PRINCETON PUBLIC UTILITIES

WELLHEAD PROTECTION PLAN

Part 2 Amendment:

- Addition of New Wells No. 8 and 9
- Existing Well No. 7 and Emergency Backup Well No. 2
- Potential Contaminant Source Management Strategy
- Impacts of Expected Changes to Land and Water Resources
- Issues, Problems & Opportunities
- Wellhead Protection Plan Goals
- Management Strategies
- Evaluation Plan
- Emergency/Conservation Plan

Date: December 28, 2011
Comm. No. 14315.000

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Public Water Supply Profile

PUBLIC WATER SUPPLY

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DOCUMENTATION LIST

STEP	DATE PERFORMED
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PART 2 EXECUTIVE SUMMARY

This report is an amendment to the original Wellhead Protection Plan for the Princeton Public Utilities Commission (PUC) in the City of Princeton. This wellhead protection plan has been developed for the Princeton Public Utility Well No. 7 (unique number 578949), Well No. 8 (unique number 751504), and Well No. 9 (unique number 749848). There is one backup well for the Public Utility, Well No. 2 that is used on an emergency basis only (unique number 219478). Well No. 5 (unique number 184979) and Well No. 6 (unique number 458591) have been sealed and will not be considered in this report.

This portion of the Wellhead Protection Plan (WHP) contains:

- Results of the Potential Contaminant Source Inventory;
- Potential Contaminant Source Management Strategy;
- Emergency/Alternative Water Supply Contingency Plan; and
- Wellhead Protection Program Evaluation Plan.

Part 1 of the Wellhead Protection Plan presented the 1) delineation of the wellhead protection area (WHPA) and the drinking water supply management area (DWSMA), and 2) the vulnerability assessments for the system's wells and the aquifer within the DWSMA. The amendment for Part 1 of the WHP was completed by TKDA, LBG, PUC, and the Minnesota Department of Health (MDH). The plan was approved on January 14, 2011. The boundaries of the WHPA/DWSMA are shown in Figures 1 and 2. There are two DWSMA areas; the North and the South. The North DWSMA was from the original plan, however with more data and modeling the DWSMA boundaries have changed slightly to include new areas and do not include some areas from the original boundary. Most of the North DWSMA is within the city limits of Princeton with a small section in Princeton Township. The South DWSMA is located within the city limits of Princeton and also in Baldwin Township.

The **vulnerability assessment for the aquifer within the DWSMAs** was performed using available information and indicates that the aquifer used by the public water supply is considered to be moderately to highly vulnerable to contamination. The aquifer is beneath a clay confining unit that is permeable as indicated by the presence of tritium in Well Nos. 7, 8, and 9. Consequently, there are many potential sources of contamination to the aquifer. This information was presented to the WHP team during the Second Scoping Meeting held with the MDH (March 9, 2011) when the necessary requirements for the content of Part 2 were outlined and discussed in detail. Due to the fact that the vulnerability varies from moderately to highly vulnerable throughout the DWSMA it was decided by the WHP team that the entire area would be considered highly vulnerable to make it easier to manage the whole DWSMA as one level of vulnerability.

The **vulnerability assessment for the public water supply system's wells** indicates that the wells are vulnerable to contamination. The information and data contained in Chapters 1-4 of this part of the WHP (hereafter referred to as the Plan) was used to formulate the approaches taken to address potential contamination sources. Management strategies are included in Chapter 5.

In Chapter 1, the required data elements indicated by the MDH in the Scoping 2 Notice are addressed, as well as the data's degree of reliability. Pertinent data elements include information about the geology, water quality, and water quantity. The data elements and information supplied

in Part 1 of the Plan are based on the assessment that the aquifer providing drinking water for this system is moderately to very vulnerable to contamination from land uses such as other wells that penetrate the same aquifer and land uses that either store liquids in tanks or dispose of liquids below the land surface.

