.37	10/18/2010	-4.33	715.04
Nicols Fens	WT-1	719.37	11/10/2010	-3.86	715.51
Nicols Fens	WT-1	719.37	12/8/2010	-3.80	715.57
Nicols Fens	WT-1	719.37	3/4/2011	-3.75	715.62
Nicols Fens	WT-1	719.37	4/29/2011	-3.31	716.06
Nicols Fens	WT-1	719.37	5/27/2011	-3.47	715.90
Nicols Fens	WT-1	719.37	6/28/2011	-3.65	715.72
Nicols Fens	WT-1	719.37	7/14/2011	-4.90	714.47
Nicols Fens	WT-1	719.37	8/9/2011	-4.99	714.38
Nicols Fens	WT-1	719.37	9/9/2011	-5.36	714.01
Nicols Fens	WT-1	719.37	10/13/2011	-4.84	714.53
Nicols Fens	WT-1	719.37	11/23/2011	-4.34	715.03
Nicols Fens	WT-1	719.37	12/14/2011	-4.34	715.03
Nicols Fens	WT-1	719.37	3/30/2012	-3.65	715.72
Nicols Fens	WT-1	719.37	4/26/2012	-3.94	715.43
Nicols Fens	WT-1	719.37	5/17/2012	-4.19	715.18
Nicols Fens	WT-1	719.37	6/8/2012	-4.48	714.89
Nicols Fens	WT-1	719.37	7/27/2012	-5.09	714.28
Nicols Fens	WT-1	719.37	8/31/2012	-5.51	713.86
Nicols Fens	WT-1	719.37	9/21/2012	-5.84	713.53
Nicols Fens	WT-1	719.37	10/8/2012	-5.48	713.89
Nicols Fens	WT-1	719.37	11/15/2012	-4.55	714.82
Nicols Fens	WT-1	719.37	12/4/2012	-4.52	714.85
Nicols Fens	WT-1	719.37	3/22/2013	-4.58	714.79
Nicols Fens	WT-1	719.37	4/8/2013	-3.58	715.79
Nicols Fens	WT-1	719.37	5/6/2013		
Nicols Fens	WT-1	719.37	6/3/2013	-4.30	715.07
Nicols Fens	WT-1	719.37	7/2/2013	-4.59	714.78

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-1	719.37	8/1/2013	-5.20	714.17
Nicols Fens	WT-1	719.37	9/3/2013	-5.32	714.05
Nicols Fens	WT-1	719.37	10/9/2013	-4.73	714.64
Nicols Fens	WT-1	719.37	11/7/2013	-4.42	714.95
Nicols Fens	WT-1	719.37	12/2/2013	-4.74	714.63
Nicols Fens	WT-1	719.37	3/13/2015	-5.45	713.92
Nicols Fens	WT-1	719.37	4/3/2015	-4.55	714.82
Nicols Fens	WT-1	719.37	5/8/2015	-4.46	714.91
Nicols Fens	WT-1	719.37	6/2/2015	-5.04	714.33
Nicols Fens	WT-1	719.37	7/9/2015	-4.92	714.45
Nicols Fens	WT-1	719.37	8/10/2015	-5.59	713.78
Nicols Fens	WT-1	719.37	9/9/2015	-5.26	714.11
Nicols Fens	WN5-USGS	717.92	3/28/2007	-1.55	716.37
Nicols Fens	WN5-USGS	717.92	4/26/2007	-1.31	716.61
Nicols Fens	WN5-USGS	717.92	5/30/2007	-2.09	715.83
Nicols Fens	WN5-USGS	717.92	6/20/2007	-2.77	715.15
Nicols Fens	WN5-USGS	717.92	7/13/2007	-3.08	714.84
Nicols Fens	WN5-USGS	717.92	8/17/2007	-2.20	715.72
Nicols Fens	WN5-USGS	717.92	9/21/2007	-1.76	716.16
Nicols Fens	WN5-USGS	717.92	10/11/2007	-1.64	716.28
Nicols Fens	WN5-USGS	717.92	11/13/2007	-1.84	716.08
Nicols Fens	WN5-USGS	717.92	12/7/2007	-1.85	716.07
Nicols Fens	WN5-USGS	717.92	3/5/2008		
Nicols Fens	WN5-USGS	717.92	4/15/2008		
Nicols Fens	WN5-USGS	717.92	5/12/2008	-1.44	716.48
Nicols Fens	WN5-USGS	717.92	6/23/2008	-1.93	715.99
Nicols Fens	WN5-USGS	717.92	7/22/2008	-2.10	715.82
Nicols Fens	WN5-USGS	717.92	8/19/2008	-2.35	715.57
Nicols Fens	WN5-USGS	717.92	9/9/2008	-2.26	715.66
Nicols Fens	WN5-USGS	717.92	10/15/2008	-1.68	716.24
Nicols Fens	WN5-USGS	717.92	11/26/2008	-1.70	716.22
Nicols Fens	WN5-USGS	717.92	12/18/2008	-1.84	716.08
Nicols Fens	WN5-USGS	717.92	3/26/2009		
Nicols Fens	WN5-USGS	717.92	4/29/2009	-1.33	716.59
Nicols Fens	WN5-USGS	717.92	5/29/2009	-1.73	716.19
Nicols Fens	WN5-USGS	717.92	6/17/2009	-1.62	716.30
Nicols Fens	WN5-USGS	717.92	7/17/2009	-2.16	715.76
Nicols Fens	WN5-USGS	717.92	8/24/2009	-1.51	716.41
Nicols Fens	WN5-USGS	717.92	9/25/2009	-2.12	715.80
Nicols Fens	WN5-USGS	717.92	10/15/2009	-1.56	716.36

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WN5-USGS	717.92	11/6/2009	-1.74	716.18
Nicols Fens	WN5-USGS	717.92	12/8/2009	-2.35	715.57
Nicols Fens	WN5-USGS	717.92	3/2/2010		
Nicols Fens	WN5-USGS	717.92	4/27/2010	-1.82	716.10
Nicols Fens	WN5-USGS	717.92	5/11/2010	-1.80	716.12
Nicols Fens	WN5-USGS	717.92	6/9/2010	-1.78	716.14
Nicols Fens	WN5-USGS	717.92	7/26/2010	-2.17	715.75
Nicols Fens	WN5-USGS	717.92	8/12/2010	-2.32	715.60
Nicols Fens	WN5-USGS	717.92	9/14/2010	-2.10	715.82
Nicols Fens	WN5-USGS	717.92	10/18/2010	-1.60	716.32
Nicols Fens	WN5-USGS	717.92	11/10/2010	-1.32	716.60
Nicols Fens	WN5-USGS	717.92	12/8/2010	-1.21	716.71
Nicols Fens	WN5-USGS	717.92	3/4/2011		
Nicols Fens	WN5-USGS	717.92	4/29/2011	-0.82	717.10
Nicols Fens	WN5-USGS	717.92	5/27/2011	-0.85	717.07
Nicols Fens	WN5-USGS	717.92	6/28/2011	-0.94	716.98
Nicols Fens	WN5-USGS	717.92	7/14/2011	-1.39	716.53
Nicols Fens	WN5-USGS	717.92	8/9/2011	-1.45	716.47
Nicols Fens	WN5-USGS	717.92	9/9/2011	-1.62	716.30
Nicols Fens	WN5-USGS	717.92	10/13/2011	-1.51	716.41
Nicols Fens	WN5-USGS	717.92	11/23/2011	-1.33	716.59
Nicols Fens	WN5-USGS	717.92	12/14/2011	-1.35	716.57
Nicols Fens	WN5-USGS	717.92	3/30/2012	-1.06	716.86
Nicols Fens	WN5-USGS	717.92	4/26/2012	-1.19	716.73
Nicols Fens	WN5-USGS	717.92	5/17/2012	-1.26	716.66
Nicols Fens	WN5-USGS	717.92	6/8/2012	-1.31	716.61
Nicols Fens	WN5-USGS	717.92	7/27/2012	-1.82	716.10
Nicols Fens	WN5-USGS	717.92	8/31/2012	-1.90	716.02
Nicols Fens	WN5-USGS	717.92	9/21/2012	-2.35	715.57
Nicols Fens	WN5-USGS	717.92	10/8/2012	-2.11	715.81
Nicols Fens	WN5-USGS	717.92	11/15/2012	-1.81	716.11
Nicols Fens	WN5-USGS	717.92	12/4/2012	-1.83	716.09
Nicols Fens	WN5-USGS	717.92	3/22/2013		
Nicols Fens	WN5-USGS	717.92	4/8/2013		
Nicols Fens	WN5-USGS	717.92	5/6/2013	-0.97	716.95
Nicols Fens	WN5-USGS	717.92	6/3/2013	-0.98	716.94
Nicols Fens	WN5-USGS	717.92	7/2/2013	-1.02	716.90
Nicols Fens	WN5-USGS	717.92	8/1/2013	-1.29	716.63
Nicols Fens	WN5-USGS	717.92	9/3/2013	-1.42	716.50
Nicols Fens	WN5-USGS	717.92	10/9/2013	-1.28	716.64
Nicols Fens	WN5-USGS	717.92	11/7/2013	-1.00	716.92
Nicols Fens	WN5-USGS	717.92	12/2/2013	-1.10	716.82

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WN5-USGS	717.92	3/13/2015		
Nicols Fens	WN5-USGS	717.92	4/3/2015	-1.27	716.65
Nicols Fens	WN5-USGS	717.92	5/8/2015	-0.95	716.97
Nicols Fens	WN5-USGS	717.92	6/2/2015	-1.08	716.84
Nicols Fens	WN5-USGS	717.92	7/9/2015	-1.06	716.86
Nicols Fens	WN5-USGS	717.92	8/10/2015	-1.30	716.62
Nicols Fens	WN5-USGS	717.92	9/9/2015	-1.19	716.73
Nicols Fens	WT-5	720.69	2/8/2007	-5.96	714.73
Nicols Fens	WT-5	720.69	3/28/2007	-4.06	716.63
Nicols Fens	WT-5	720.69	4/26/2007	-4.80	715.89
Nicols Fens	WT-5	720.69	5/30/2007	-5.87	714.82
Nicols Fens	WT-5	720.69	6/20/2007	-7.01	713.68
Nicols Fens	WT-5	720.69	7/13/2007	-7.53	713.16
Nicols Fens	WT-5	720.69	8/17/2007	-6.24	714.45
Nicols Fens	WT-5	720.69	9/21/2007	-5.19	715.50
Nicols Fens	WT-5	720.69	10/11/2007	-5.04	715.65
Nicols Fens	WT-5	720.69	11/13/2007	-5.51	715.18
Nicols Fens	WT-5	720.69	12/7/2007	-5.66	715.03
Nicols Fens	WT-5	720.69	3/5/2008	-6.04	714.65
Nicols Fens	WT-5	720.69	4/15/2008	-4.95	715.74
Nicols Fens	WT-5	720.69	5/12/2008	-5.22	715.47
Nicols Fens	WT-5	720.69	6/23/2008	-5.44	715.25
Nicols Fens	WT-5	720.69	7/22/2008	-6.82	713.87
Nicols Fens	WT-5	720.69	8/19/2008	-7.25	713.44
Nicols Fens	WT-5	720.69	9/9/2008	-6.96	713.73
Nicols Fens	WT-5	720.69	10/15/2008	-5.73	714.96
Nicols Fens	WT-5	720.69	11/26/2008	-5.85	714.84
Nicols Fens	WT-5	720.69	12/18/2008	-6.14	714.55
Nicols Fens	WT-5	720.69	3/26/2009	-5.10	715.59
Nicols Fens	WT-5	720.69	4/29/2009	-5.27	715.42
Nicols Fens	WT-5	720.69	5/29/2009	-6.29	714.40
Nicols Fens	WT-5	720.69	6/17/2009	-5.62	715.07
Nicols Fens	WT-5	720.69	7/17/2009	-7.11	713.58
Nicols Fens	WT-5	720.69	8/24/2009	-5.62	715.07
Nicols Fens	WT-5	720.69	9/25/2009	-6.80	713.89
Nicols Fens	WT-5	720.69	10/15/2009	-5.09	715.60
Nicols Fens	WT-5	720.69	11/6/2009	-5.50	715.19
Nicols Fens	WT-5	720.69	12/8/2009	-6.20	714.49
Nicols Fens	WT-5	720.69	3/2/2010	-6.05	714.64
Nicols Fens	WT-5	720.69	4/27/2010	-5.45	715.24

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-5	720.69	5/11/2010	-5.17	715.52
Nicols Fens	WT-5	720.69	6/9/2010	-5.88	714.81
Nicols Fens	WT-5	720.69	7/26/2010	-6.04	714.65
Nicols Fens	WT-5	720.69	8/12/2010	-5.98	714.71
Nicols Fens	WT-5	720.69	9/14/2010	-6.71	713.98
Nicols Fens	WT-5	720.69	10/18/2010	-6.04	714.65
Nicols Fens	WT-5	720.69	11/10/2010	-5.55	715.14
Nicols Fens	WT-5	720.69	12/8/2010	-5.52	715.17
Nicols Fens	WT-5	720.69	3/4/2011		
Nicols Fens	WT-5	720.69	4/29/2011	-5.08	715.61
Nicols Fens	WT-5	720.69	5/27/2011	-5.33	715.36
Nicols Fens	WT-5	720.69	6/28/2011	-5.49	715.20
Nicols Fens	WT-5	720.69	7/14/2011	-6.48	714.21
Nicols Fens	WT-5	720.69	8/9/2011	-6.55	714.14
Nicols Fens	WT-5	720.69	9/9/2011	-6.95	713.74
Nicols Fens	WT-5	720.69	10/13/2011	-6.28	714.41
Nicols Fens	WT-5	720.69	11/23/2011	-5.78	714.91
Nicols Fens	WT-5	720.69	12/14/2011	-5.83	714.86
Nicols Fens	WT-5	720.69	3/30/2012	-5.13	715.56
Nicols Fens	WT-5	720.69	4/26/2012	-5.47	715.22
Nicols Fens	WT-5	720.69	5/17/2012	-5.85	714.84
Nicols Fens	WT-5	720.69	6/8/2012	-6.12	714.57
Nicols Fens	WT-5	720.69	7/27/2012	-6.44	714.25
Nicols Fens	WT-5	720.69	8/31/2012	-7.85	712.84
Nicols Fens	WT-5	720.69	9/21/2012	-7.15	713.54
Nicols Fens	WT-5	720.69	10/8/2012	-6.85	713.84
Nicols Fens	WT-5	720.69	11/15/2012	-5.82	714.87
Nicols Fens	WT-5	720.69	12/4/2012	-5.83	714.86
Nicols Fens	WT-5	720.69	3/22/2013		
Nicols Fens	WT-5	720.69	4/8/2013	-5.11	715.58
Nicols Fens	WT-5	720.69	5/6/2013	-5.43	715.26
Nicols Fens	WT-5	720.69	6/3/2013	-5.43	715.26
Nicols Fens	WT-5	720.69	7/2/2013	-5.74	714.95
Nicols Fens	WT-5	720.69	8/1/2013	-6.42	714.27
Nicols Fens	WT-5	720.69	9/3/2013	-6.50	714.19
Nicols Fens	WT-5	720.69	10/9/2013	-5.77	714.92
Nicols Fens	WT-5	720.69	11/7/2013	-5.40	715.29
Nicols Fens	WT-5	720.69	12/2/2013	-5.86	714.83
Nicols Fens	WT-5	720.69	3/13/2015	-6.72	713.97
Nicols Fens	WT-5	720.69	4/3/2015	-5.35	715.34
Nicols Fens	WT-5	720.69	5/8/2015	-5.01	715.68
Nicols Fens	WT-5	720.69	6/2/2015	-5.70	714.99

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-5	720.69	7/9/2015	-5.65	715.04
Nicols Fens	WT-5	720.69	8/10/2015	-6.20	714.49
Nicols Fens	WT-5	720.69	9/9/2015	-5.88	714.81
Nicols Fens	WT-2	719.88	2/8/2007	-5.97	713.91
Nicols Fens	WT-2	719.88	3/28/2007	-4.12	715.76
Nicols Fens	WT-2	719.88	4/26/2007	-3.85	716.03
Nicols Fens	WT-2	719.88	5/30/2007	-5.00	714.88
Nicols Fens	WT-2	719.88	6/20/2007	-6.25	713.63
Nicols Fens	WT-2	719.88	7/13/2007	-6.49	713.39
Nicols Fens	WT-2	719.88	8/17/2007	-5.23	714.65
Nicols Fens	WT-2	719.88	9/21/2007	-4.27	715.61
Nicols Fens	WT-2	719.88	10/11/2007	-4.17	715.71
Nicols Fens	WT-2	719.88	11/13/2007	-4.50	715.38
Nicols Fens	WT-2	719.88	12/7/2007	-4.68	715.20
Nicols Fens	WT-2	719.88	3/5/2008	-5.04	714.84
Nicols Fens	WT-2	719.88	4/15/2008		
Nicols Fens	WT-2	719.88	5/12/2008	-4.07	715.81
Nicols Fens	WT-2	719.88	6/23/2008	-5.26	714.62
Nicols Fens	WT-2	719.88	7/22/2008	-5.67	714.21
Nicols Fens	WT-2	719.88	8/19/2008	-5.98	713.90
Nicols Fens	WT-2	719.88	9/9/2008	-5.70	714.18
Nicols Fens	WT-2	719.88	10/15/2008	-4.54	715.34
Nicols Fens	WT-2	719.88	11/26/2008	-4.70	715.18
Nicols Fens	WT-2	719.88	12/18/2008	-5.02	714.86
Nicols Fens	WT-2	719.88	3/26/2009		
Nicols Fens	WT-2	719.88	4/29/2009	-3.80	716.08
Nicols Fens	WT-2	719.88	5/29/2009	-4.46	715.42
Nicols Fens	WT-2	719.88	6/17/2009	-3.91	715.97
Nicols Fens	WT-2	719.88	7/17/2009	-5.47	714.41
Nicols Fens	WT-2	719.88	8/24/2009	-3.79	716.09
Nicols Fens	WT-2	719.88	9/25/2009	-4.81	715.07
Nicols Fens	WT-2	719.88	10/15/2009	-3.36	716.52
Nicols Fens	WT-2	719.88	11/6/2009	-3.72	716.16
Nicols Fens	WT-2	719.88	12/8/2009	-4.42	715.46
Nicols Fens	WT-2	719.88	3/2/2010		
Nicols Fens	WT-2	719.88	4/27/2010	-3.71	716.17
Nicols Fens	WT-2	719.88	5/11/2010	-3.45	716.43
Nicols Fens	WT-2	719.88	6/9/2010	-4.21	715.67
Nicols Fens	WT-2	719.88	7/26/2010	-4.24	715.64
Nicols Fens	WT-2	719.88	8/12/2010	-4.16	715.72

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-2	719.88	9/14/2010	-4.90	714.98
Nicols Fens	WT-2	719.88	10/18/2010	-4.26	715.62
Nicols Fens	WT-2	719.88	11/10/2010	-3.78	716.10
Nicols Fens	WT-2	719.88	12/8/2010	-3.65	716.23
Nicols Fens	WT-2	719.88	3/4/2011		
Nicols Fens	WT-2	719.88	4/29/2011	-3.36	716.52
Nicols Fens	WT-2	719.88	5/27/2011	-3.60	716.28
Nicols Fens	WT-2	719.88	6/28/2011	-3.69	716.19
Nicols Fens	WT-2	719.88	7/14/2011	-4.58	715.30
Nicols Fens	WT-2	719.88	8/9/2011	-4.65	715.23
Nicols Fens	WT-2	719.88	9/9/2011	-5.07	714.81
Nicols Fens	WT-2	719.88	10/13/2011	-4.29	715.59
Nicols Fens	WT-2	719.88	11/23/2011	-3.97	715.91
Nicols Fens	WT-2	719.88	12/14/2011	-4.02	715.86
Nicols Fens	WT-2	719.88	3/30/2012	-3.28	716.60
Nicols Fens	WT-2	719.88	4/26/2012	-3.61	716.27
Nicols Fens	WT-2	719.88	5/17/2012	-3.99	715.89
Nicols Fens	WT-2	719.88	6/8/2012	-4.21	715.67
Nicols Fens	WT-2	719.88	7/27/2012	-4.37	715.51
Nicols Fens	WT-2	719.88	8/31/2012	-4.90	714.98
Nicols Fens	WT-2	719.88	9/21/2012	-5.10	714.78
Nicols Fens	WT-2	719.88	10/8/2012	-4.87	715.01
Nicols Fens	WT-2	719.88	11/15/2012	-3.94	715.94
Nicols Fens	WT-2	719.88	12/4/2012	-3.92	715.96
Nicols Fens	WT-2	719.88	3/22/2013		
Nicols Fens	WT-2	719.88	4/8/2013		
Nicols Fens	WT-2	719.88	5/6/2013	-3.23	716.65
Nicols Fens	WT-2	719.88	6/3/2013	-3.36	716.52
Nicols Fens	WT-2	719.88	7/2/2013	-3.78	716.10
Nicols Fens	WT-2	719.88	8/1/2013	-4.43	715.45
Nicols Fens	WT-2	719.88	9/3/2013	-4.58	715.30
Nicols Fens	WT-2	719.88	10/9/2013	-3.87	716.01
Nicols Fens	WT-2	719.88	11/7/2013	-3.38	716.50
Nicols Fens	WT-2	719.88	12/2/2013	-3.77	716.11
Nicols Fens	WT-2	719.88	3/13/2015		
Nicols Fens	WT-2	719.88	4/3/2015		
Nicols Fens	WT-2	719.88	5/8/2015	-3.90	715.98
Nicols Fens	WT-2	719.88	6/2/2015	-3.48	716.40
Nicols Fens	WT-2	719.88	7/9/2015	-3.48	716.40
Nicols Fens	WT-2	719.88	8/10/2015	-4.05	715.83
Nicols Fens	WT-2	719.88	9/9/2015	-3.61	716.27

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-3	721.27	2/8/2007	-7.11	714.16
Nicols Fens	WT-3	721.27	3/28/2007	-5.25	716.02
Nicols Fens	WT-3	721.27	4/26/2007	-5.65	715.62
Nicols Fens	WT-3	721.27	5/30/2007	-6.74	714.53
Nicols Fens	WT-3	721.27	6/20/2007	-7.86	713.41
Nicols Fens	WT-3	721.27	7/13/2007	-8.27	713.00
Nicols Fens	WT-3	721.27	8/17/2007	-7.25	714.02
Nicols Fens	WT-3	721.27	9/21/2007	-6.17	715.10
Nicols Fens	WT-3	721.27	10/11/2007	-6.07	715.20
Nicols Fens	WT-3	721.27	11/13/2007	-6.56	714.71
Nicols Fens	WT-3	721.27	12/7/2007	-6.68	714.59
Nicols Fens	WT-3	721.27	3/5/2008	-7.11	714.16
Nicols Fens	WT-3	721.27	4/15/2008		
Nicols Fens	WT-3	721.27	5/12/2008	-6.18	715.09
Nicols Fens	WT-3	721.27	6/23/2008	-7.53	713.74
Nicols Fens	WT-3	721.27	7/22/2008	-7.75	713.52
Nicols Fens	WT-3	721.27	8/19/2008	-8.02	713.25
Nicols Fens	WT-3	721.27	9/9/2008	-7.81	713.46
Nicols Fens	WT-3	721.27	10/15/2008	-6.78	714.49
Nicols Fens	WT-3	721.27	11/26/2008	-6.96	714.31
Nicols Fens	WT-3	721.27	12/18/2008	-7.19	714.08
Nicols Fens	WT-3	721.27	3/26/2009		
Nicols Fens	WT-3	721.27	4/29/2009	-6.40	714.87
Nicols Fens	WT-3	721.27	5/29/2009	-7.46	713.81
Nicols Fens	WT-3	721.27	6/17/2009	-6.83	714.44
Nicols Fens	WT-3	721.27	7/17/2009	-8.31	712.96
Nicols Fens	WT-3	721.27	8/24/2009	-6.78	714.49
Nicols Fens	WT-3	721.27	9/25/2009	-7.90	713.37
Nicols Fens	WT-3	721.27	10/15/2009	-6.35	714.92
Nicols Fens	WT-3	721.27	11/6/2009	-6.67	714.60
Nicols Fens	WT-3	721.27	12/8/2009	-7.41	713.86
Nicols Fens	WT-3	721.27	3/2/2010		
Nicols Fens	WT-3	721.27	4/27/2010	-6.75	714.52
Nicols Fens	WT-3	721.27	5/11/2010	-6.43	714.84
Nicols Fens	WT-3	721.27	6/9/2010	-7.20	714.07
Nicols Fens	WT-3	721.27	7/26/2010	-7.28	713.99
Nicols Fens	WT-3	721.27	8/12/2010	-7.14	714.13
Nicols Fens	WT-3	721.27	9/14/2010	-7.99	713.28
Nicols Fens	WT-3	721.27	10/18/2010	-7.46	713.81
Nicols Fens	WT-3	721.27	11/10/2010	-6.94	714.33
Nicols Fens	WT-3	721.27	12/8/2010		