Chapter 2 addresses the possible impacts that changes in the physical environment, land use, and water resources have on the public water supply. No land use changes are anticipated in the North DWSMA due to the fact that is it as fully developed as it can be, but there is the possibility that the South DWSMA will have land use changes. Currently a part of the South DWSMA that is located in Baldwin Township is zoned as urban expansion by Sherburne County in their zoning and comprehensive plan; meaning it has the possibility that the land use may change.

The problems and opportunities concerning land use issues relating to the aquifer, well water, and the DWSMA and those issues identified at public meetings are addressed in Chapter 3. The moderately to very vulnerable status of the aquifer and the good quality of water currently produced by the system's wells leaves four major concerns: 1) other wells located within the DWSMA that could become pathways for contamination to enter the aquifer; 2) the pumping effects of other high-capacity wells that may alter the boundaries of the delineated WHPA, reduce the hydraulic head in the aquifer, or cause the movement of contamination toward public water supply well(s); 3) leaking storage tanks that may release contaminants into ground water, and 4) shallow disposal type wells.

The drinking water protection goals that the public water supplier (PWS) would like to achieve with this plan are listed in Chapter 4. In essence, the PWS would like to 1) prevent contamination of the aquifer, 2) manage the aquifer cooperatively to assure sustainable water supplies for all users.

The objectives and action plans for managing the potential sources of contamination are contained in Chapter 5. Actions aimed toward educating the general public about groundwater issues, and collecting data relevant to wellhead protection planning are the general focus.

Chapter 6 contains a guide to evaluate the implementation of the identified management strategies of Chapter 5. The wellhead protection program for the Princeton Public Utilities Commission will be evaluated on an annual basis.

Chapter 7 references the Water Conservation Plan approved by the Minnesota Department of Natural Resources. An emergency/contingency plan was produced to address the possibility that the water supply system is interrupted due to either emergency situations or drought.

Findings in this Wellhead Protection Report are a result of collaboration between the City of Princeton, the Princeton Public Utility Commission, Sherburne and Mille Lacs Counties, Baldwin Township, Princeton Township, the MDH, and TKDA.

Figure 1—NORTH WHPA and DWSMA Map

Figure 2—SOUTH WHPA and DWSMA Map

CHAPTER ONE

DATA ELEMENTS; ASSESSMENT (4720.5200)

I. REQUIRED DATA ELEMENTS

A. Physical Environment Data Elements

1. Precipitation – Precipitation information was included in the development of this plan. Due to the geology of the area, as explained in more detail below, and the high vulnerability of a large area of the DWSMA, precipitation has the potential to influence the recharge to the groundwater aquifer serving this public supply system. Based on data gathered from the Minnesota State climatology office the Princeton area receives an annual rainfall of 28.88 inches. Table 1 in the appendix shows the precipitation data gathered for the last five years from http://climate.umn.edu/.

2. Geology - This data element is required and is presented in the first part of the Plan. The geology of the Princeton area consists of alluvium, glacial outwash, and glacial till above sandstone and crystalline bedrock. The alluvial material consists of gravel, sand, silt, and clay (that is discontinuous). The outwash deposits are sands and gravels that vary in thickness and extent, and terminate into clay till that contains sand and gravel bodies. Sandstone and bedrock are found approximately 15 to 50 meters below the ground surface. Groundwater is mostly found under confined and unconfined conditions in the sand and gravel and in the sandstone bedrock. The clay aquitard till layer provides some protection to the buried drift aquifer. There have been detections of tritium in Wells No. 7, 8, and 9. The presence of tritium is evidence that surface waters are able to infiltrate in the clay layer in some areas due to the different vulnerability levels of both the North and the South DWSMA, making the system vulnerable to groundwater pollution. The extent of the relationship between the surface waters and the aquifer serving the public water supply system is uncertain; however it appears that there is a connection between them. Due to better geologic information and modeling the North DWSMA boundaries have changed slightly from the previous report. The Minnesota Geologic Survey is going to be completing a County Geologic Atlas and it will be available to Sherburne County in 2013. It would be beneficial for Princeton to support this effort to get a better understanding of the geology of the area. For more detailed information about the geology, the part 1 plan is on file with Princeton Public Utilities Commission.