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-3	721.27	3/4/2011		
Nicols Fens	WT-3	721.27	4/29/2011	-6.36	714.91
Nicols Fens	WT-3	721.27	5/27/2011	-6.25	715.02
Nicols Fens	WT-3	721.27	6/28/2011	-6.38	714.89
Nicols Fens	WT-3	721.27	7/14/2011	-7.26	714.01
Nicols Fens	WT-3	721.27	8/9/2011	-7.33	713.94
Nicols Fens	WT-3	721.27	9/9/2011	-7.74	713.53
Nicols Fens	WT-3	721.27	10/13/2011	-6.96	714.31
Nicols Fens	WT-3	721.27	11/23/2011	-6.71	714.56
Nicols Fens	WT-3	721.27	12/14/2011	-6.76	714.51
Nicols Fens	WT-3	721.27	3/30/2012	-6.02	715.25
Nicols Fens	WT-3	721.27	4/26/2012	-6.31	714.96
Nicols Fens	WT-3	721.27	5/17/2012	-6.75	714.52
Nicols Fens	WT-3	721.27	6/8/2012	-7.06	714.21
Nicols Fens	WT-3	721.27	7/27/2012	-7.07	714.20
Nicols Fens	WT-3	721.27	8/31/2012	-7.52	713.75
Nicols Fens	WT-3	721.27	9/21/2012	-7.61	713.66
Nicols Fens	WT-3	721.27	10/8/2012	-7.39	713.88
Nicols Fens	WT-3	721.27	11/15/2012	-6.62	714.65
Nicols Fens	WT-3	721.27	12/4/2012	-6.59	714.68
Nicols Fens	WT-3	721.27	3/22/2013		
Nicols Fens	WT-3	721.27	4/8/2013		
Nicols Fens	WT-3	721.27	5/6/2013	-5.79	715.48
Nicols Fens	WT-3	721.27	6/3/2013	-5.88	715.39
Nicols Fens	WT-3	721.27	7/2/2013	-6.31	714.96
Nicols Fens	WT-3	721.27	8/1/2013	-7.09	714.18
Nicols Fens	WT-3	721.27	9/3/2013	-7.18	714.09
Nicols Fens	WT-3	721.27	10/9/2013	-6.47	714.80
Nicols Fens	WT-3	721.27	11/7/2013	-6.01	715.26
Nicols Fens	WT-3	721.27	12/2/2013	-6.47	714.80
Nicols Fens	WT-3	721.27	3/13/2015		
Nicols Fens	WT-3	721.27	4/3/2015		
Nicols Fens	WT-3	721.27	5/8/2015	-5.97	715.30
Nicols Fens	WT-3	721.27	6/2/2015	-5.50	715.77
Nicols Fens	WT-3	721.27	7/9/2015	-5.49	715.78
Nicols Fens	WT-3	721.27	8/10/2015	-6.05	715.22
Nicols Fens	WT-3	721.27	9/9/2015	-5.70	715.57
Nicols Fens	WT-4	713.58	2/8/2007	-1.62	711.96
Nicols Fens	WT-4	713.58	3/28/2007	-1.60	711.98
Nicols Fens	WT-4	713.58	4/26/2007	-1.60	711.98

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-4	713.58	5/30/2007	-1.71	711.87
Nicols Fens	WT-4	713.58	6/20/2007	-1.80	711.78
Nicols Fens	WT-4	713.58	7/13/2007	-1.86	711.72
Nicols Fens	WT-4	713.58	8/17/2007	-1.71	711.87
Nicols Fens	WT-4	713.58	9/21/2007	-1.67	711.91
Nicols Fens	WT-4	713.58	10/11/2007	-1.68	711.90
Nicols Fens	WT-4	713.58	11/13/2007	-1.67	711.91
Nicols Fens	WT-4	713.58	12/7/2007	-1.63	711.95
Nicols Fens	WT-4	713.58	3/5/2008	-1.76	711.82
Nicols Fens	WT-4	713.58	4/16/2008	-1.76	711.82
Nicols Fens	WT-4	713.58	5/12/2008	-1.93	711.65
Nicols Fens	WT-4	713.58	6/26/2008	-1.99	711.59
Nicols Fens	WT-4	713.58	7/22/2008	-1.83	711.75
Nicols Fens	WT-4	713.58	8/19/2008	-1.78	711.80
Nicols Fens	WT-4	713.58	9/9/2008	-1.77	711.81
Nicols Fens	WT-4	713.58	10/15/2008	-1.82	711.76
Nicols Fens	WT-4	713.58	11/26/2008	-1.82	711.76
Nicols Fens	WT-4	713.58	3/26/2009	-1.82	711.76
Nicols Fens	WT-4	713.58	4/29/2009	-1.61	711.97
Nicols Fens	WT-4	713.58	5/29/2009	-1.84	711.74
Nicols Fens	WT-4	713.58	6/17/2009	-1.72	711.86
Nicols Fens	WT-4	713.58	7/17/2009	-1.82	711.76
Nicols Fens	WT-4	713.58	8/24/2009	-1.73	711.85
Nicols Fens	WT-4	713.58	9/25/2009	-1.66	711.92
Nicols Fens	WT-4	713.58	10/15/2009	-1.64	711.94
Nicols Fens	WT-4	713.58	11/6/2009	-1.73	711.85
Nicols Fens	WT-4	713.58	12/8/2009	-1.81	711.77
Nicols Fens	WT-4	713.58	3/2/2010	-1.73	711.85
Nicols Fens	WT-4	713.58	4/27/2010	-1.78	711.80
Nicols Fens	WT-4	713.58	5/11/2010	-1.72	711.86
Nicols Fens	WT-4	713.58	6/9/2010	-1.77	711.81
Nicols Fens	WT-4	713.58	7/26/2010	-1.82	711.76
Nicols Fens	WT-4	713.58	8/12/2010	-1.81	711.77
Nicols Fens	WT-4	713.58	9/14/2010	-1.80	711.78
Nicols Fens	WT-4	713.58	10/18/2010	-1.71	711.87
Nicols Fens	WT-4	713.58	11/10/2010	-1.66	711.92
Nicols Fens	WT-4	713.58	12/8/2010	-1.60	711.98
Nicols Fens	WT-4	713.58	3/4/2011	-1.61	711.97
Nicols Fens	WT-4	713.58	4/29/2011	-1.56	712.02
Nicols Fens	WT-4	713.58	5/27/2011	-1.59	711.99
Nicols Fens	WT-4	713.58	6/28/2011	-1.61	711.97
Nicols Fens	WT-4	713.58	7/14/2011	-1.60	711.98

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	WT-4	713.58	8/9/2011	-1.65	711.93
Nicols Fens	WT-4	713.58	9/9/2011	-1.63	711.95
Nicols Fens	WT-4	713.58	10/13/2011	-1.61	711.97
Nicols Fens	WT-4	713.58	11/23/2011	-1.58	712.00
Nicols Fens	WT-4	713.58	12/14/2011	-1.58	712.00
Nicols Fens	WT-4	713.58	3/30/2012	-1.69	711.89
Nicols Fens	WT-4	713.58	4/26/2012	-1.75	711.83
Nicols Fens	WT-4	713.58	5/17/2012	-1.75	711.83
Nicols Fens	WT-4	713.58	6/8/2012	-1.75	711.83
Nicols Fens	WT-4	713.58	7/27/2012	-1.78	711.80
Nicols Fens	WT-4	713.58	8/31/2012	-1.74	711.84
Nicols Fens	WT-4	713.58	9/21/2012	-1.74	711.84
Nicols Fens	WT-4	713.58	10/8/2012	-1.70	711.88
Nicols Fens	WT-4	713.58	11/15/2012	-1.71	711.87
Nicols Fens	WT-4	713.58	12/4/2012	-1.69	711.89
Nicols Fens	WT-4	713.58	3/22/2013	-1.81	711.77
Nicols Fens	WT-4	713.58	4/8/2013	-1.71	711.87
Nicols Fens	WT-4	713.58	5/6/2013	-1.78	711.80
Nicols Fens	WT-4	713.58	6/3/2013	-1.74	711.84
Nicols Fens	WT-4	713.58	7/2/2013	-1.77	711.81
Nicols Fens	WT-4	713.58	8/1/2013	-1.77	711.81
Nicols Fens	WT-4	713.58	9/3/2013	-1.73	711.85
Nicols Fens	WT-4	713.58	10/9/2013	-1.68	711.90
Nicols Fens	WT-4	713.58	11/7/2013	-1.63	711.95
Nicols Fens	WT-4	713.58	12/2/2013	-1.65	711.93
Nicols Fens	WT-4	713.58	3/13/2015	-1.60	711.98
Nicols Fens	WT-4	713.58	4/3/2015	-1.63	711.95
Nicols Fens	WT-4	713.58	5/8/2015	-1.47	712.11
Nicols Fens	WT-4	713.58	6/2/2015	-0.67	712.91
Nicols Fens	WT-4	713.58	7/9/2015	-1.61	711.97
Nicols Fens	WT-4	713.58	8/10/2015	-1.62	711.96
Nicols Fens	WT-4	713.58	9/9/2015	-1.59	711.99
Nicols Fens	F1	714.96	3/28/2007	-2.87	712.09
Nicols Fens	F1	714.96	4/26/2007	-2.85	712.11
Nicols Fens	F1	714.96	5/30/2007	-2.88	712.08
Nicols Fens	F1	714.96	6/20/2007	-2.17	712.79
Nicols Fens	F1	714.96	7/13/2007	-1.89	713.07
Nicols Fens	F1	714.96	8/17/2007	-2.94	712.02
Nicols Fens	F1	714.96	9/21/2007	-2.99	711.97
Nicols Fens	F1	714.96	10/11/2007	-3.02	711.94

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F1	714.96	11/13/2007	-2.77	712.19
Nicols Fens	F1	714.96	12/7/2007	-2.77	712.19
Nicols Fens	F1	714.96	3/5/2008	-2.27	712.69
Nicols Fens	F1	714.96	4/16/2008	-2.58	712.38
Nicols Fens	F1	714.96	5/12/2008	-2.47	712.49
Nicols Fens	F1	714.96	6/26/2008	-2.25	712.71
Nicols Fens	F1	714.96	7/22/2008	-2.86	712.10
Nicols Fens	F1	714.96	8/19/2008	-2.83	712.13
Nicols Fens	F1	714.96	9/9/2008	-2.86	712.10
Nicols Fens	F1	714.96	10/15/2008	-2.85	712.11
Nicols Fens	F1	714.96	11/26/2008		
Nicols Fens	F1	714.96	3/26/2009		
Nicols Fens	F1	714.96	4/29/2009		
Nicols Fens	F1	714.96	5/29/2009		
Nicols Fens	F1	714.96	6/17/2009	-0.55	714.41
Nicols Fens	F1	714.96	7/17/2009		
Nicols Fens	F1	714.96	8/24/2009	-1.33	713.63
Nicols Fens	F1	714.96	9/25/2009	-1.55	713.41
Nicols Fens	F1	714.96	10/15/2009	-1.08	713.88
Nicols Fens	F1	714.96	11/6/2009		
Nicols Fens	F1	714.96	3/2/2010		
Nicols Fens	F1	714.96	4/27/2010		
Nicols Fens	F1	714.96	5/11/2010	-1.04	713.92
Nicols Fens	F1	714.96	6/9/2010	-0.20	714.76
Nicols Fens	F1	714.96	7/26/2010		
Nicols Fens	F1	714.96	8/12/2010	-1.01	713.95
Nicols Fens	F1	714.96	9/14/2010		
Nicols Fens	F1	714.96	10/18/2010		
Nicols Fens	F1	714.96	11/10/2010		
Nicols Fens	F1	714.96	12/8/2010	-1.04	713.92
Nicols Fens	F1	714.96	3/4/2011		714.96
Nicols Fens	F1	714.96	4/29/2011	-1.26	713.70
Nicols Fens	F1	714.96	5/27/2011	-1.26	713.70
Nicols Fens	F1	714.96	6/28/2011	-1.28	713.68
Nicols Fens	F1	714.96	7/14/2011	-1.17	713.79
Nicols Fens	F1	714.96	8/9/2011	-0.36	714.60
Nicols Fens	F1	714.96	10/13/2011	-1.41	713.55
Nicols Fens	F1	714.96	11/23/2011	-0.78	714.18
Nicols Fens	F1	714.96	12/14/2011		
Nicols Fens	F1	714.96	3/30/2012	-0.37	714.59
Nicols Fens	F1	714.96	4/26/2012		
Nicols Fens	F1	714.96	5/17/2012		

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	frozen
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F1	714.96	6/8/2012		
Nicols Fens	F1	714.96	7/27/2012		
Nicols Fens	F1	714.96	8/31/2012		
Nicols Fens	F1	714.96	9/21/2012		
Nicols Fens	F1	714.96	10/8/2012		
Nicols Fens	F1	714.96	11/15/2012		
Nicols Fens	F1	714.96	12/4/2012		
Nicols Fens	F1	714.96	3/22/2013	-1.83	713.13
Nicols Fens	F1	714.96	4/8/2013	-1.57	713.39
Nicols Fens	F1	714.96	5/6/2013		
Nicols Fens	F1	714.96	6/3/2013		
Nicols Fens	F1	714.96	7/2/2013		
Nicols Fens	F1	714.96	8/1/2013		
Nicols Fens	F1	714.96	9/3/2013		
Nicols Fens	F1	714.96	10/9/2013	-1.04	713.92
Nicols Fens	F1	714.96	11/7/2013	-1.02	713.94
Nicols Fens	F1	714.96	12/2/2013		
Nicols Fens	F1	714.96	3/13/2015	-1.71	713.25
Nicols Fens	F1	714.96	4/3/2015		
Nicols Fens	F1	714.96	5/8/2015	-0.78	714.18
Nicols Fens	F1	714.96	6/2/2015		
Nicols Fens	F1	714.96	7/9/2015	-0.26	714.70
Nicols Fens	F1	714.96	8/10/2015		
Nicols Fens	F1	714.96	9/9/2015		
Nicols Fens	F2	714.68	3/28/2007	-0.92	713.76
Nicols Fens	F2	714.68	4/26/2007	-0.97	713.71
Nicols Fens	F2	714.68	5/30/2007	-1.19	713.49
Nicols Fens	F2	714.68	6/20/2007	-1.28	713.40
Nicols Fens	F2	714.68	7/13/2007	-1.26	713.42
Nicols Fens	F2	714.68	8/17/2007	-1.09	713.59
Nicols Fens	F2	714.68	9/21/2007	-0.91	713.77
Nicols Fens	F2	714.68	10/11/2007	-0.91	713.77
Nicols Fens	F2	714.68	11/13/2007	-0.96	713.72
Nicols Fens	F2	714.68	3/5/2008	-0.99	713.69
Nicols Fens	F2	714.68	4/16/2008	-0.83	713.85
Nicols Fens	F2	714.68	5/12/2008	-0.85	713.83
Nicols Fens	F2	714.68	6/26/2008	-0.97	713.71
Nicols Fens	F2	714.68	7/22/2008	-0.93	713.75
Nicols Fens	F2	714.68	8/19/2008	-0.87	713.81
Nicols Fens	F2	714.68	9/9/2008	-0.86	713.82

Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes: **frozen** **flowing**

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F2	714.68	10/15/2008	-0.90	713.78
Nicols Fens	F2	714.68	11/26/2008	-0.89	713.79
Nicols Fens	F2	714.68	12/18/2008	-0.89	713.79
Nicols Fens	F2	714.68	3/26/2009	-0.83	713.85
Nicols Fens	F2	714.68	4/29/2009	-0.88	713.80
Nicols Fens	F2	714.68	5/29/2009	-0.97	713.71
Nicols Fens	F2	714.68	6/17/2009	-0.84	713.84
Nicols Fens	F2	714.68	7/17/2009	-1.06	713.62
Nicols Fens	F2	714.68	8/24/2009	-0.90	713.78
Nicols Fens	F2	714.68	9/25/2009	-0.98	713.70
Nicols Fens	F2	714.68	10/15/2009	-0.94	713.74
Nicols Fens	F2	714.68	11/6/2009	-1.07	713.61
Nicols Fens	F2	714.68	12/8/2009	-1.21	713.47
Nicols Fens	F2	714.68	3/2/2010	-0.94	713.74
Nicols Fens	F2	714.68	4/27/2010	-1.10	713.58
Nicols Fens	F2	714.68	5/11/2010	-1.04	713.64
Nicols Fens	F2	714.68	6/9/2010	-1.03	713.65
Nicols Fens	F2	714.68	7/26/2010	-1.20	713.48
Nicols Fens	F2	714.68	8/12/2010	-1.22	713.46
Nicols Fens	F2	714.68	9/14/2010	-1.19	713.49
Nicols Fens	F2	714.68	10/18/2010	-1.00	713.68
Nicols Fens	F2	714.68	11/10/2010	-0.91	713.77
Nicols Fens	F2	714.68	12/8/2010		
Nicols Fens	F2	714.68	3/4/2011	-0.98	713.70
Nicols Fens	F2	714.68	4/29/2011	-0.99	713.69
Nicols Fens	F2	714.68	5/27/2011	-0.95	713.73
Nicols Fens	F2	714.68	6/28/2011	-0.88	713.80
Nicols Fens	F2	714.68	7/14/2011	-0.94	713.74
Nicols Fens	F2	714.68	8/9/2011	-1.01	713.67
Nicols Fens	F2	714.68	10/13/2011	-1.11	713.57
Nicols Fens	F2	714.68	11/23/2011	-1.11	713.57
Nicols Fens	F2	714.68	12/14/2011	-1.10	713.58
Nicols Fens	F2	714.68	3/30/2012	-1.18	713.50
Nicols Fens	F2	714.68	4/26/2012	-1.25	713.43
Nicols Fens	F2	714.68	5/17/2012	-1.20	713.48
Nicols Fens	F2	714.68	6/8/2012	-1.24	713.44
Nicols Fens	F2	714.68	7/27/2012	-1.28	713.40
Nicols Fens	F2	714.68	8/31/2012	-1.30	713.38
Nicols Fens	F2	714.68	9/21/2012	-1.45	713.23
Nicols Fens	F2	714.68	10/8/2012	-1.40	713.28
Nicols Fens	F2	714.68	11/15/2012	-1.42	713.26
Nicols Fens	F2	714.68	12/4/2012	-1.45	713.23

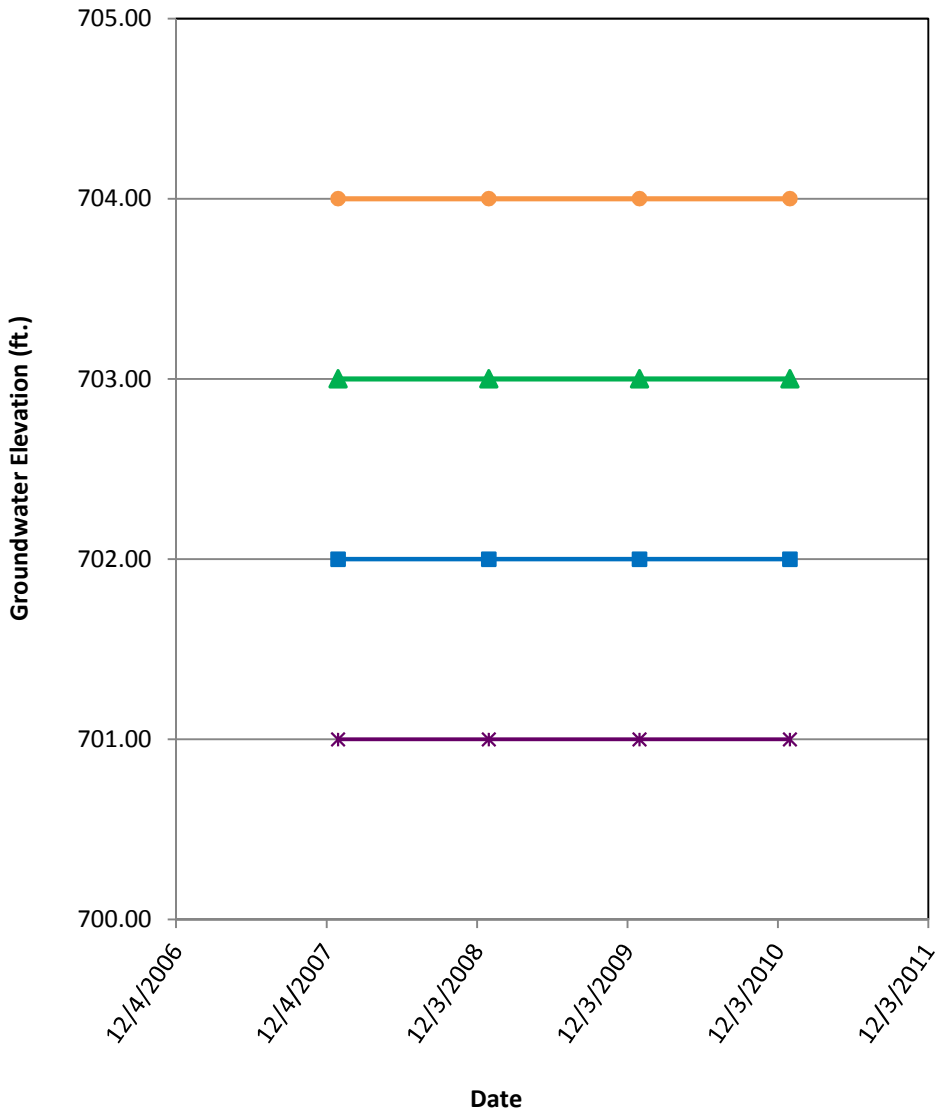
Table 2
Groundwater Elevations
Lower Minnesota Fiver Watershed District Fen Study
Burns & McDonnell Project Number 84167

Color Codes:	**frozen**
	flowing

Well Location	Well ID	Survey TOC Elevation (ft.)	Date	Depth to Water Below TOC (ft.)	Ground Water Elevation (ft.)
Nicols Fens	F2	714.68	3/22/2013	-1.24	713.44
Nicols Fens	F2	714.68	4/8/2013	-1.10	713.58
Nicols Fens	F2	714.68	5/6/2013	-1.21	713.47
Nicols Fens	F2	714.68	6/3/2013	-1.17	713.51
Nicols Fens	F2	714.68	7/2/2013	-1.27	713.41
Nicols Fens	F2	714.68	8/1/2013	-1.28	713.40
Nicols Fens	F2	714.68	9/3/2013	-1.27	713.41
Nicols Fens	F2	714.68	10/9/2013	-1.21	713.47
Nicols Fens	F2	714.68	11/7/2013	-1.24	713.44
Nicols Fens	F2	714.68	12/2/2013	-1.13	713.55

APPENDIX A - HYDROGRAPHS

The Hydrographs use the symbols below to show different sceening depths:

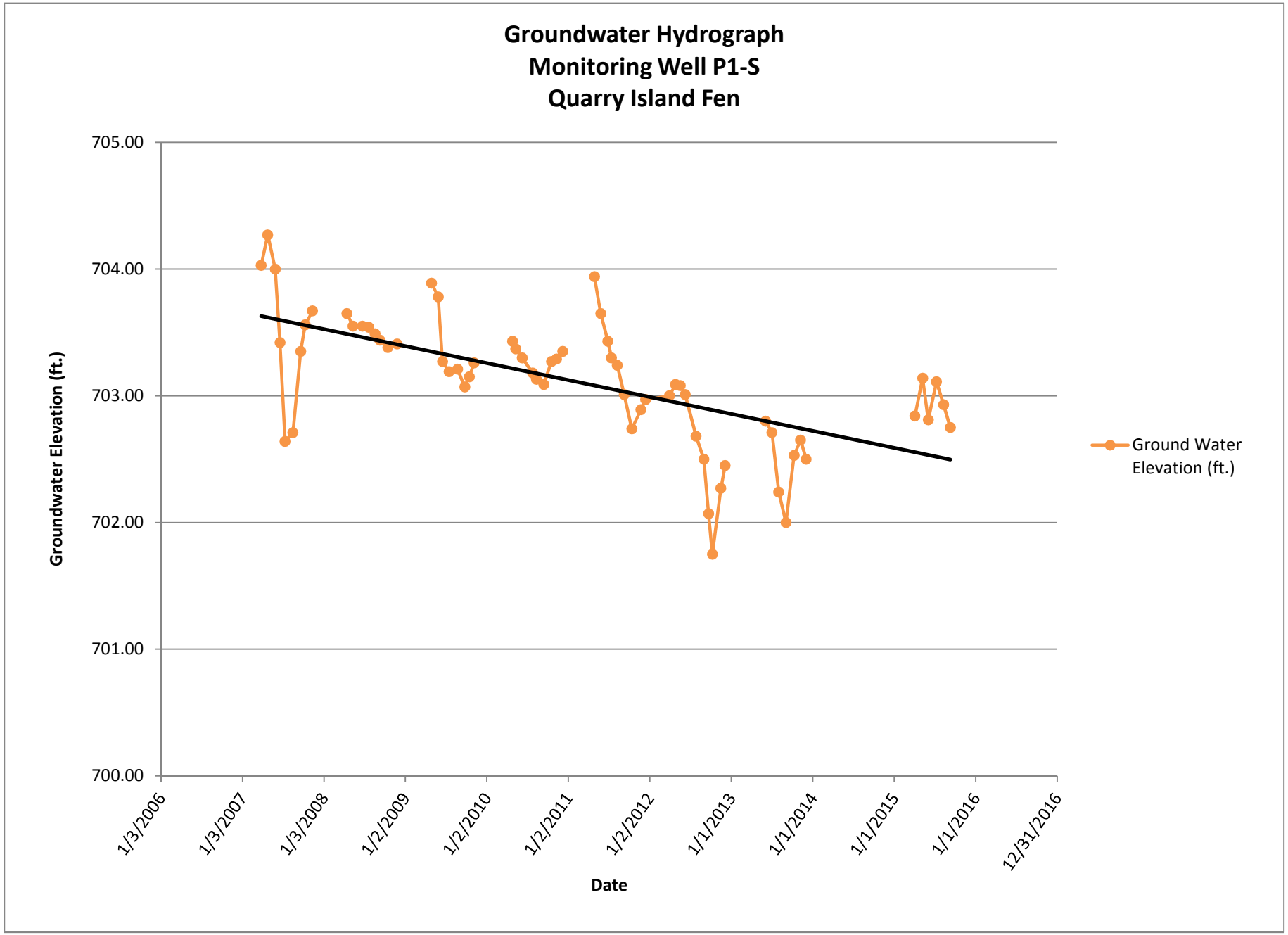


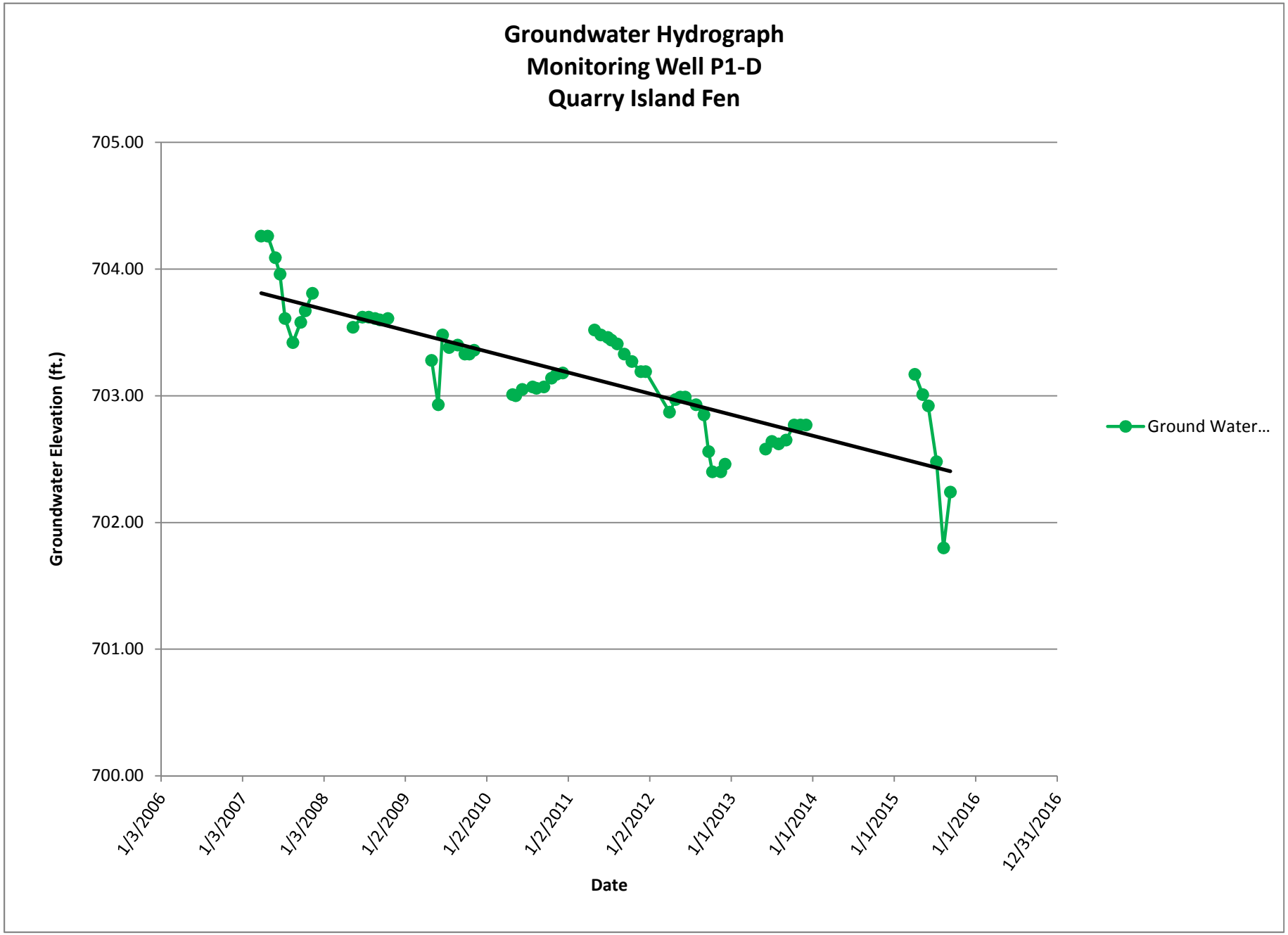
Orange line with circle markers = wells completed in peat and/or 0-15 feet below ground surface

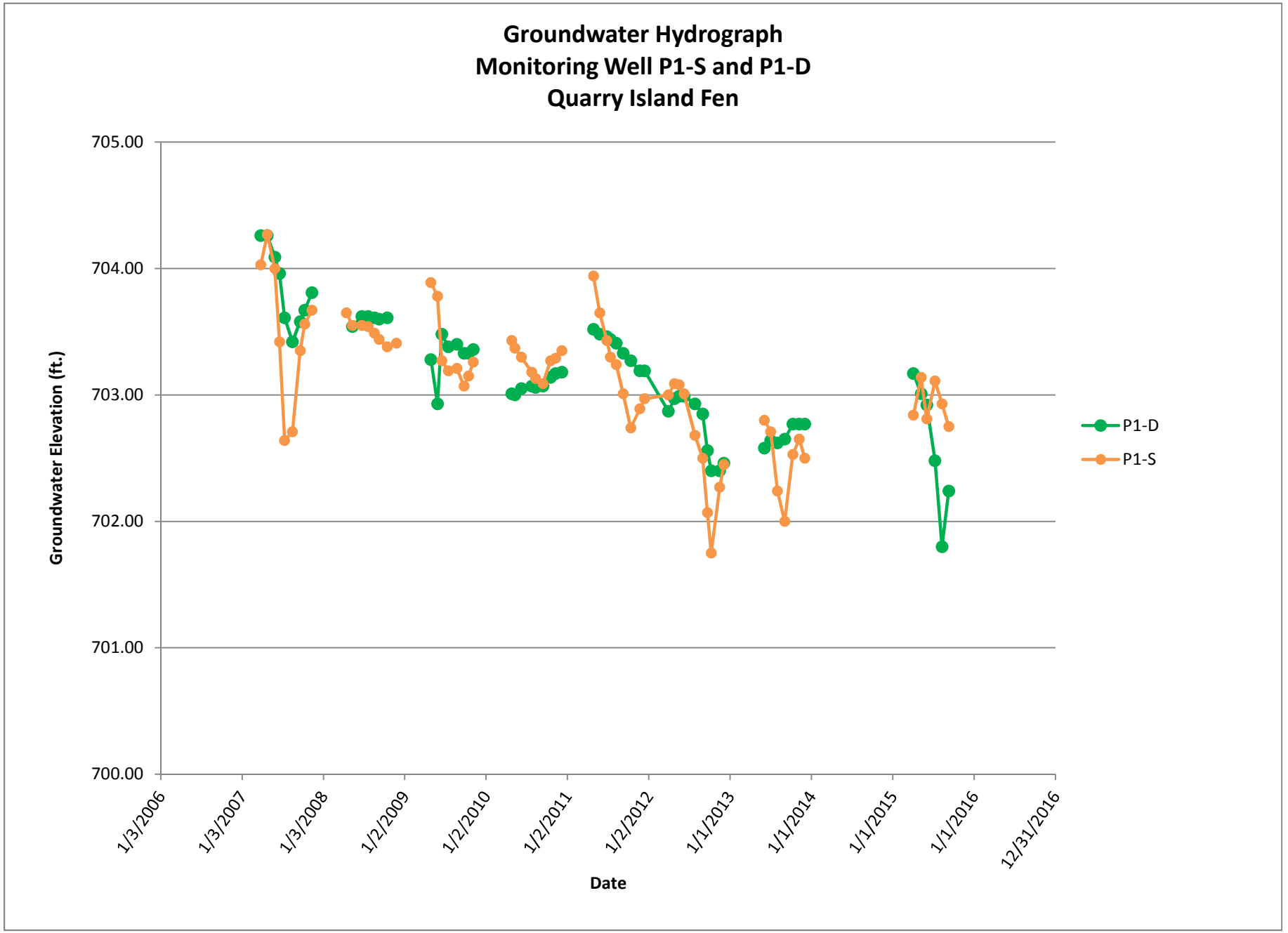
Green line with triangel markers = wells completed 15-30 feet below ground surface

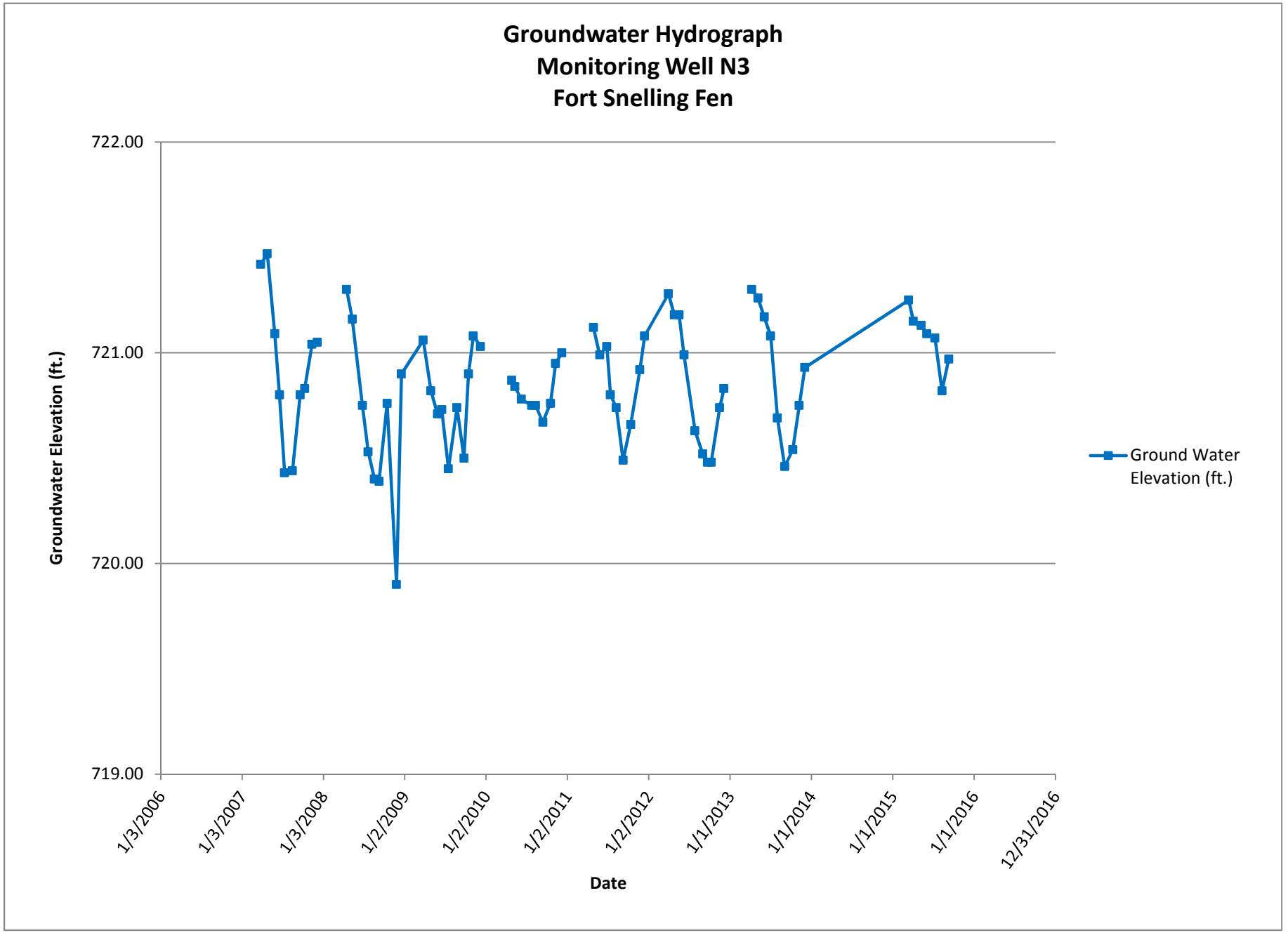
Blue line with square markers = wells completed 30-60 feet below ground surface

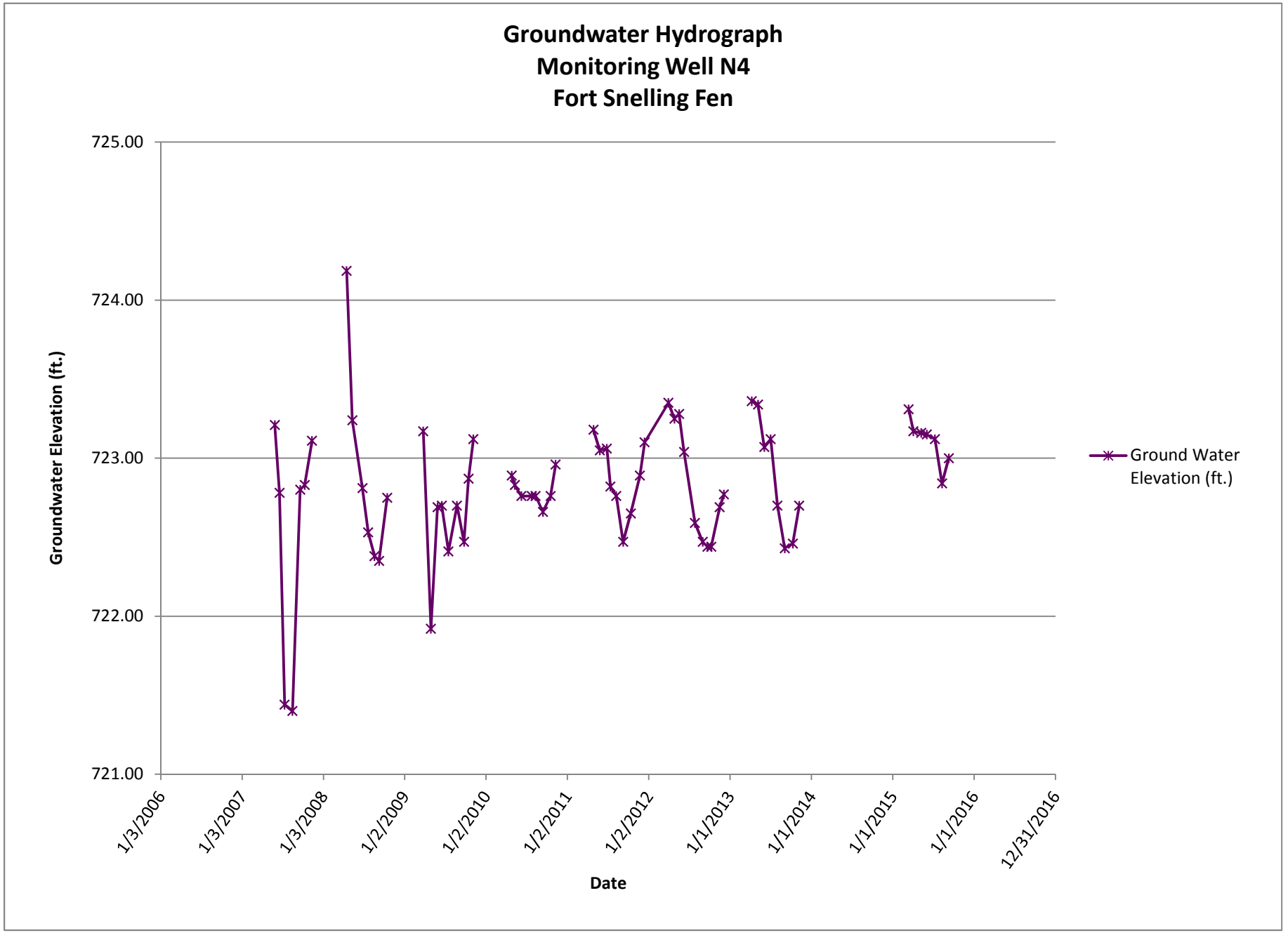
Purple line with star markers = wells completed 60-80 feet below ground surface

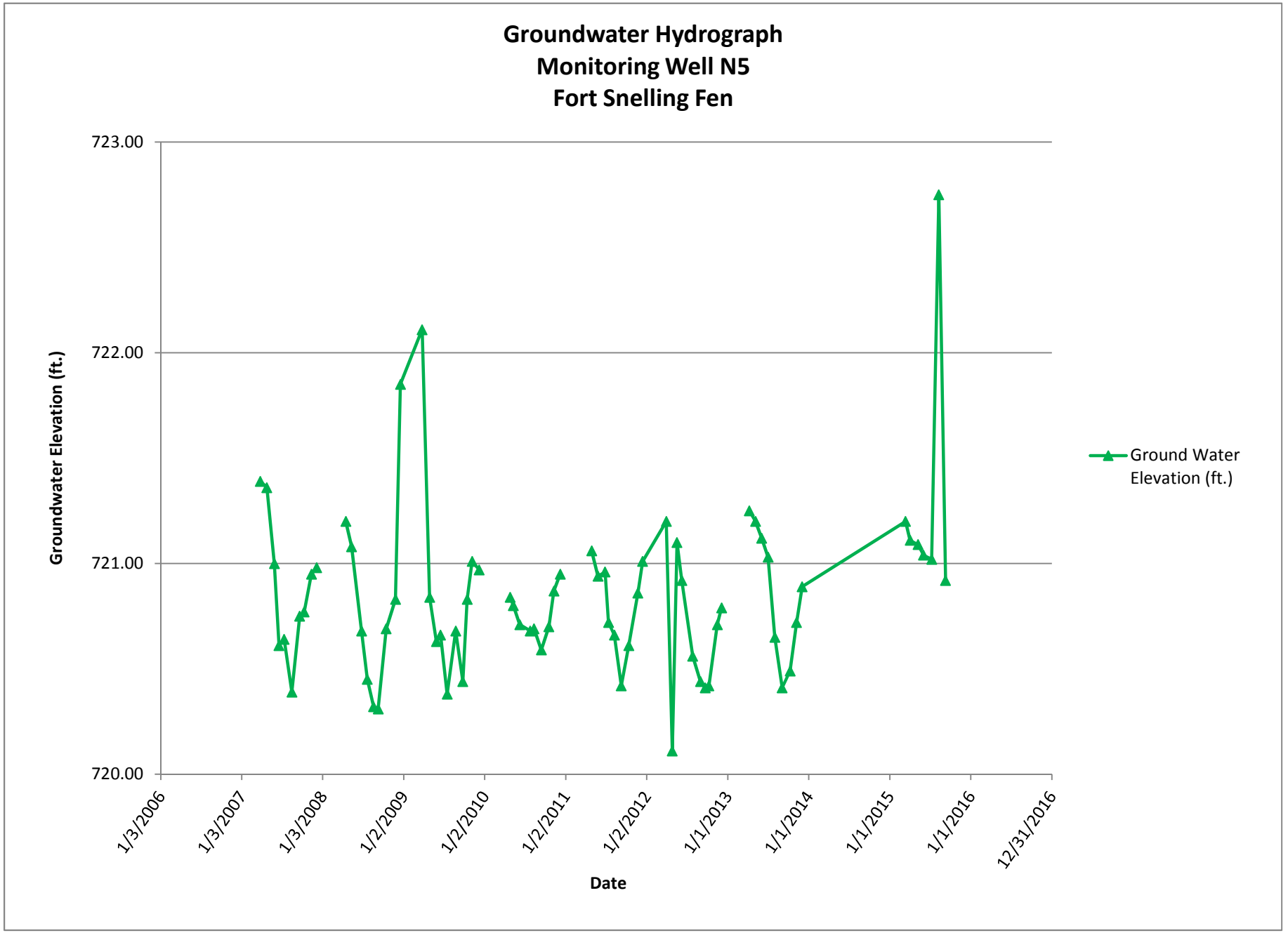

Groundwater Hydrograph
Monitoring Well P1-S
Quarry Island Fen
705.00
704.00
703.00
702.00
701.00
700.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