3. Soils - This element applies to this report because contaminates can be conveyed from the surface to the water serving this water supply system. Soil data and infiltration characteristics were used in the delineation of the WHPA. See Exhibit 7 for a map of soil types for the North DWSMA and Exhibit 8 for a map of soil types for the South DWSMA. Both the Mille Lacs and Sherburne Soil and Water Conservation Districts (SWCD) have additional information in their Water Plans that are available on their respective websites.

4. Water Resources –
    a) South DWSMA - There are no protected waterways in the South DWSMA; however there are a few ponds or wetlands.
    b) North DWSMA - In the North DWSMA the Rum River is a protected waterway by the Department of Natural Resources and is a regional discharge point located on the east side of the City. From the Part 1 report it shows that groundwater flows easterly or towards the Rum River, and because it is down gradient from the wells it will not have an effect on the groundwater that Princeton uses. There are also a few wetland areas on the western part of the North DWSMA. Included in the appendix are FEMA floodplain maps for reference.

B. Land Use Data Elements

1. Land Use - Due to the information contained in Part 1 which indicates that the aquifer is variably vulnerable from moderate to highly vulnerable to land use activities, an inventory including wells, storage tanks, and shallow disposal wells located within the DWSMA was performed. A listing of these wells and potential contaminant sites was inventoried for both the North and South DWSMAs, and maps showing their locations are included in the Appendix as Exhibits 1 and 2. No shallow type disposal wells, or Class V wells, were known to exist within the DWSMA. Other information relating to land use such as comprehensive land use maps, and zoning maps for the area were included with this Plan, see Exhibits 3-6 in the Appendix. Highway 169 is a major transportation route that goes through both the North and the South DWSMA. There are no oil or gas pipelines in the DWSMA. There is one public drainage system located in the DWSMA, a stormwater pond as shown in Exhibit 15.

    a. North DWSMA – The North DWSMA is located in Mille Lacs County and almost entirely within the City limits with a small section on the west side of the DWSMA that is located in Princeton Township and the land use controlled by Mille Lacs County. Below is a table with the land use/land cover found in the North DWSMA. See Exhibit 9 for a land cover map.

LAND COVER	ACRES	PERCENT	YEAR
Open Water	6.87	1.14	2001
Developed, Open Space	97.16	16.15	2001
Developed, Low Intensity	104.26	17.33	2001
Developed, Medium Intensity	51.24	8.52	2001
Developed, High Intensity	34.83	5.79	2001
Deciduous Forest	47.03	7.82	2001
Evergreen Forest	21.73	3.61	2001
Grassland/Herbaceous	5.77	0.96	2001
Pasture/Hay	74.98	12.46	2001
Cultivated Crops	113.13	18.80	2001
Woody Wetlands	1.33	0.22	2001
Emergent Herbaceous Wetlands	43.26	7.19	2001
Total	601.60	100.00	2001

b. South DWSMA – The South DWSMA is located in Sherburne County and although Well No. 8 and Well No. 9 are located within the city limits of Princeton, they are surrounded by land that is in Baldwin Township. At this time, Sherburne County has jurisdiction over Baldwin Township land use; however the Township is in the process of developing a comprehensive land use and zoning plan. Currently Baldwin Township is serviced by private wells and septic systems. Below is a table with the land use/land cover found in the South DWSMA. See Exhibit 10 for a land cover map.