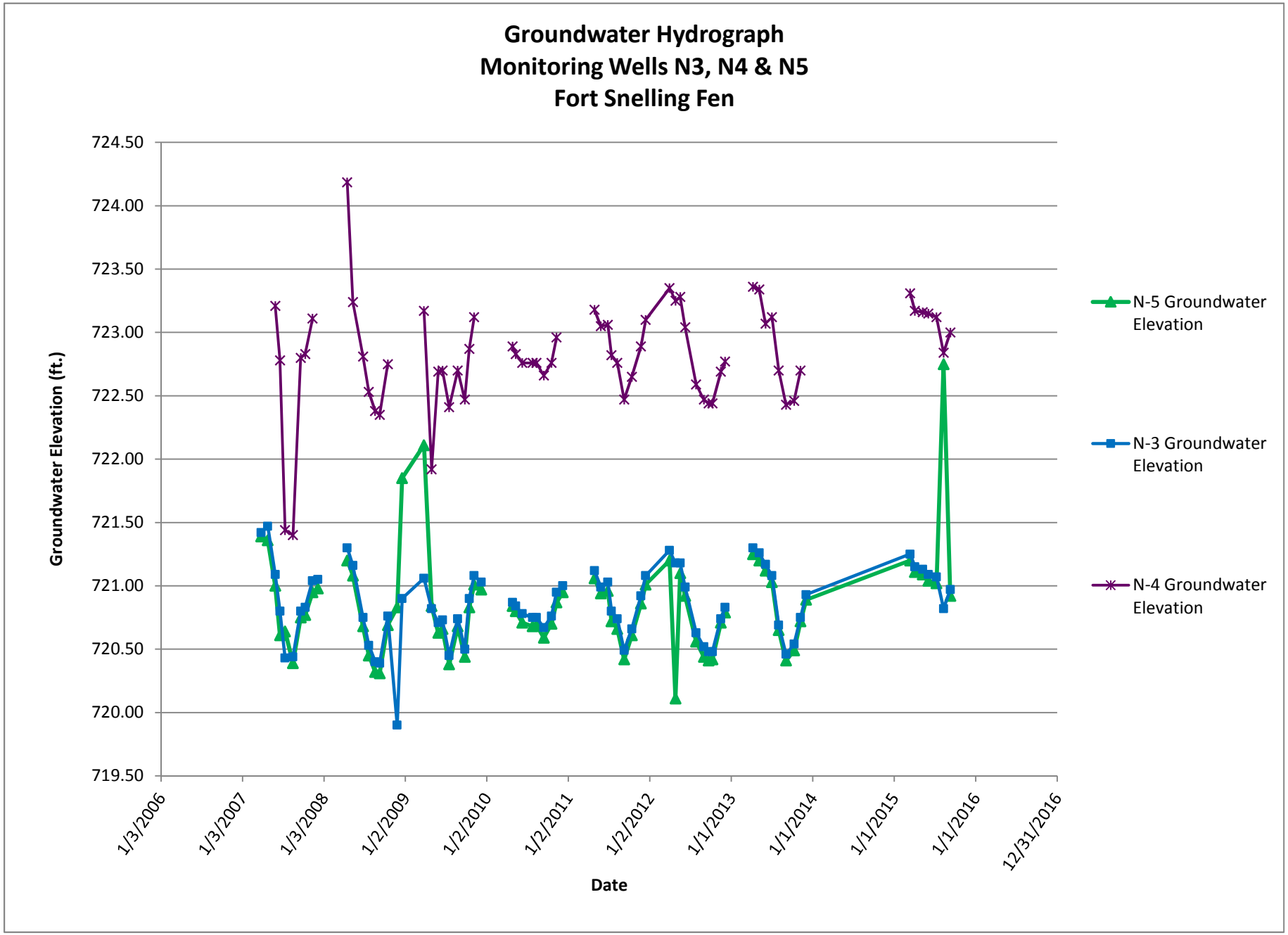

Groundwater Hydrograph
Monitoring Well P1-D
Quarry Island Fen
705.00
704.00
703.00
702.00
701.00
700.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water…

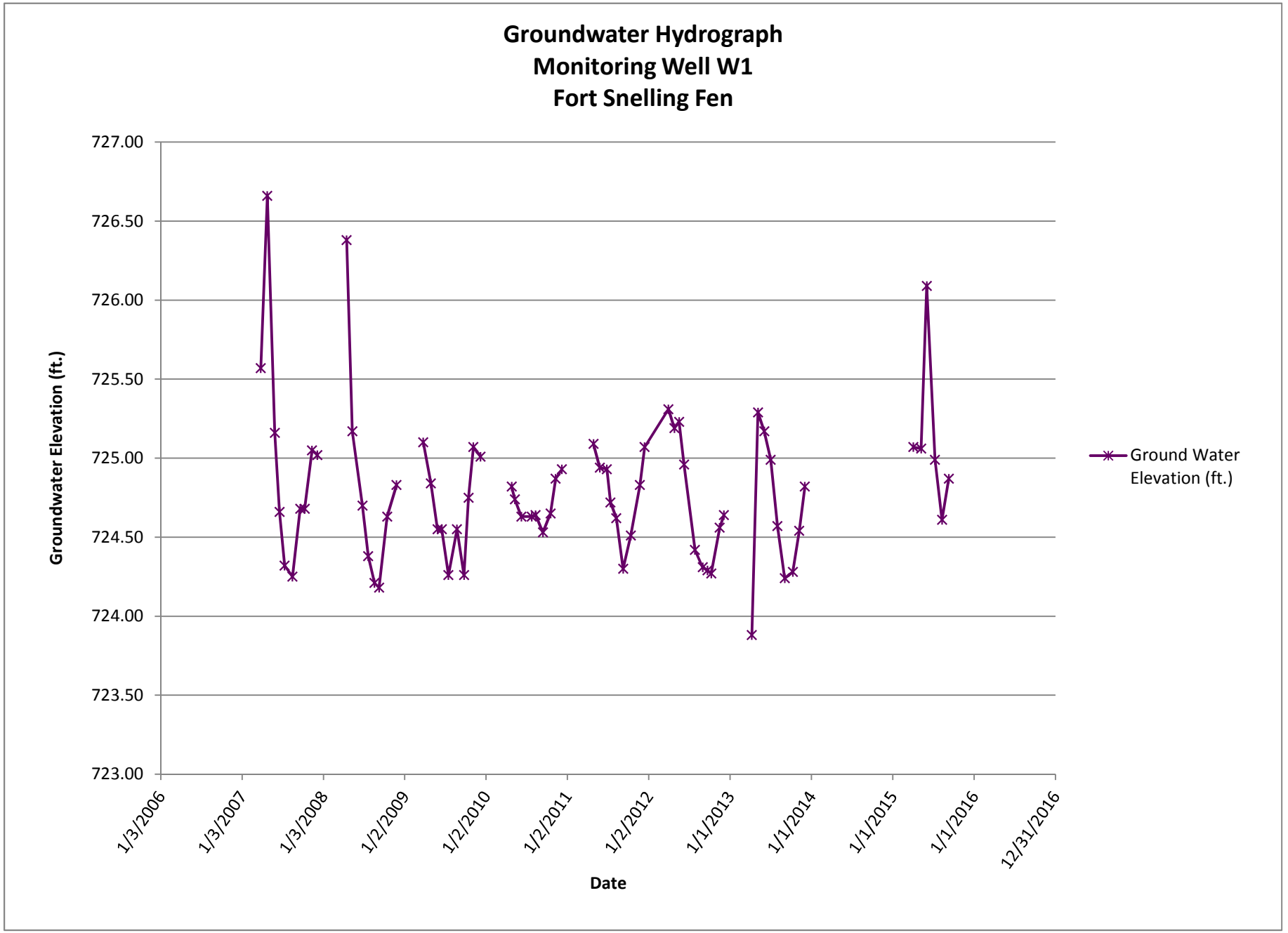

Groundwater Hydrograph
Monitoring Well P1-S and P1-D
Quarry Island Fen
Groundwater Elevation (ft.)
705.00
704.00
703.00
702.00
701.00
700.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
P1-D
P1-S

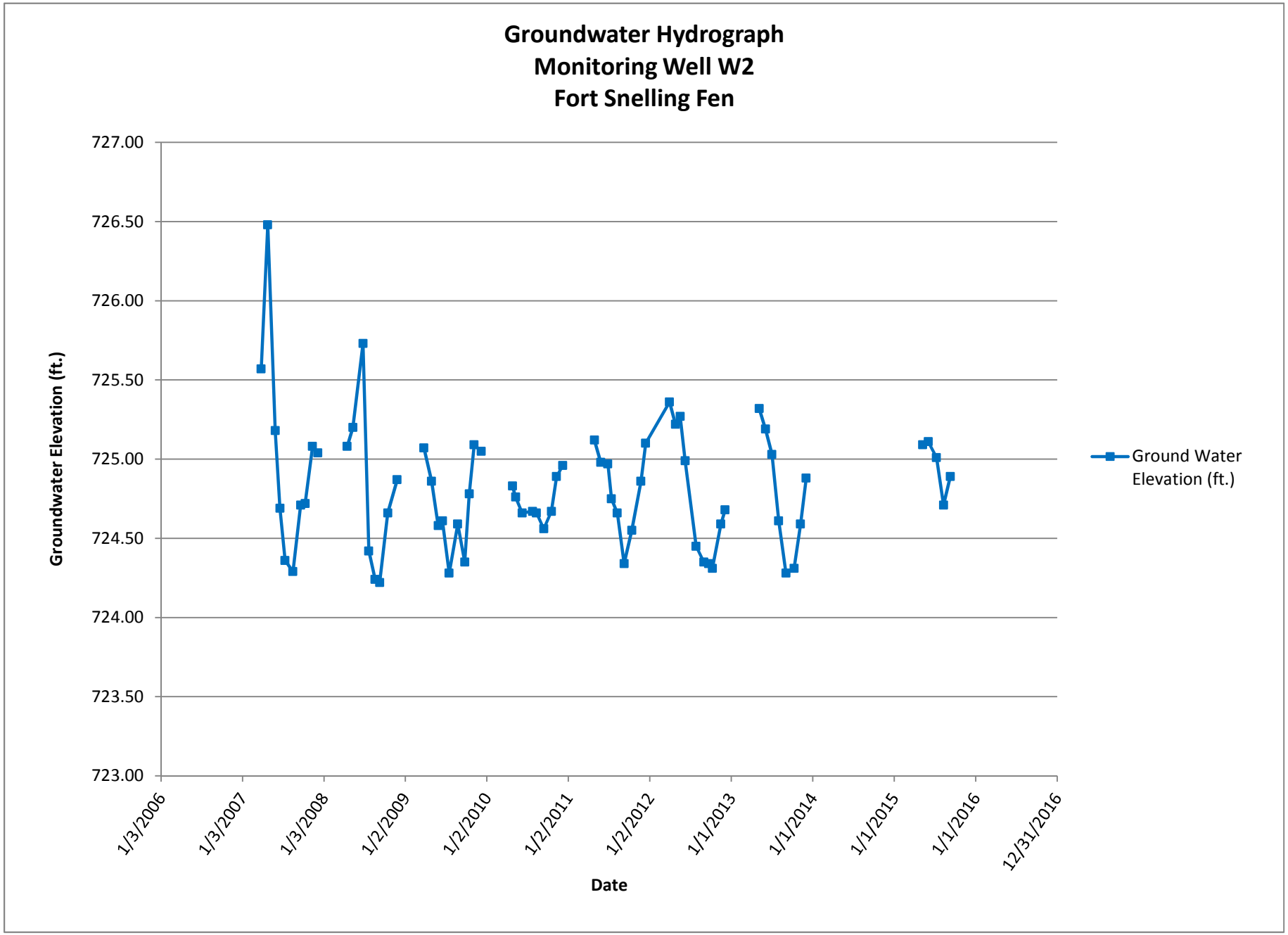

Groundwater Hydrograph
Monitoring Well N3
Fort Snelling Fen
722.00
721.00
720.00
719.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

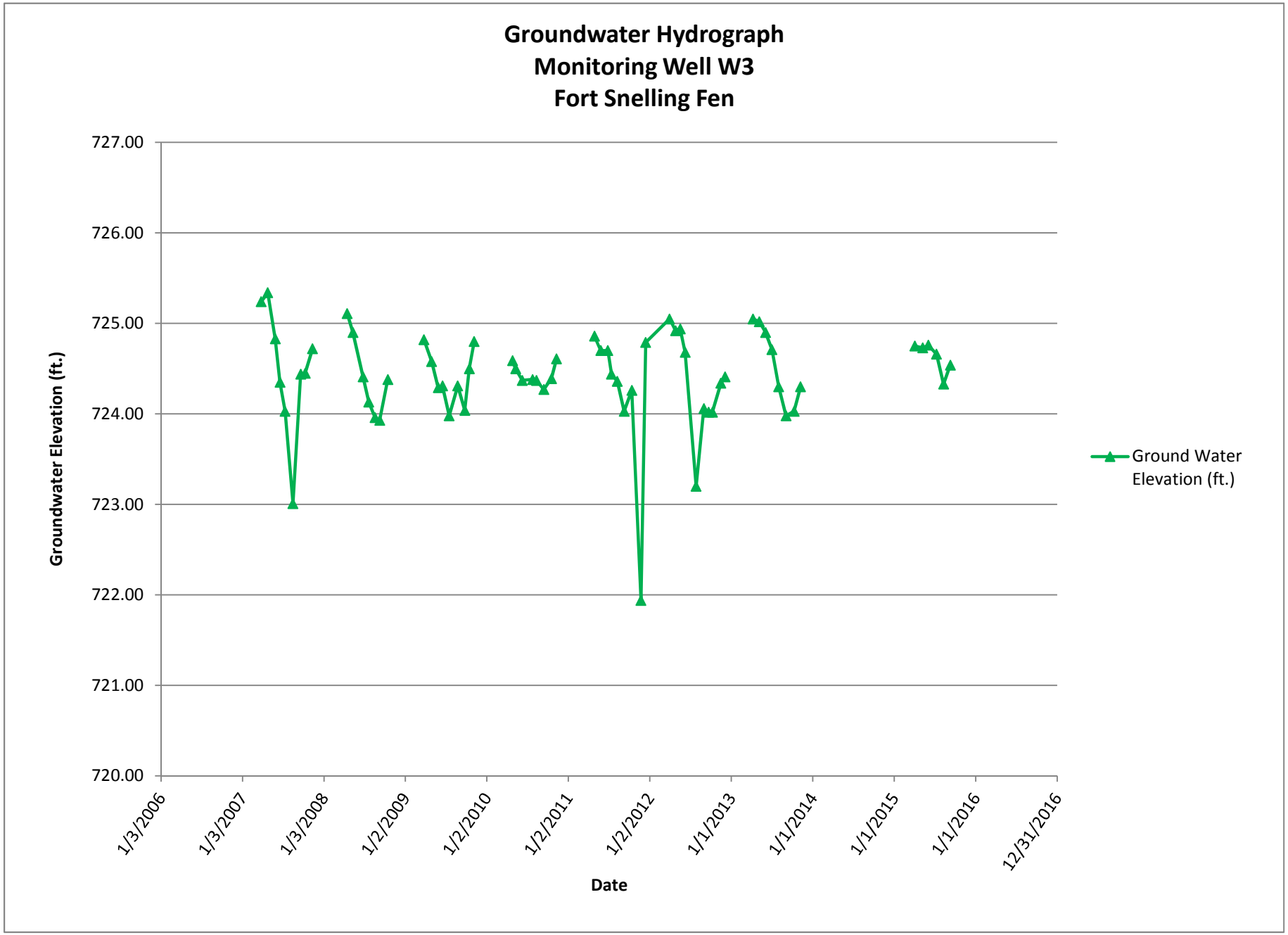

Groundwater Hydrograph
Monitoring Well N4
Fort Snelling Fen
725.00
724.00
723.00
722.00
721.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

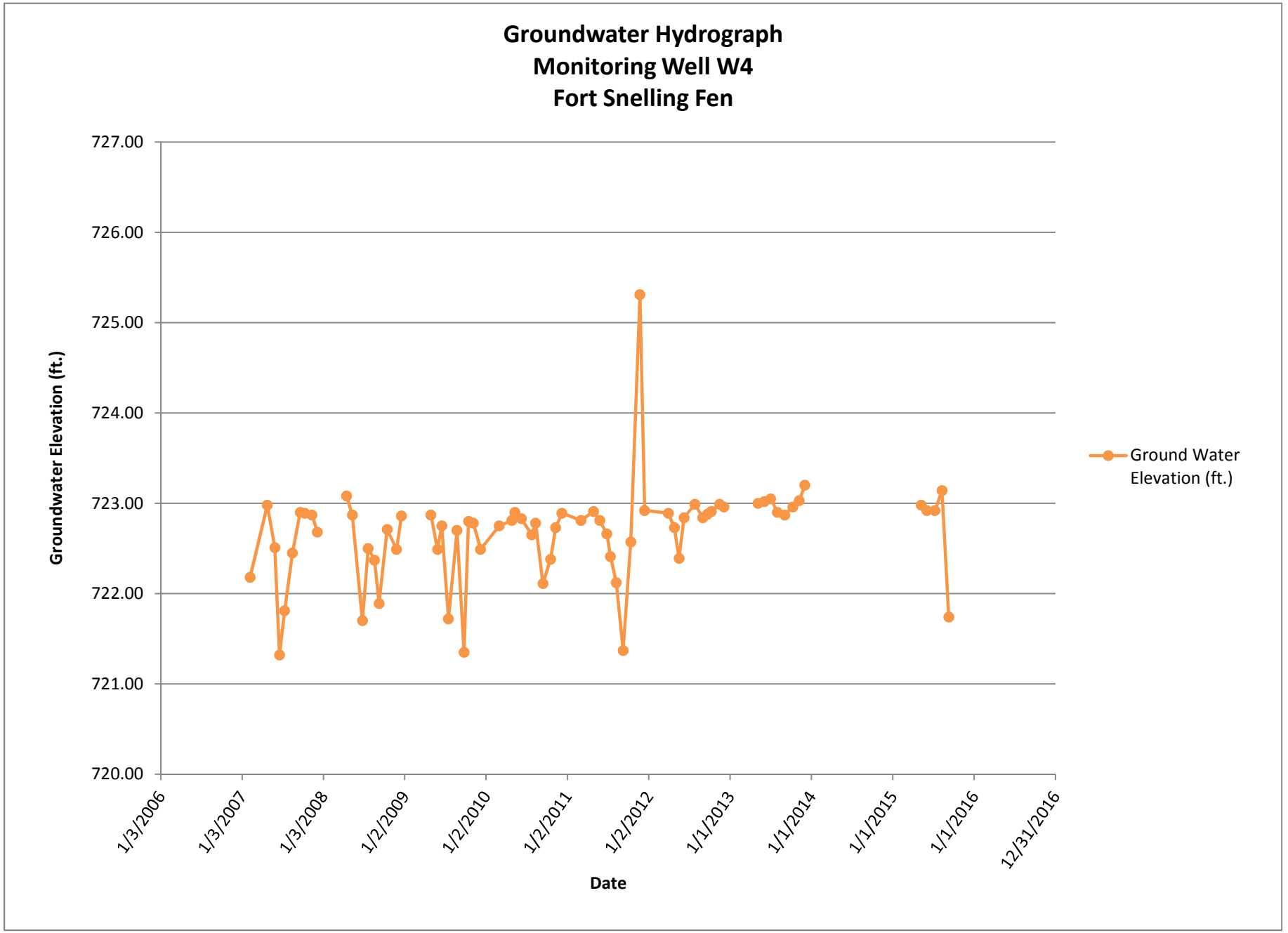

Groundwater Hydrograph
Monitoring Well N5
Fort Snelling Fen
723.00
722.00
721.00
720.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

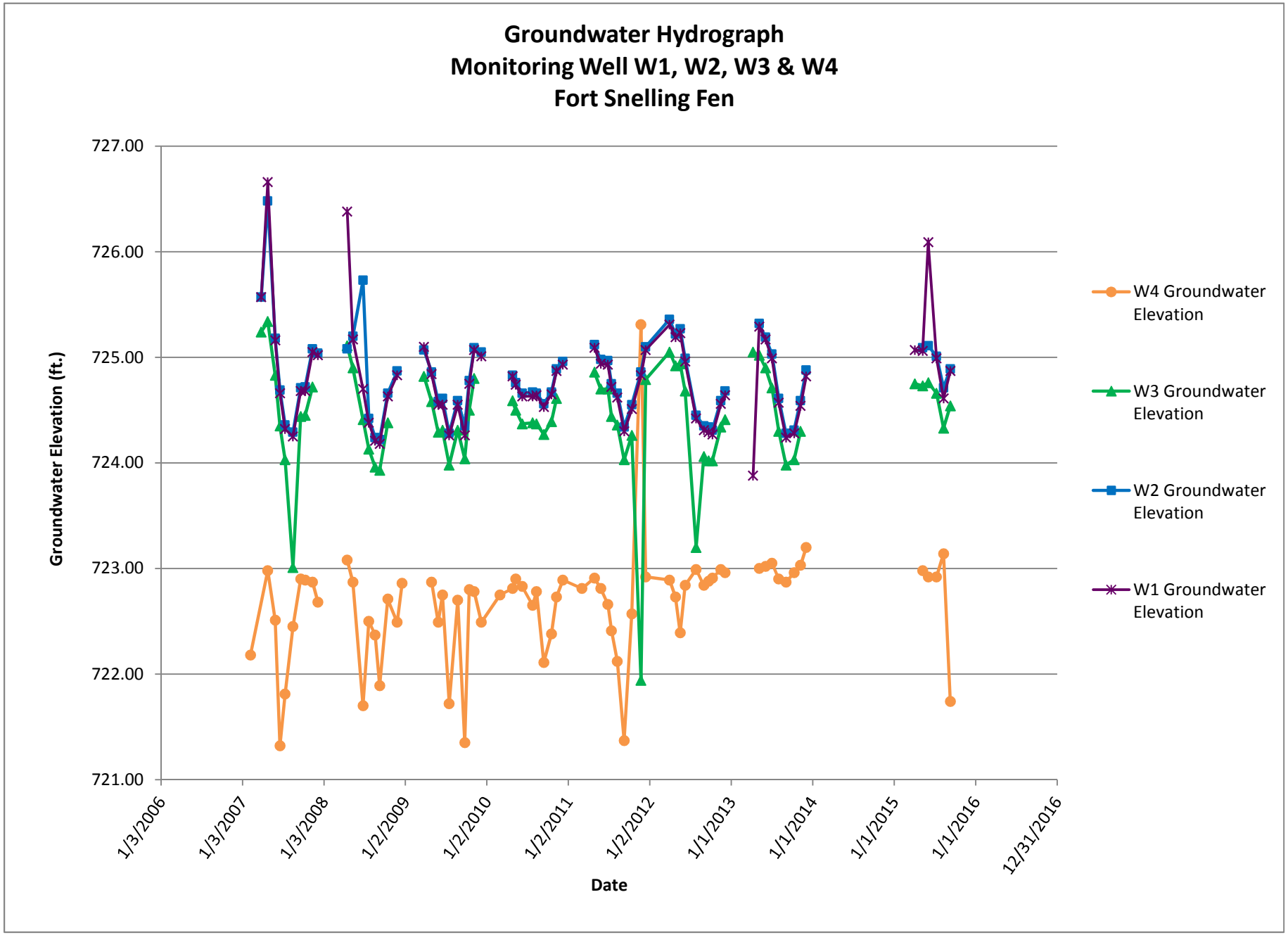

Groundwater Hydrograph
Monitoring Wells N3, N4 & N5
Fort Snelling Fen
Groundwater Elevation (ft.)
724.50
724.00
723.50
723.00
722.50
722.00
721.50
721.00
720.50
720.00
719.50
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
N-5 Groundwater Elevation
N-3 Groundwater Elevation
N-4 Groundwater Elevation

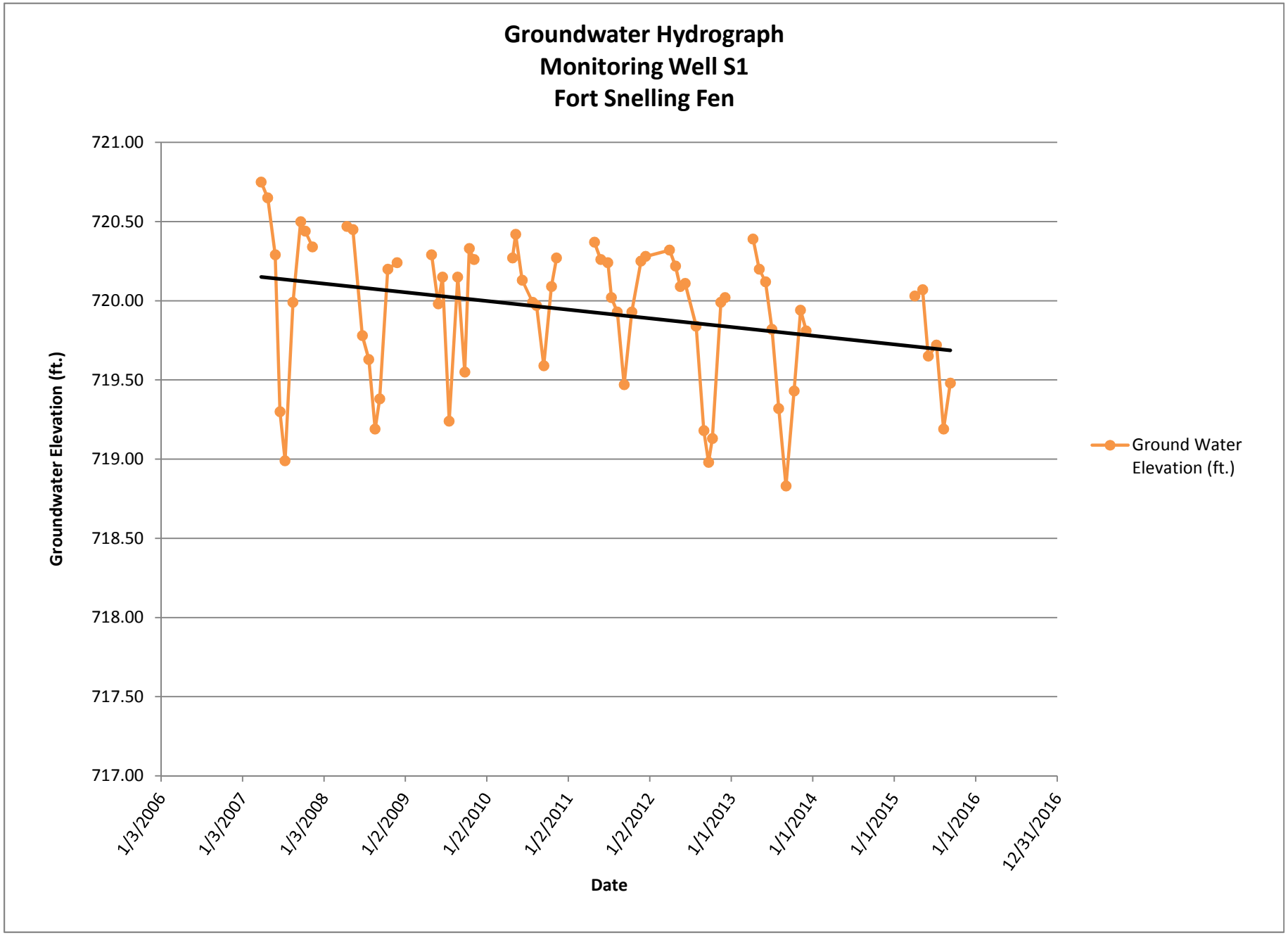

Groundwater Hydrograph
Monitoring Well W1
Fort Snelling Fen
Groundwater Elevation (ft.)
727.00
726.50
726.00
725.50
725.00
724.50
724.00
723.50
723.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

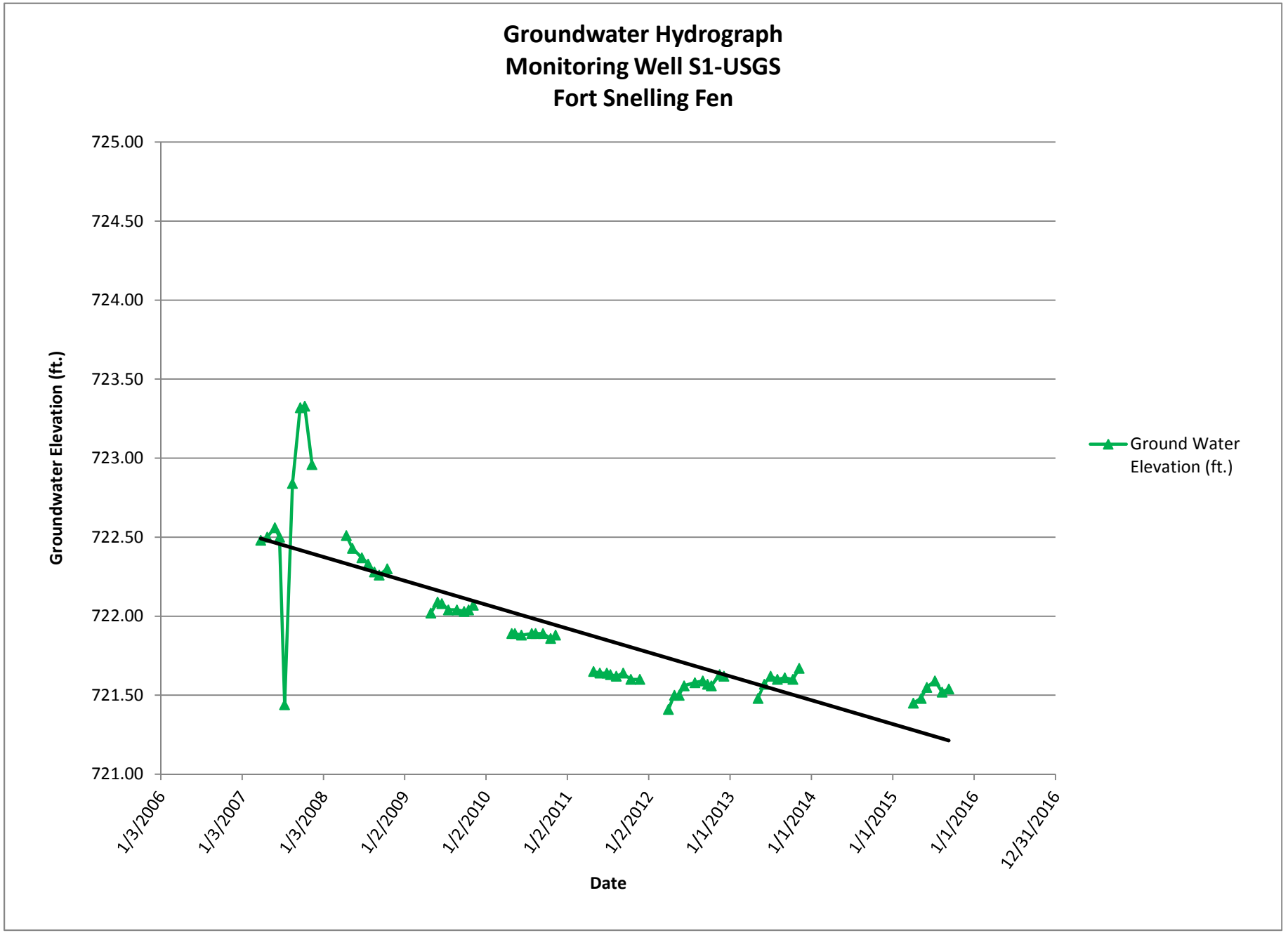

Groundwater Hydrograph
Monitoring Well W2
Fort Snelling Fen
Groundwater Elevation (ft.)
727.00
726.50
726.00
725.50
725.00
724.50
724.00
723.50
723.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

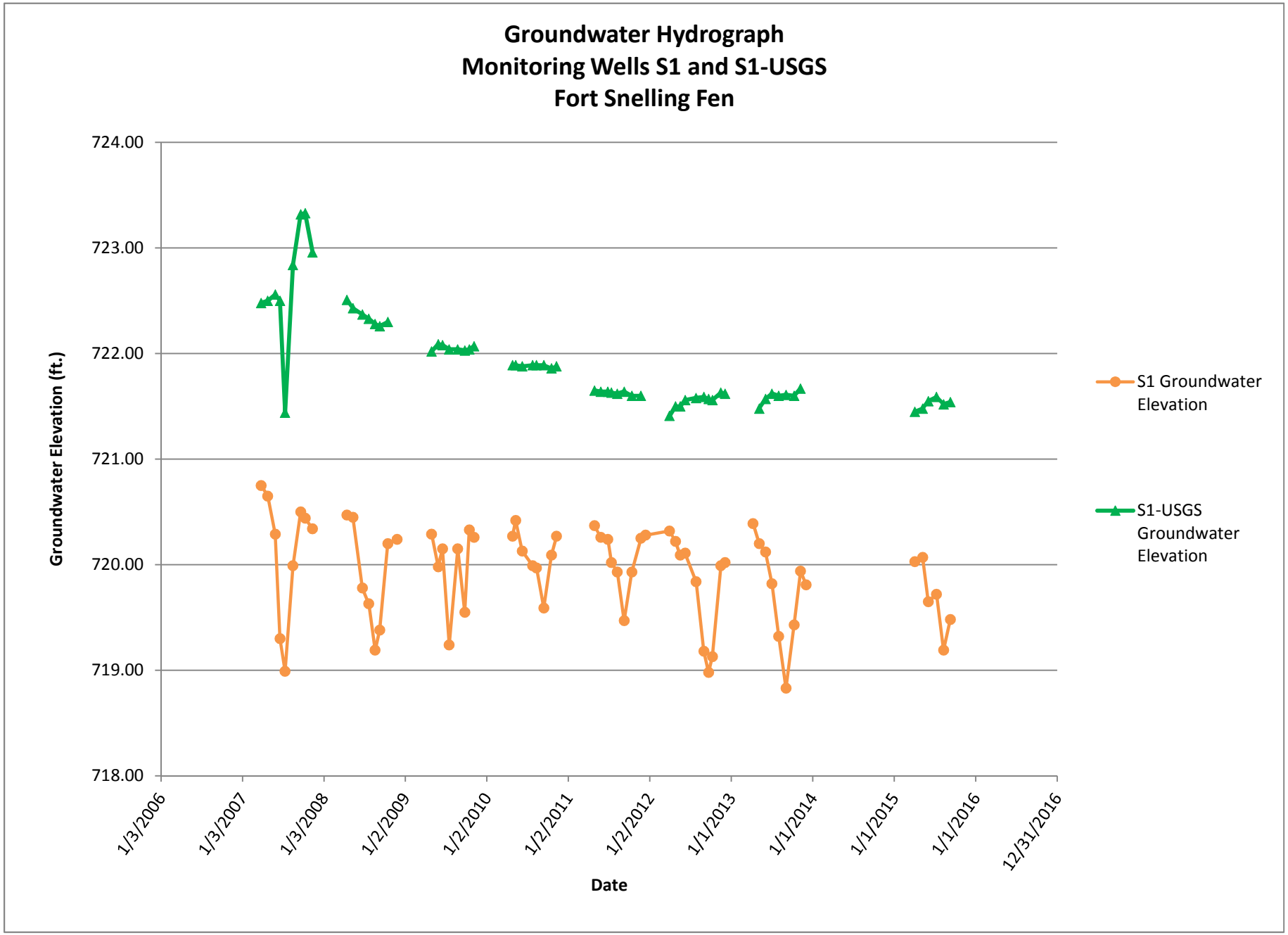

Groundwater Hydrograph
Monitoring Well W3
Fort Snelling Fen
727.00
726.00
725.00
724.00
723.00
722.00
721.00
720.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well W4
Fort Snelling Fen
727.00
726.00
725.00
724.00
723.00
722.00
721.00
720.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well W1, W2, W3 & W4
Fort Snelling Fen
Groundwater Elevation (ft.)
727.00
726.00
725.00
724.00
723.00
722.00
721.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
W4 Groundwater Elevation
W3 Groundwater Elevation
W2 Groundwater Elevation
W1 Groundwater Elevation


Groundwater Hydrograph
Monitoring Well S1
Fort Snelling Fen
721.00
720.50
720.00
719.50
719.00
718.50
718.00
717.50
717.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well S1-USGS
Fort Snelling Fen
Groundwater Elevation (ft.)
725.00
724.50
724.00
723.50
723.00
722.50
722.00
721.50
721.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Wells S1 and S1-USGS
Fort Snelling Fen
Groundwater Elevation (ft.)
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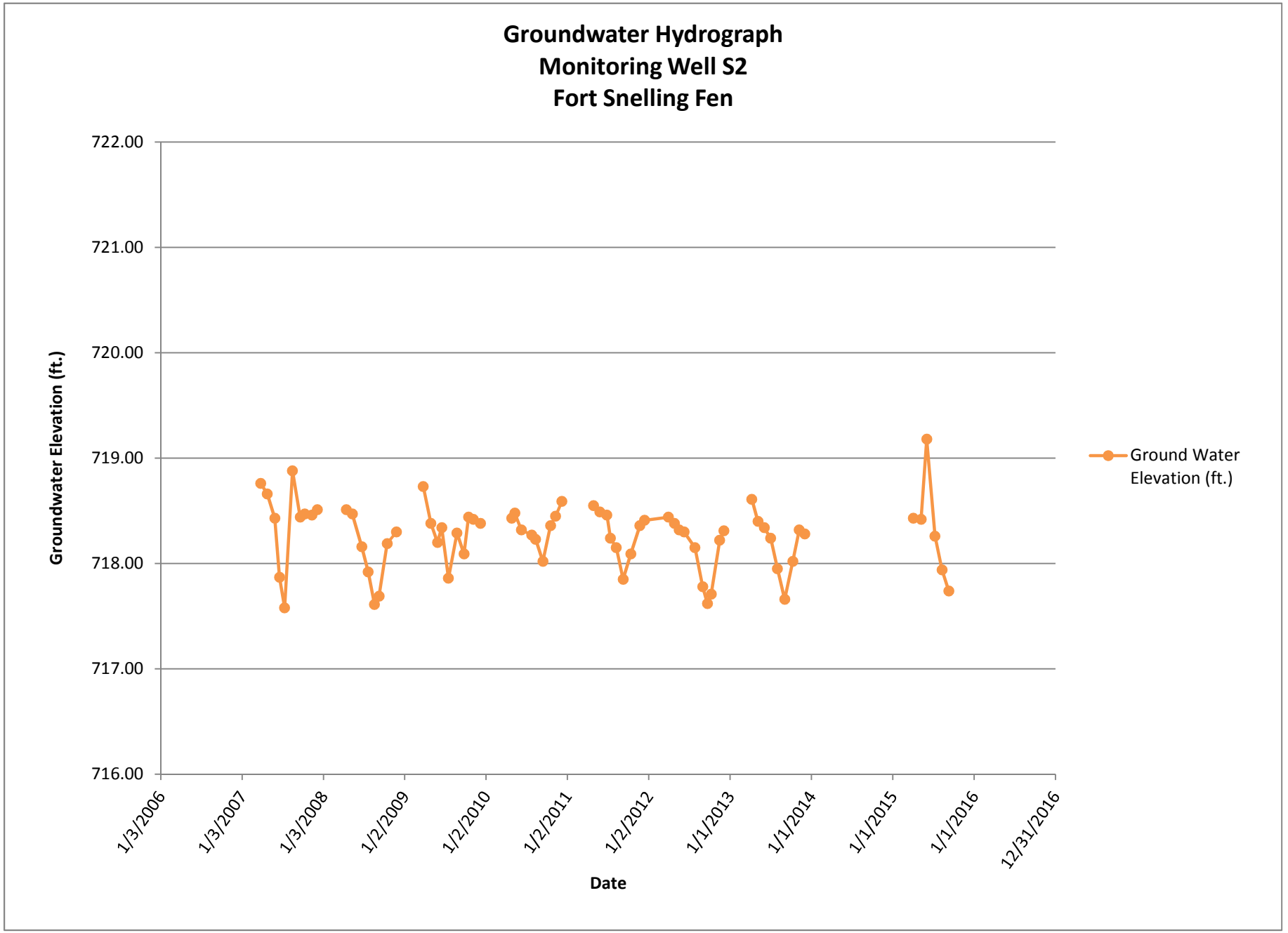
722.00
721.00
720.00
719.00
718.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
S1 Groundwater Elevation
S1-USGS Groundwater Elevation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Monitoring Well S2
Fort Snelling Fen
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721.00
720.00
719.00
718.00
717.00
716.00
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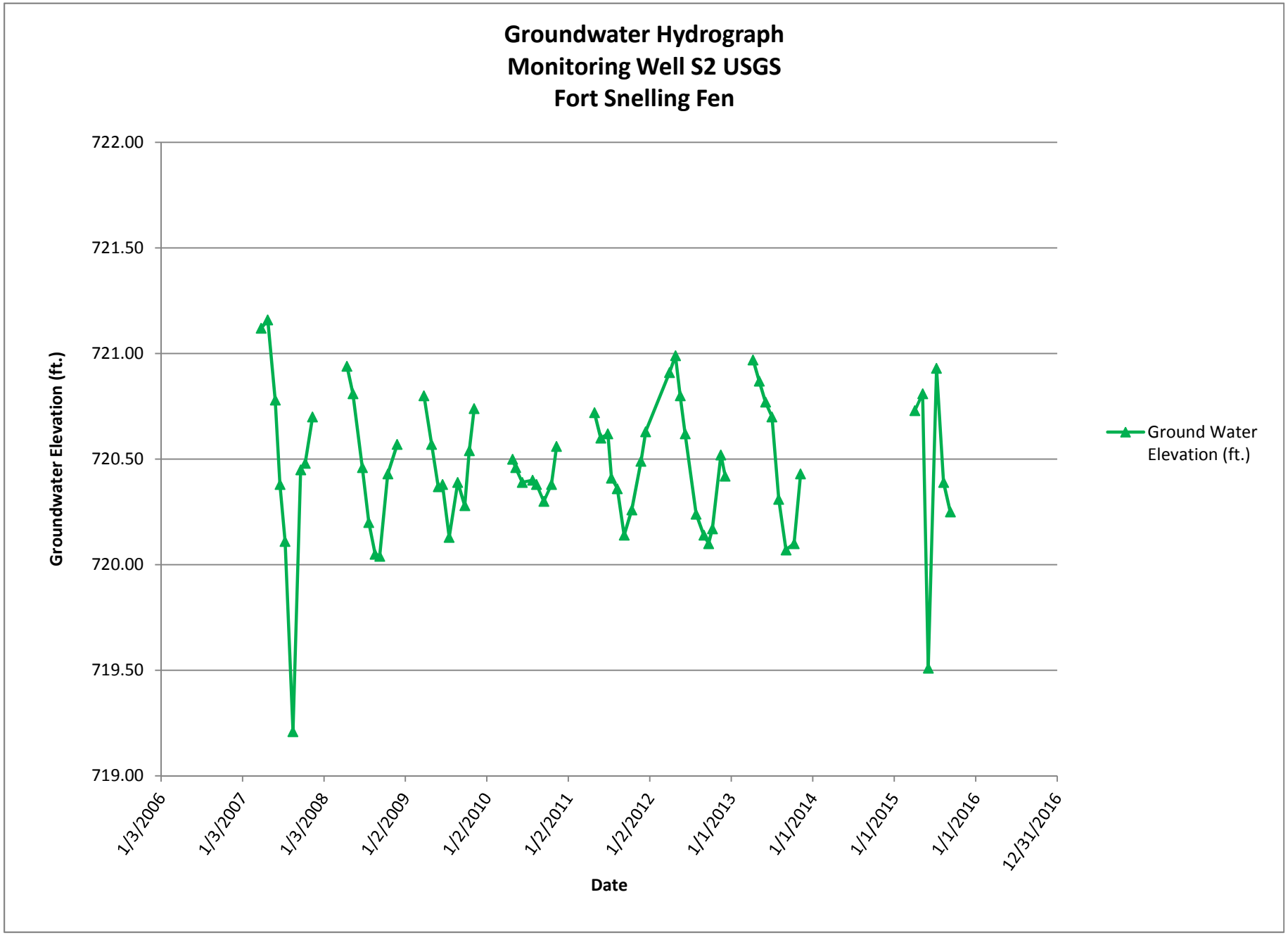
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)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Fort Snelling Fen
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720.50
720.00
719.50
719.00
Groundwater Elevation (ft.)
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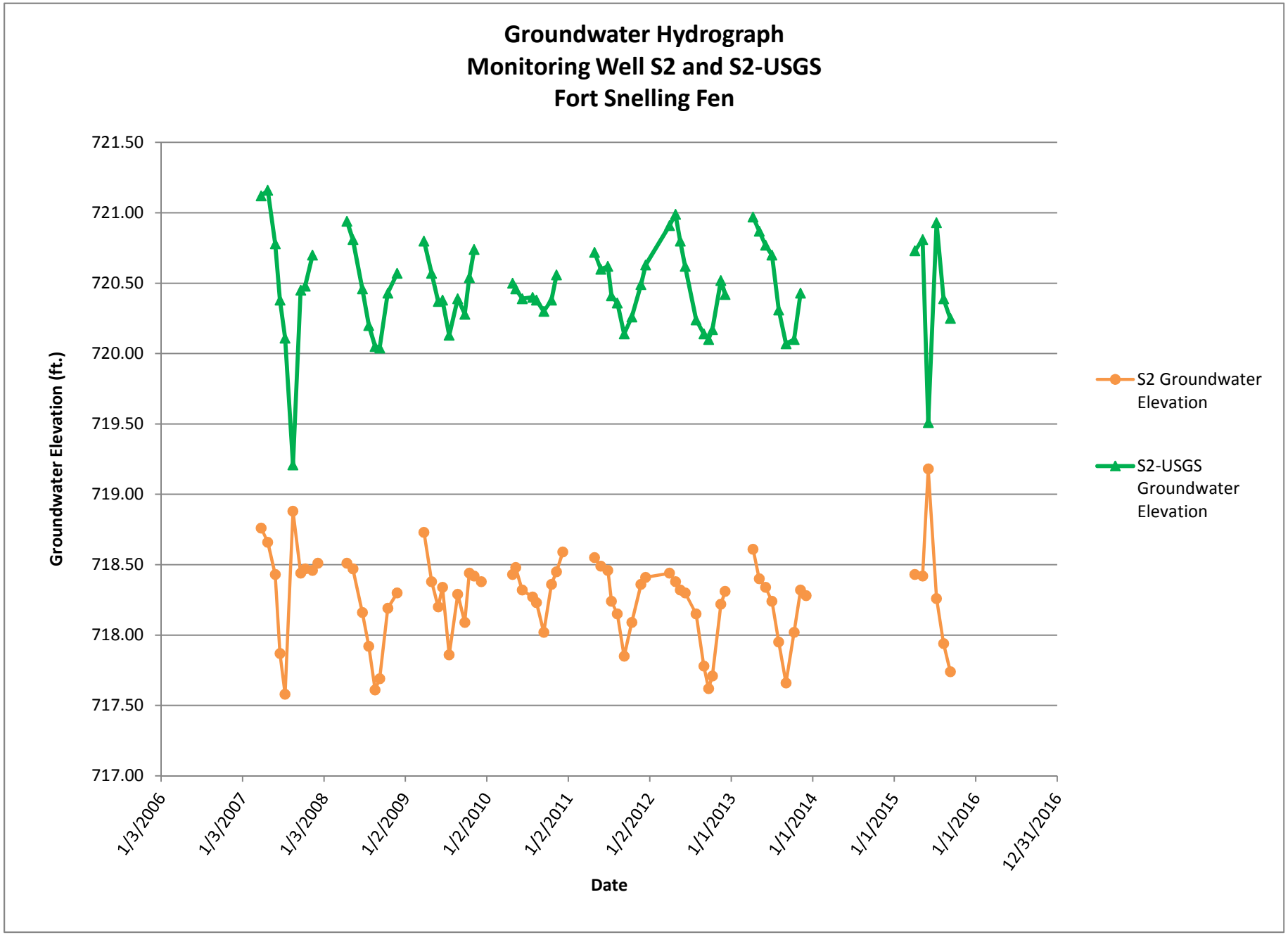
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)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Monitoring Well S2 and S2-USGS
Fort Snelling Fen
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720.00
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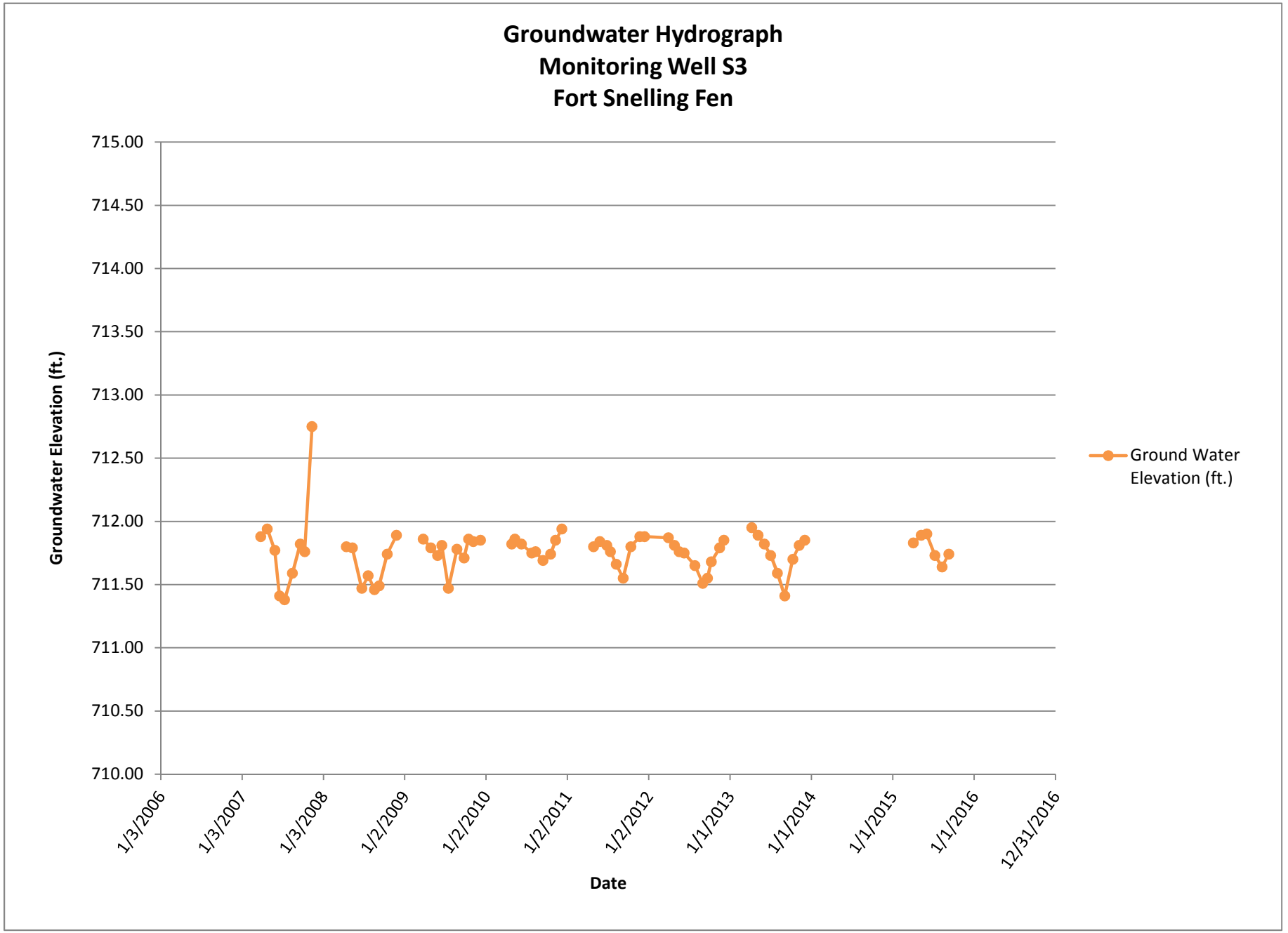
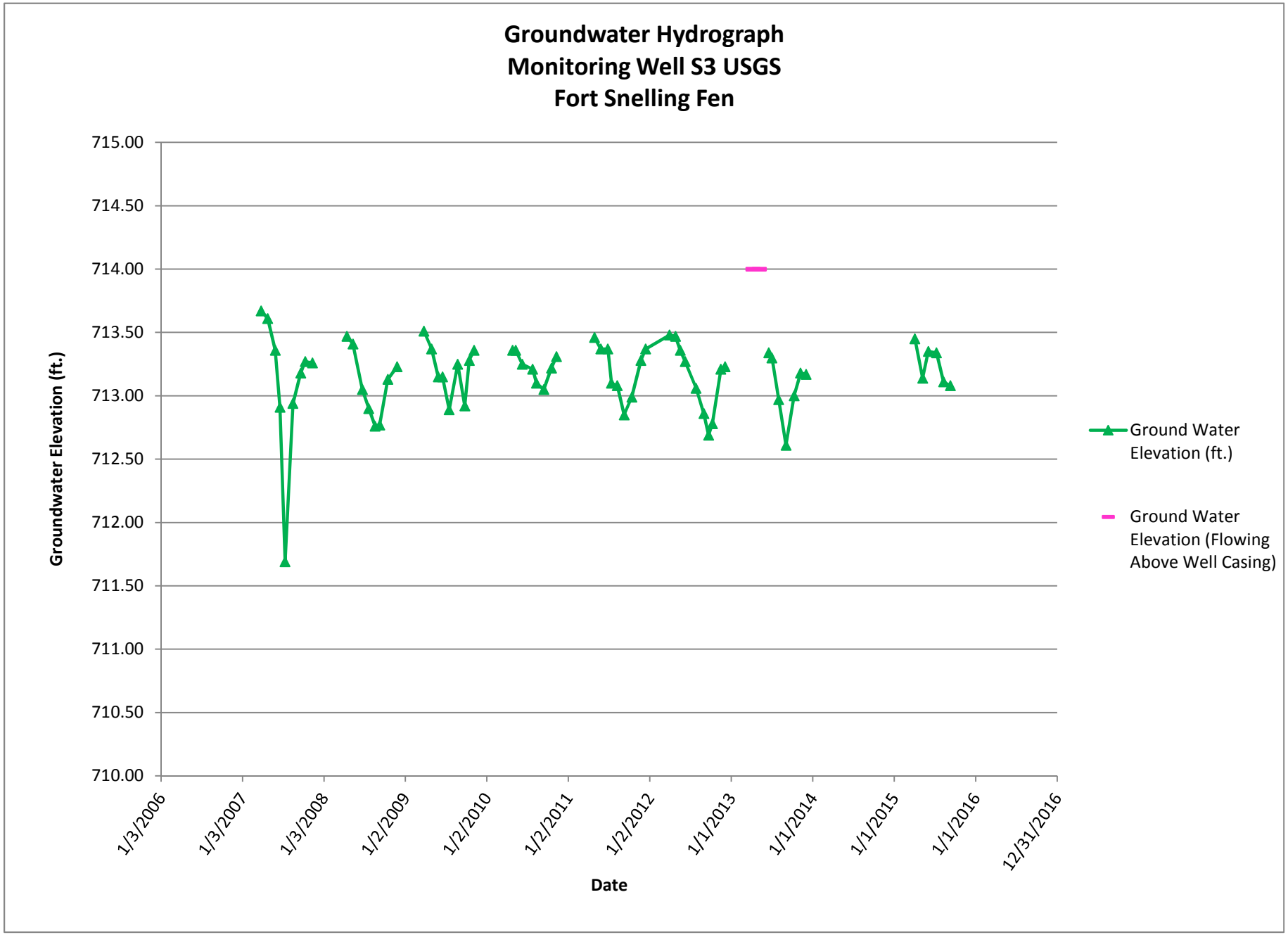
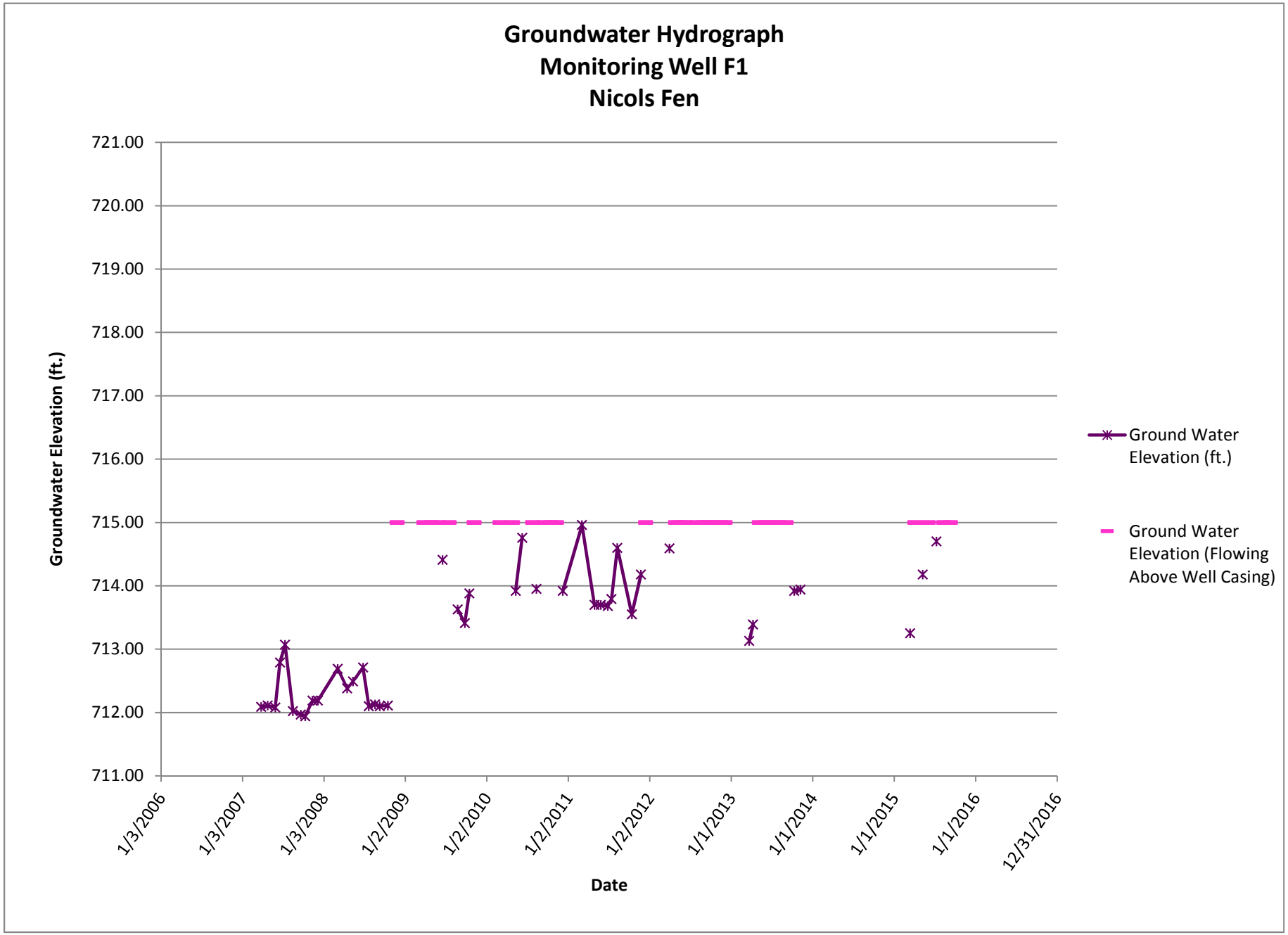
718.50
718.00
717.50
717.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
S2 Groundwater Elevation
S2-USGS Groundwater Elevation