LAND COVER	ACRES	PERCENT	YEAR
Open Water	1.11	0.12	2001
Developed, Open Space	103.51	10.81	2001
Developed, Low Intensity	58.51	6.11	2001
Developed, Medium Intensity	91.09	9.51	2001
Developed, High Intensity	44.33	4.63	2001
Deciduous Forest	68.71	7.17	2001
Evergreen Forest	3.77	0.39	2001
Mixed Forest	0.22	0.02	2001
Shrub/Scrub	4.87	0.51	2001
Grassland/Herbaceous	29.03	3.03	2001
Pasture/Hay	98.41	10.28	2001
Cultivated Crops	416.68	43.51	2001
Emergent Herbaceous Wetlands	37.45	3.91	2001
Total	957.71	100.00	2001

2. Public Water Supply Wells Inner Well Management Zone (IWMZ) –The City of Princeton's Inner Well Management Zone IWMZ (200 feet radius) areas of each PWS well to identify any potential contaminant threats and update setbacks for any contaminants found in the immediate 200 feet area. Below is a brief summary of contaminants or issues relative to the immediate area around the wells.

Princeton North DWSMA – Well No. 7 & Emergency Well No. 2

Staff reviewed contaminants and verified setbacks for any contaminants in and around Well No. 7 located inside the well pump house. One of the contaminants or potential items identified was the current use or need for the monitoring well located east of Well No. 7. Staff may wish to discuss the use of the well and if it should be sealed. The Princeton Public Utilities have taken steps to protect the area around Well No. 7 by installing concrete containment around 2 of the 3 transformers east of the Well No. 7 pump house. Staff continues to monitor the transformer area for any potential leaks. Several sewer mains and connections were also noted in the area. Well No. 7 is situated in a primarily residential area with the Princeton utility office, shop and power plant located immediately west of Well No. 7.

Emergency Well No. 2 is presently the only available emergency back-up well in the Princeton North DWSMA. Emergency Wells 5 and 6 have been recently sealed. The only contaminant threat observed near Well No. 2 was several electric transformers. This area is also monitored for any leaks or contaminants which could impact Well No. 2 by utility staff. Well No. 2 is situated in a pump house in a parking lot area of downtown Princeton. Immediately east of the well is the floodplain and parkland area of the Rum River.

Princeton North DWSMA – 1 YR TOT Area

Southwest of Well No. 7 are two (2) 20,000 gallon above grade petroleum tanks used to run diesel generators and electric transformers used for generation and supply of power for the City of Princeton. Princeton Utilities has installed buried containment available to collect any fuel from a damaged tank and a drain near the unloading area of these tanks. The buried containment area is also used by utility staff as a safe place to work on transformers and equipment.

Princeton South DWSMA – Well Nos. 8 and 9

The area around Well No. 8 was reviewed for potential contaminants. A monitoring well is located immediately north of the well and is used by utility staff to monitor the staff water level of the aquifer and Well No. 8. A sanitary sewer line ends approximately 70 southeast of the well. Well No. 9 is located further south and no immediate contaminants were identified within the IWMZ of the well. Both Princeton Utility Wells are constructed along an old railroad right of way on the edge of industrial areas located south and north of the wells. There is also a ditch located near both wells. The implications of this are unknown, but could allow faster transport if some sort of spill were to happen in the immediate area adjacent to the wells.

Princeton South DWSMA – 1 YR TOT Area

The one year time of travel area for the Princeton South DWSMA encompasses some industrial businesses. These businesses are located outside the city limits in Baldwin Township. Since the area is not served by city water or sewer, there are opportunities to educate businesses in this area about proper well and septic management and other potential activities and best management practices that may be used to protect both the city and private business wells that are in the area. Spill and hazardous waste management is another set of activities that will be promoted in WHP Plan activities found later in this plan. Educating and working with these businesses to make them aware of WHP is a high priority for the Princeton Utility staff and WHP Team.

3. Potential Contaminant Source Inventory – The Princeton Public Utilities Commission and WHP Team completed a potential contaminant source inventory (PCSI) for both the North and the South DWSMA. The inventory was done based on databases from various State agencies and also local knowledge of potential contaminants within the DWSMA. Refer to the next section for the assessment of data elements.