Groundwater Hydrograph
Monitoring Well S3
Fort Snelling Fen
Groundwater Elevation (ft.)
715.00
714.50
714.00
713.50
713.00
712.50
712.00
711.50
711.00
710.50
710.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well S3 USGS
Fort Snelling Fen
Groundwater Elevation (ft.)
715.00
714.50
714.00
713.50
713.00
712.50
712.00
711.50
711.00
710.50
710.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)
Ground Water Elevation (Flowing Above Well Casing)


Groundwater Hydrograph
Monitoring Well F1
Nicols Fen
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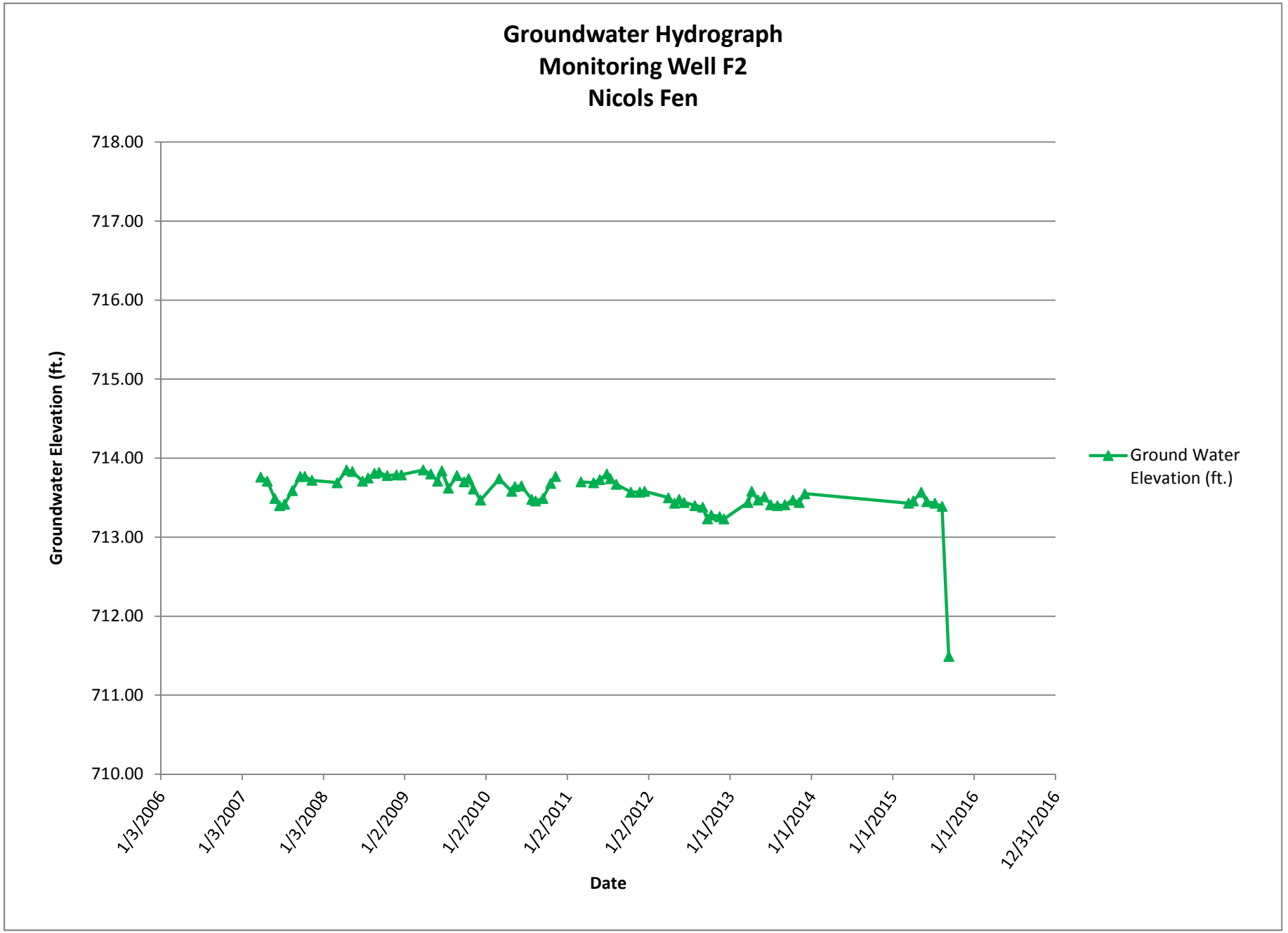
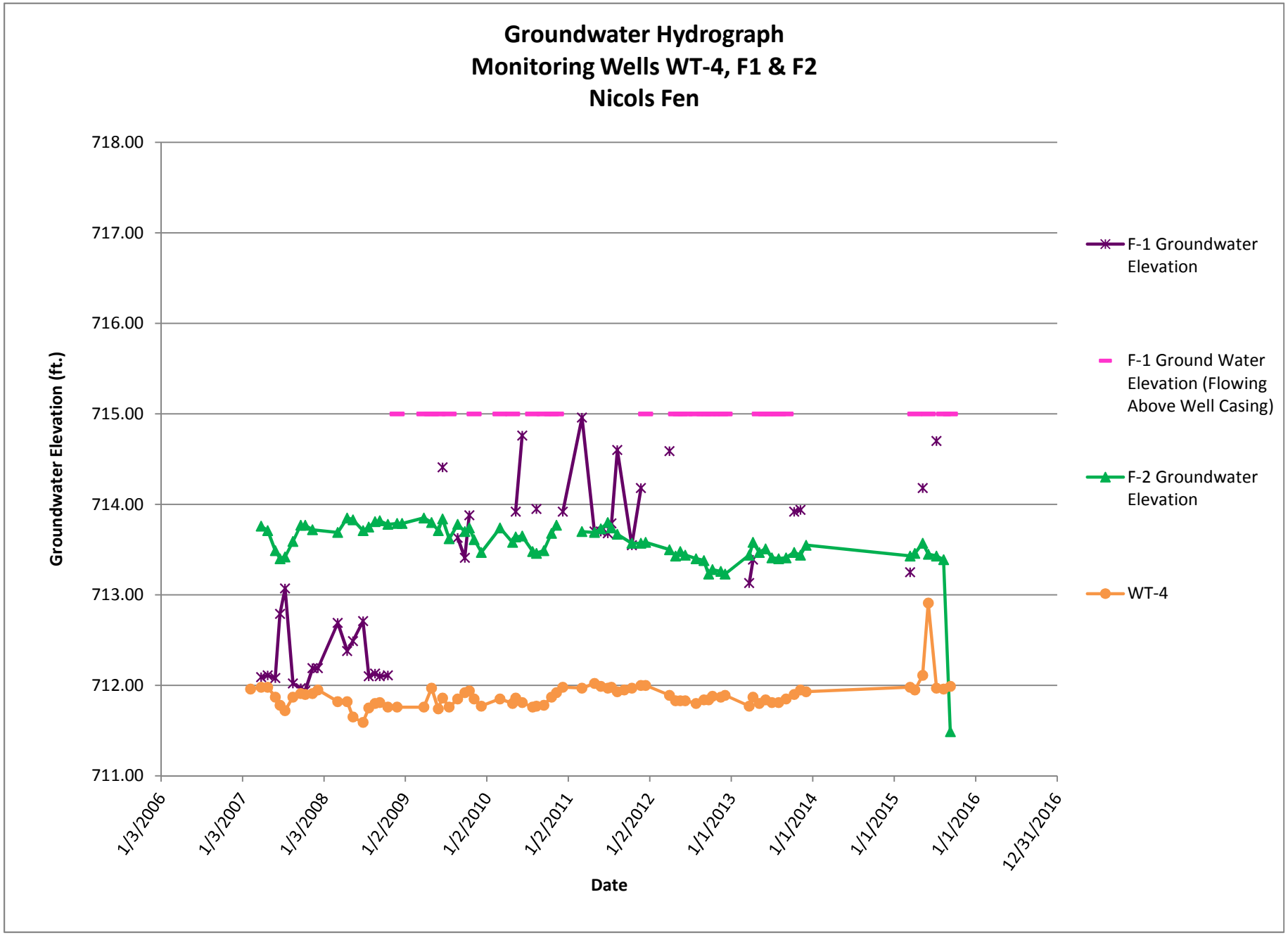
720.00
719.00
718.00
717.00
716.00
715.00
714.00
713.00
712.00
711.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)
Ground Water Elevation (Flowing Above Well Casing)


Groundwater Hydrograph
Monitoring Well F2
Nicols Fen
718.00
717.00
716.00
715.00
714.00
713.00
712.00
711.00
710.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Wells WT-4, F1 & F2
Nicols Fen
Groundwater Elevation (ft.)
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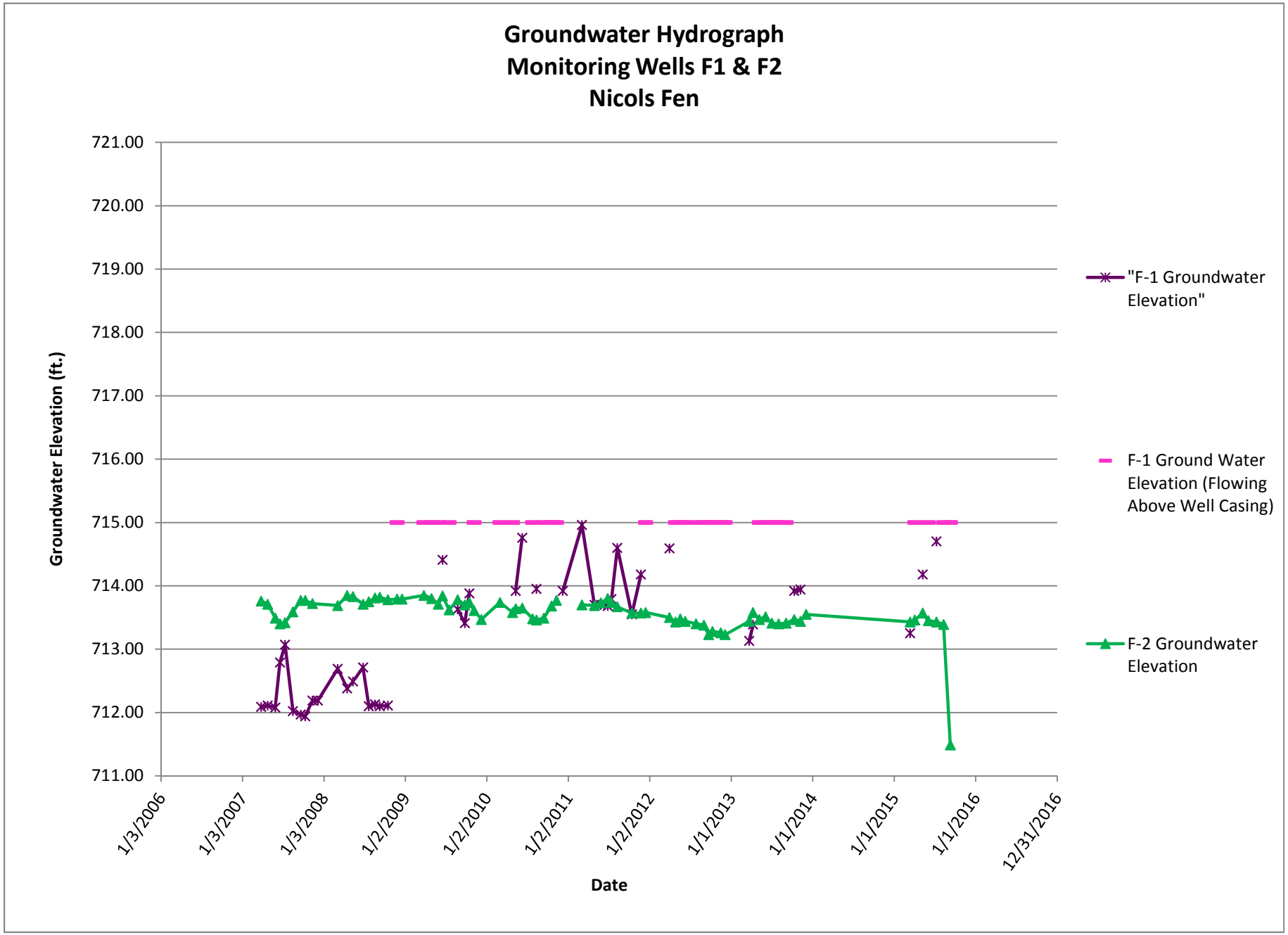
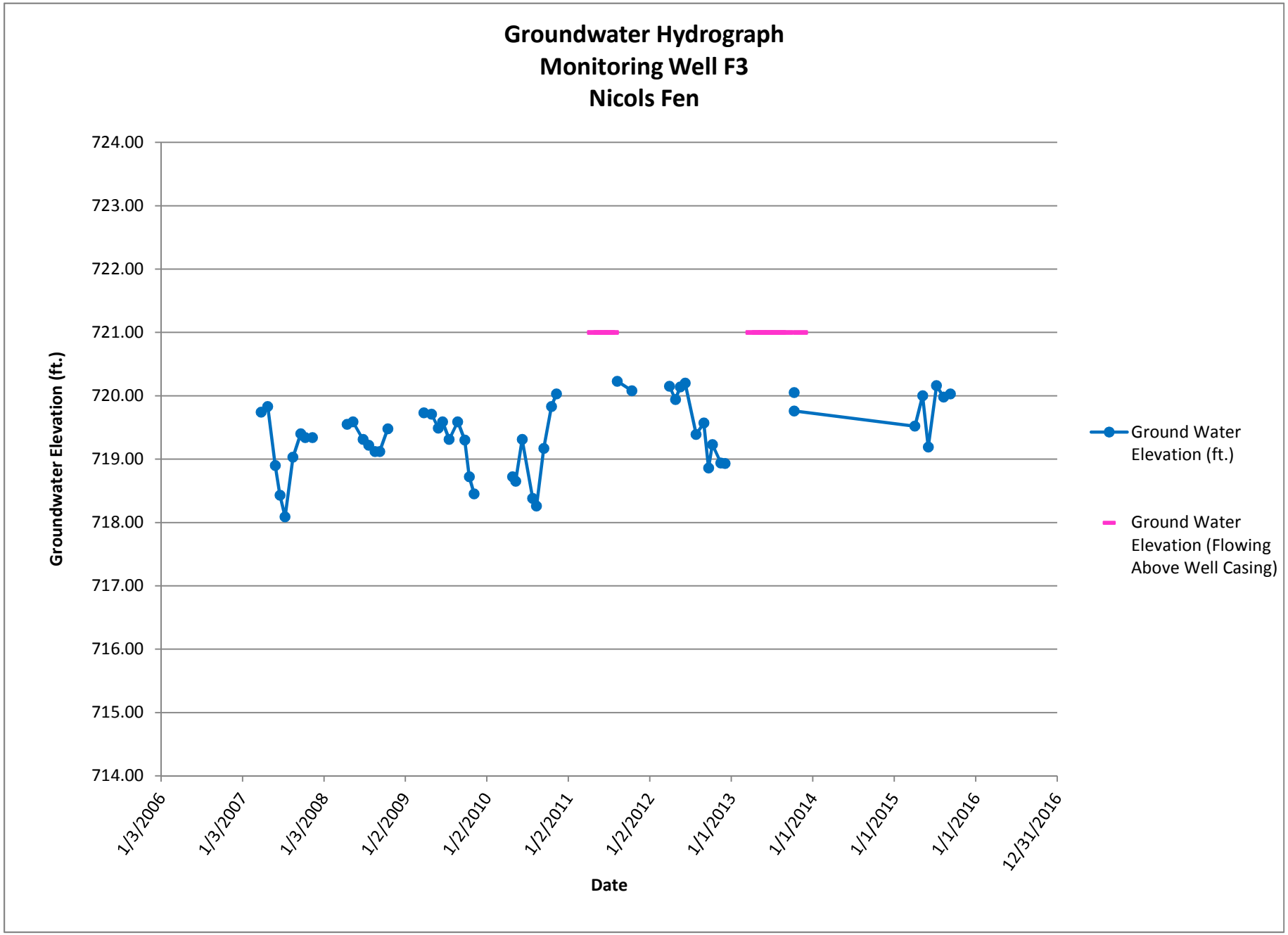
717.00
716.00
715.00
714.00
713.00
712.00
711.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
F-1 Groundwater Elevation
F-1 Ground Water Elevation (Flowing Above Well Casing)
F-2 Groundwater Elevation
WT-4


Groundwater Hydrograph
Monitoring Wells F1 & F2
Nicols Fen
Groundwater Elevation (ft.)
721.00
720.00
719.00
718.00
717.00
716.00
715.00
714.00
713.00
712.00
711.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
"F-1 Groundwater Elevation"
F-1 Ground Water Elevation (Flowing Above Well Casing)
F-2 Groundwater Elevation


Groundwater Hydrograph
Monitoring Well F3
Nicols Fen
Groundwater Elevation (ft.)
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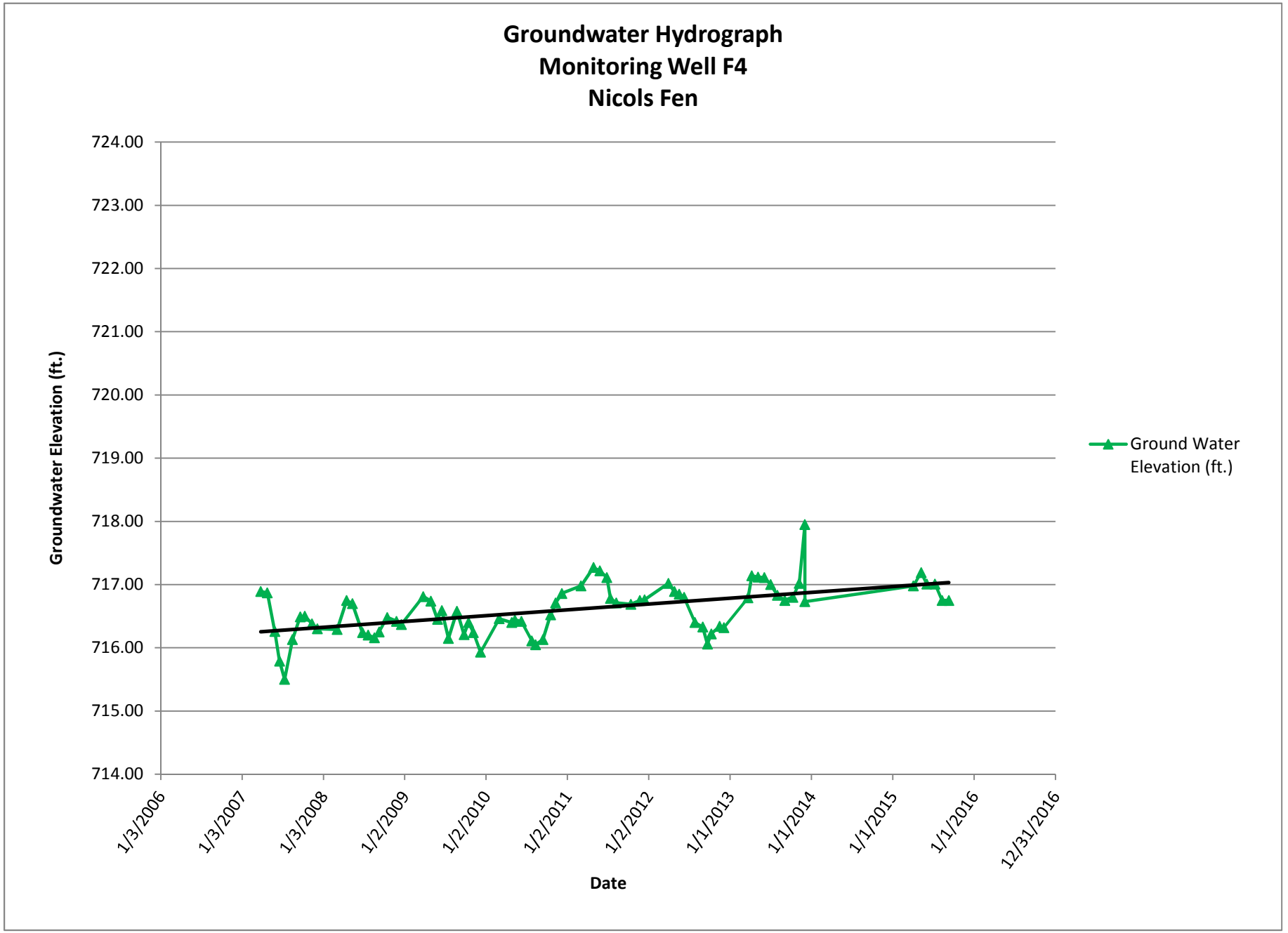
723.00
722.00
721.00
720.00
719.00
718.00
717.00
716.00
715.00
714.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)
Ground Water Elevation (Flowing Above Well Casing)


Groundwater Hydrograph
Monitoring Well F4
Nicols Fen
Groundwater Elevation (ft.)
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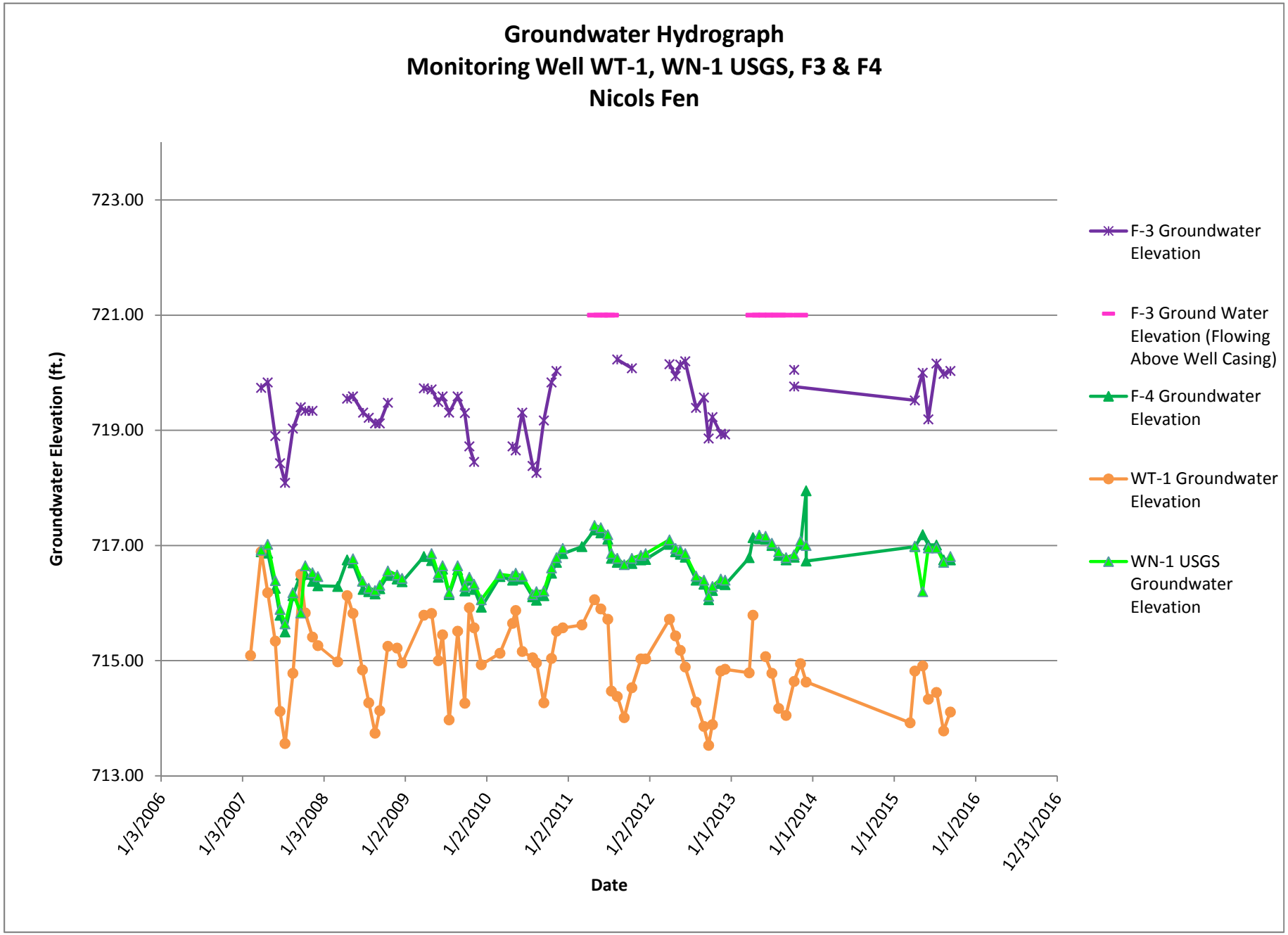
723.00
722.00
721.00
720.00
719.00
718.00
717.00
716.00
715.00
714.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well WT-1, WN-1 USGS, F3 & F4
Nicols Fen
Groundwater Elevation (ft.)
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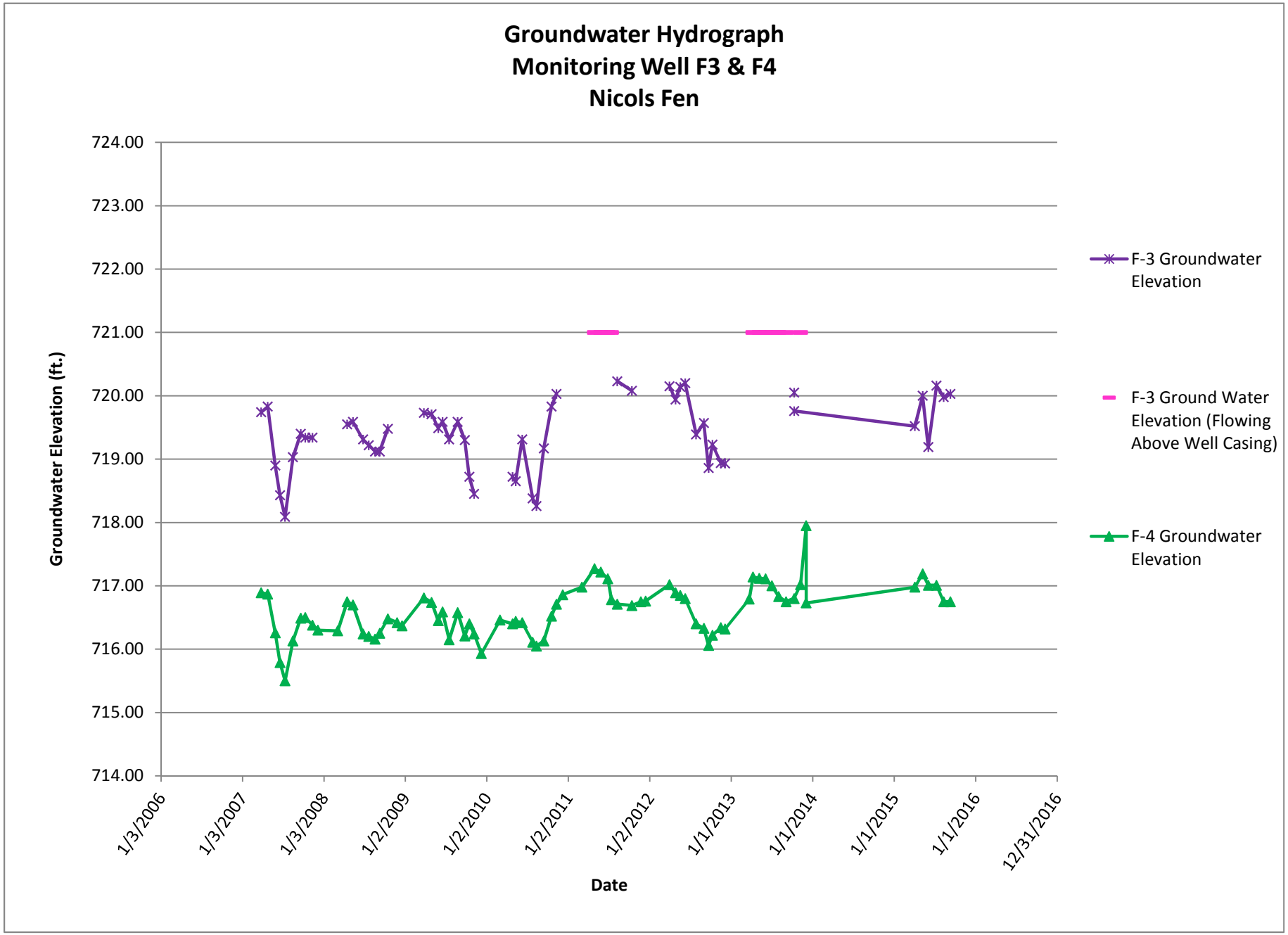
721.00
719.00
717.00
715.00
713.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
F-3 Groundwater Elevation
F-3 Ground Water Elevation (Flowing Above Well Casing)
F-4 Groundwater Elevation
WT-1 Groundwater Elevation
WN-1 USGS Groundwater Elevation


Groundwater Hydrograph
Monitoring Well F3 & F4
Nicols Fen
Groundwater Elevation (ft.)
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722.00
721.00
720.00
719.00
718.00
717.00
716.00
715.00
714.00
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
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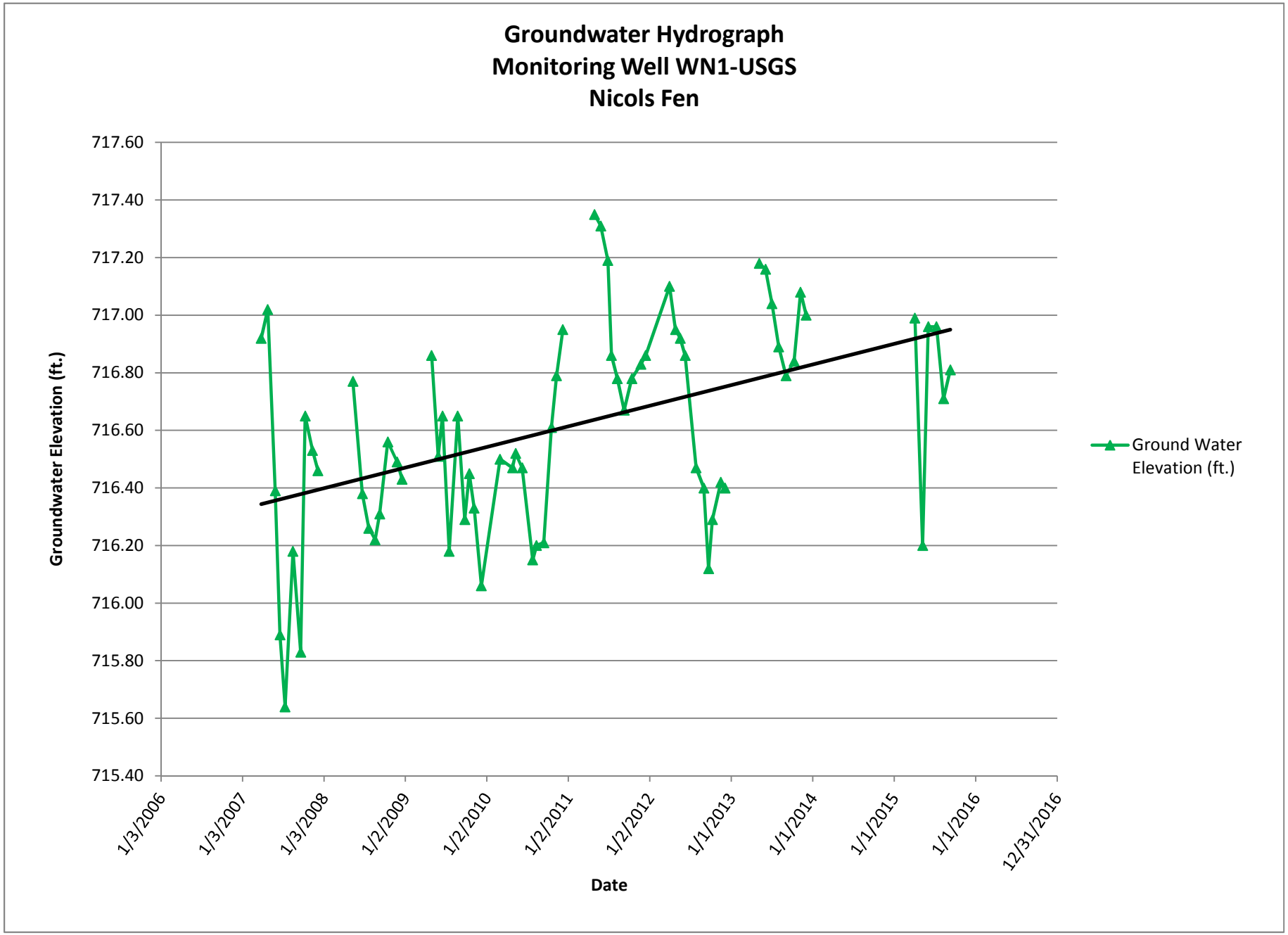
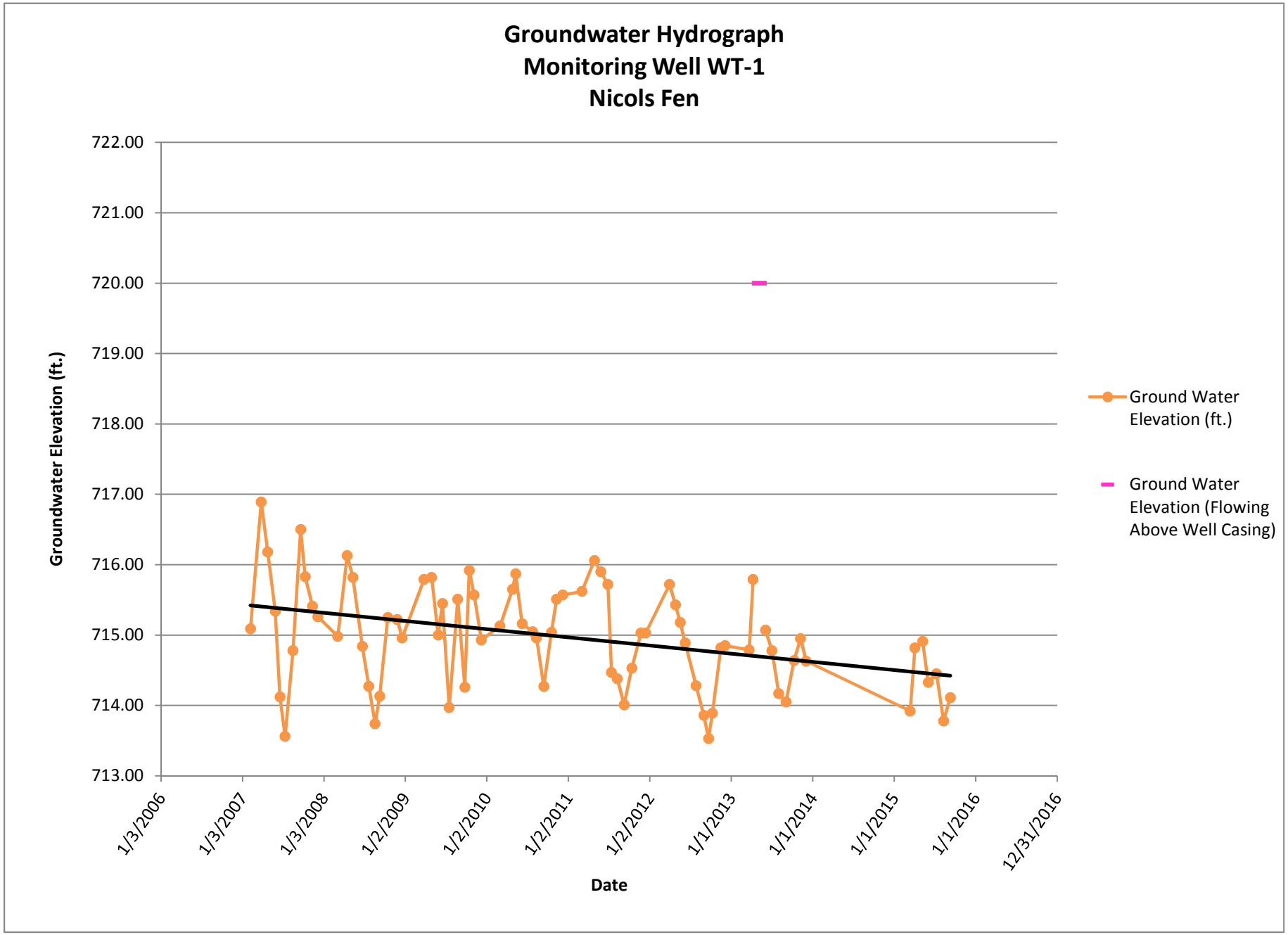
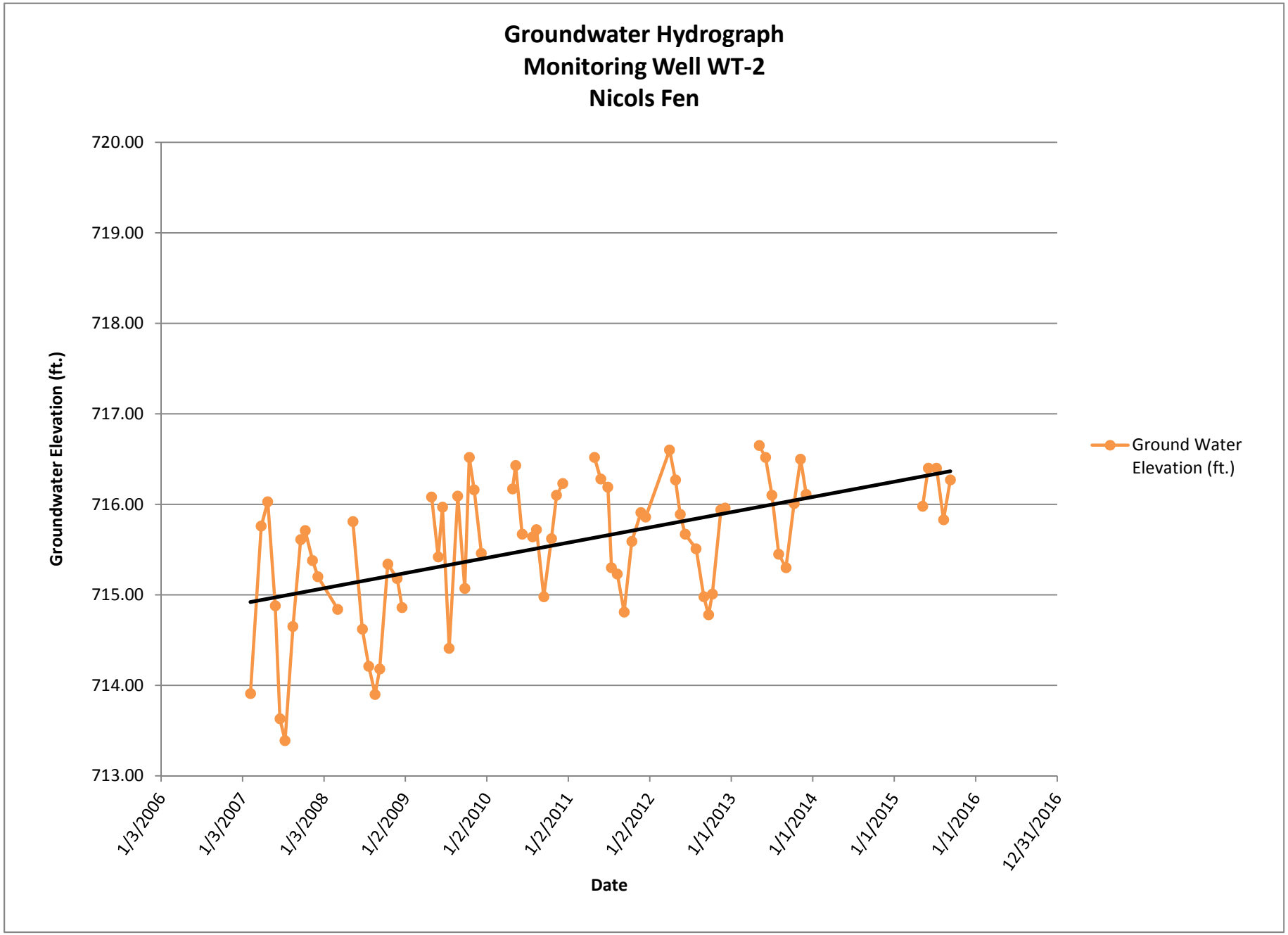
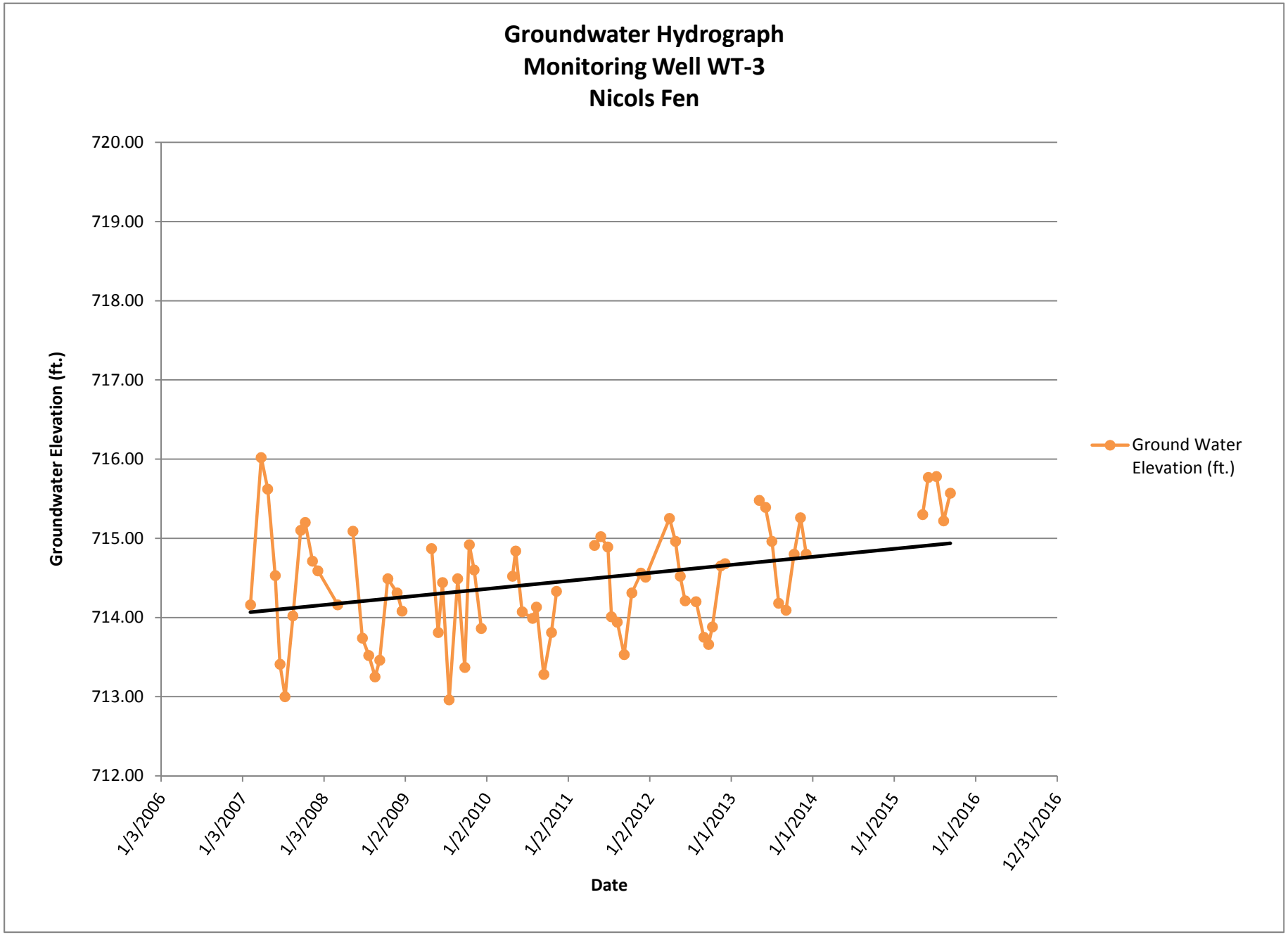
F-3 Ground Water Elevation (Flowing Above Well Casing)
F-4 Groundwater Elevation


Groundwater Hydrograph
Monitoring Well WN1-USGS
Nicols Fen
Groundwater Elevation (ft.)
717.60
717.40
717.20
717.00
716.80
716.60
716.40
716.20
716.00
715.80
715.60
715.40
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well WT-1
Nicols Fen
722.00
721.00
720.00
719.00
718.00
717.00
716.00
715.00
714.00
713.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)
Ground Water Elevation (Flowing Above Well Casing)


Groundwater Hydrograph
Monitoring Well WT-2
Nicols Fen
720.00
719.00
718.00
717.00
716.00
715.00
714.00
713.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well WT-3
Nicols Fen
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719.00
718.00
717.00
716.00
715.00
714.00
713.00
712.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
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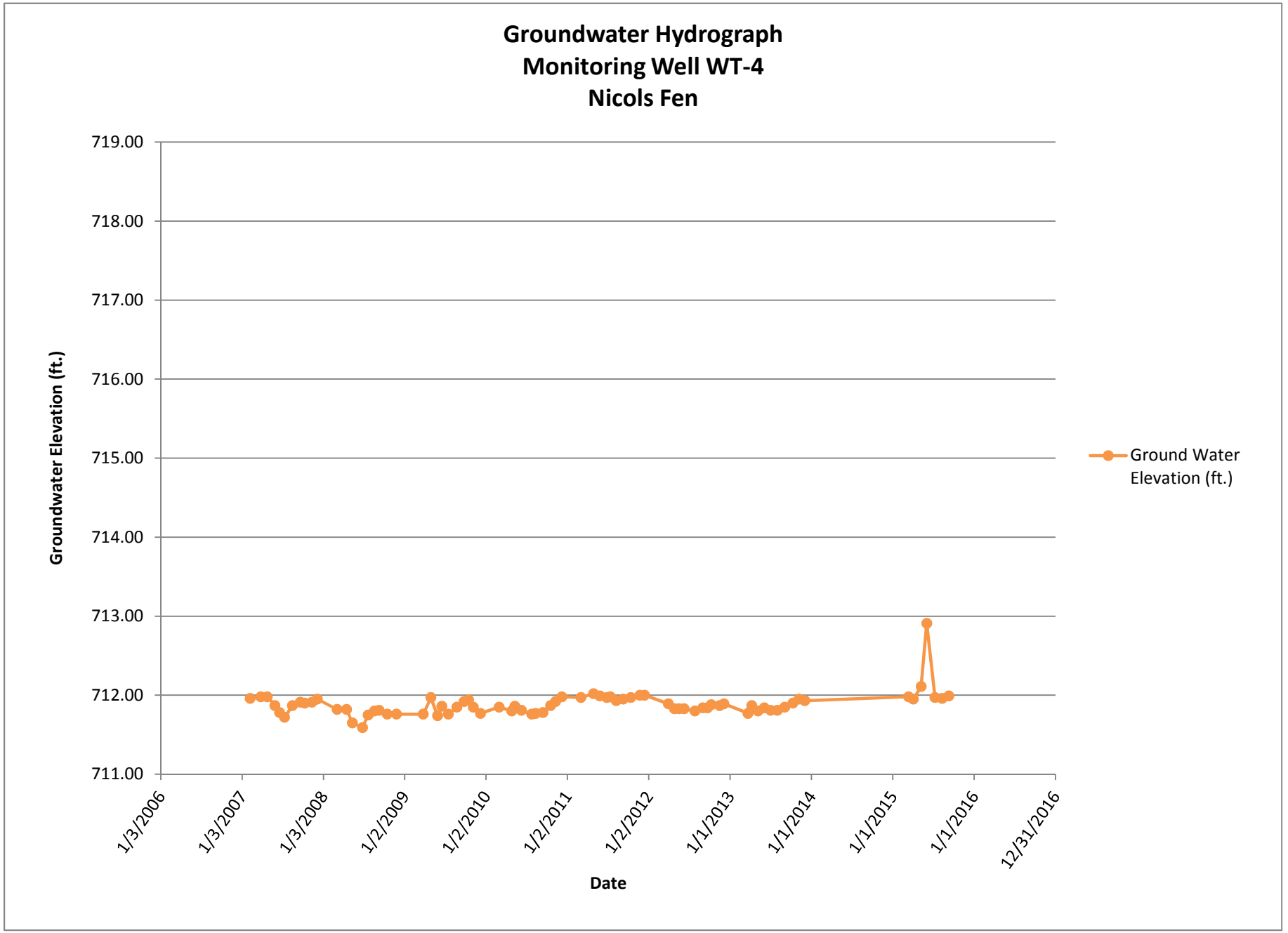
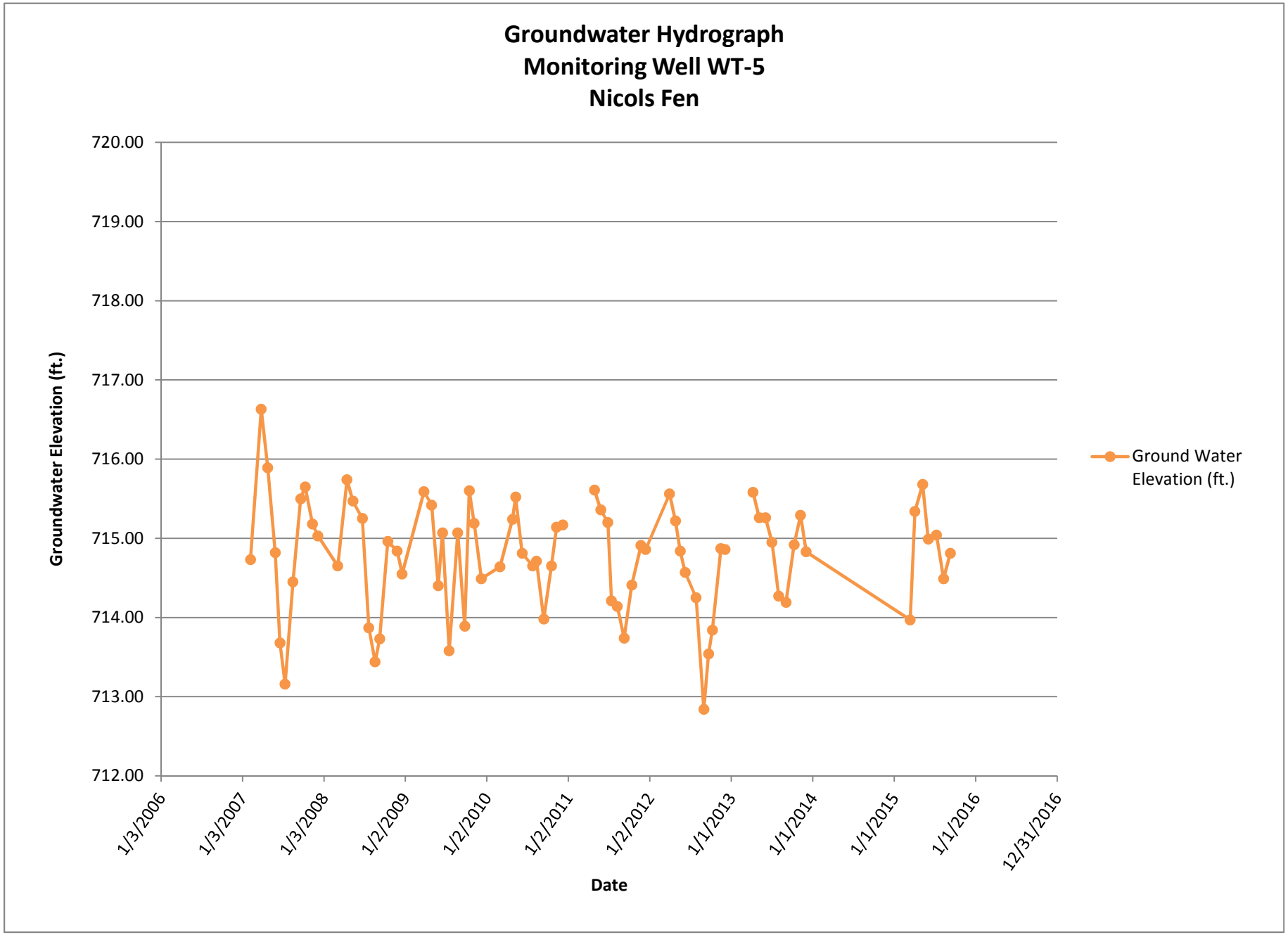
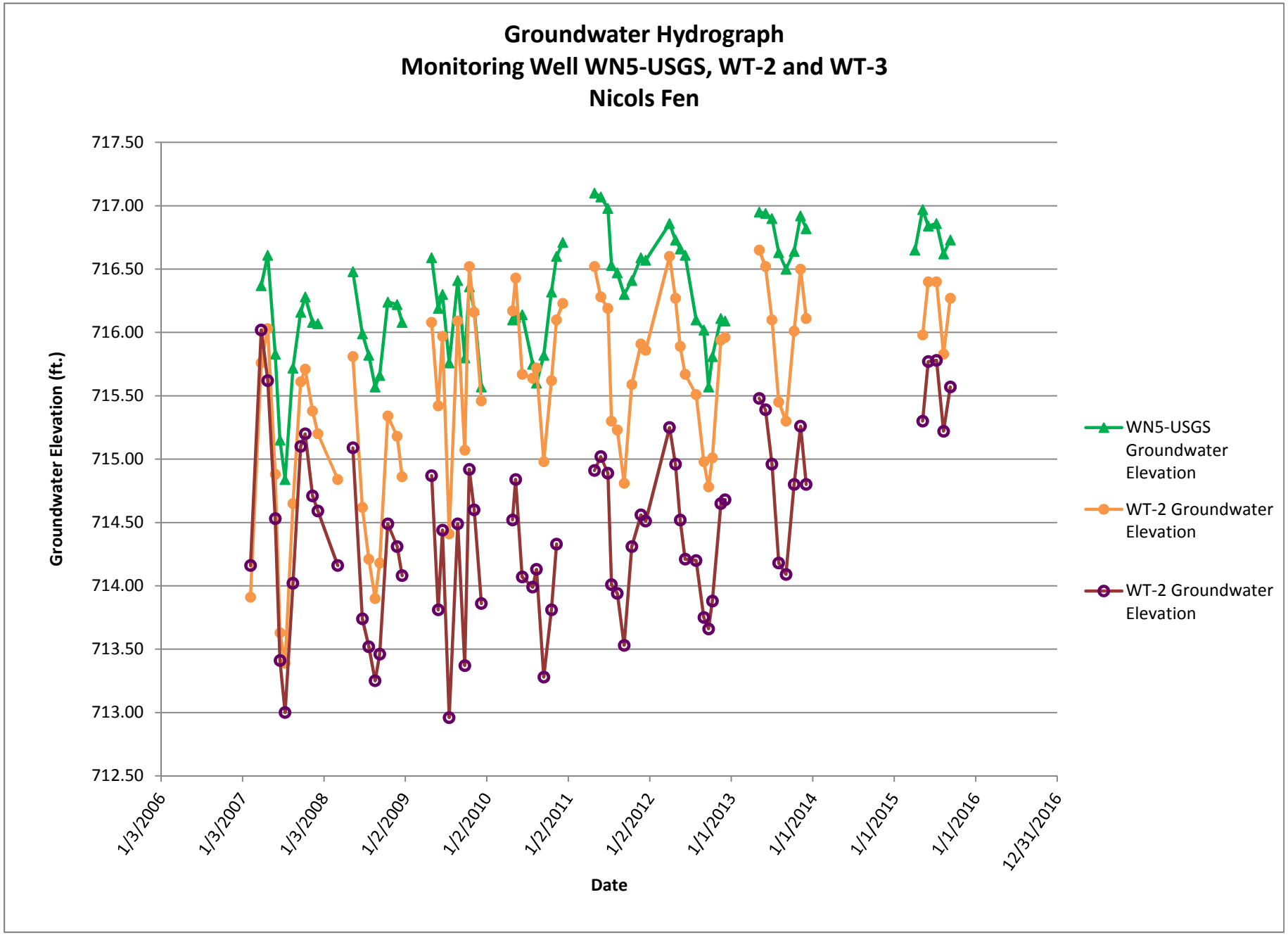
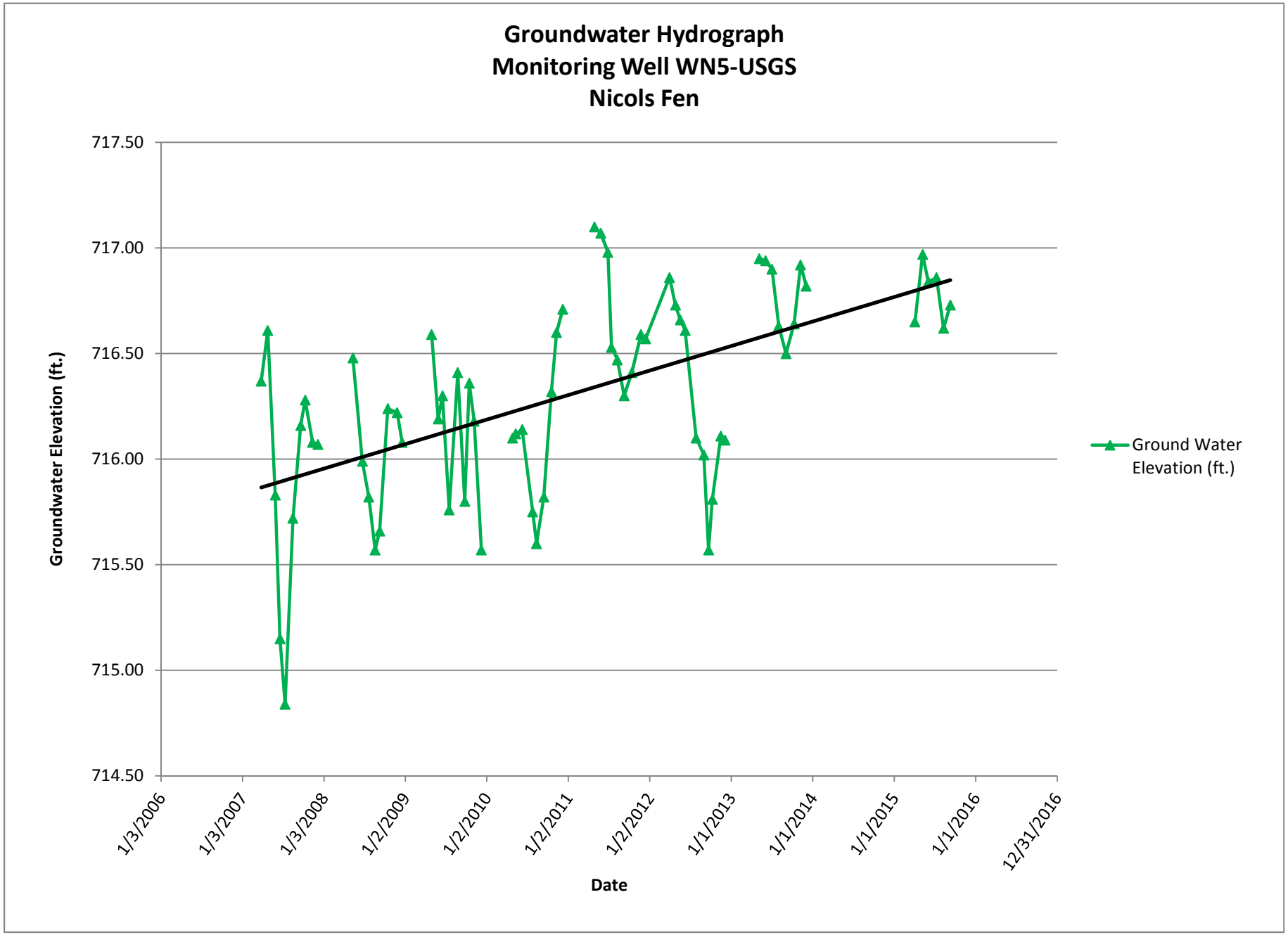
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well WT-4
Nicols Fen
719.00
718.00
717.00
716.00
715.00
714.00
713.00
712.00
711.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well WT-5
Nicols Fen
720.00
719.00
718.00
717.00
716.00
715.00
714.00
713.00
712.00
Groundwater Elevation (ft.)
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)


Groundwater Hydrograph
Monitoring Well WN5-USGS, WT-2 and WT-3
Nicols Fen
Groundwater Elevation (ft.)
717.50
717.00
716.50
716.00
715.50
715.00
714.50
714.00
713.50
713.00
712.50
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
WN5-USGS Groundwater Elevation
WT-2 Groundwater Elevation
WT-2 Groundwater Elevation


Groundwater Hydrograph
Monitoring Well WN5-USGS
Nicols Fen
Groundwater Elevation (ft.)
717.50
717.00
716.50
716.00
715.50
715.00
714.50
1/3/2006
1/3/2007
1/3/2008
1/2/2009
1/2/2010
1/2/2011
1/2/2012
1/1/2013
1/1/2014
1/1/2015
1/1/2016
12/31/2016
Date
Ground Water Elevation (ft.)

APPENDIX B - BIBLIOGRAPHY

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