4. Public Utility Services – The City of Princeton requires all properties within City limits that are within 150 feet of either or both a sanitary sewer collection system or a city water system to install a suitable service connection at their own expense in accordance with Title 9 of the City of Princeton Code of Ordinances. This has been an ordinance for a number of years, but has not been strongly enforced. However, in the near future the City will require property owners to adhere to the ordinance and these activities have been included as a management strategy in chapter 5 of this plan.

   The Utility will work with the MDH Hydrologist to determine the location of any old municipal wells that have not been properly sealed. This activity has been included as a management strategy in chapter 5 of this plan.

C. Water Quantity Data Elements

1. Surface Water Quantity – There is the potential for surface waters to recharge the aquifers that the PUC uses for their wells.

2. Groundwater Quantity - Groundwater levels are adequate for the amounts the Princeton Public Utility Commission currently is permitted for under the groundwater appropriations program administered by the Minnesota Department of Natural Resources (MDNR). There are currently no other high capacity wells besides those belonging to the Princeton Public Utility within the DWSMA. No well interference complaints with the Utility's wells have been documented. At this time, there appears to be sufficient groundwater quantity based upon existing pumping capacity of all wells completed in the aquifer used by the Utility.

D. Water Quality Data Elements

1. Surface Water Quality - This element applies to this report because there is a direct hydraulic connection between surface waters and the water serving this water supply system. It is a management goal to continue to protect the quality of the aquifer.

2. Groundwater Quality - Historically, the Public Utility has supplied good quality drinking water (see the Consumer Confidence report in the Appendix). Existing information consisting of isotopic and chemical analyses indicates that the aquifer used by the public water supply may be recharged by surface water. As such, there is a moderate probability that current land use has a direct impact on the quality of drinking water. Tests conducted by the MDH have revealed traces of tritium in Well Nos. 7, 8, and 9 indicating there is some component of 'young' water recharging the aquifer used by the Utility. Groundwater quality information was used to determine that other wells, buried tanks, and shallow disposal wells are the major contamination sources that need to be inventoried and managed. Additional groundwater quality information should be collected over the ten-year life of the plan. Changes in the general chemistry of the well water may indicate that the aquifer is receiving recharge from different pathways such as improperly constructed or sealed wells or through different geological materials.

II. ASSESSMENT OF DATA ELEMENTS

A. Use of the Well - Princeton obtains water from three primary glacial drift wells, Wells No. 7, 8, and 9. Well No. 2 is retained as emergency backup source and is also a buried drift well. At this time there is a sufficient quantity and quality of water for the City.

TABLE 1. Princeton Well Data

PUC Well Number	Unique Number	Aquifer	Use
2	219478	Buried drift	Backup
7	578949	Buried drift	Primary
8	751504	Buried drift	Primary
9	749848	Buried drift	Primary

B. Quality and Quantity of Water Supplying the Public Water Supply Well - At this time problems with water quality and quantity are not an issue as the system meets or exceeds standards in the Federal Safe Drinking Water Act. See the Consumer Confidence Report in the Appendix.

C. Land and Groundwater Uses in the Drinking Water Supply Management Area –

1. Princeton North – A complete list of potential contaminants is found on Table 2 located in the appendix of this plan and discussion of land uses is found on page 8 of this plan. Overall, land and groundwater uses in the Princeton North DWSMA consist of developed urban and residential uses as most of this area is within the corporate limits of the City of Princeton and hooked to city water and sanitary services. The rural undeveloped portion of the Princeton North DWSMA is located southwest of State Highway 169 and is not expected to be intensely developed due to the nearby Princeton airport and wetlands found in the area.

   In order for this plan and management strategies relative to the Princeton North DWSMA to be effective, the Princeton Public Utilities will need to work and communicate with City of Princeton Staff and officials, Mille Lacs County SWCD and Planning and Zoning and Princeton Township on land use and groundwater issues as part of implementation of this plan.

2. Princeton South – A complete list of potential contaminants is found on Table 3 located in the appendix of this plan and discussion of land uses is found on page 9 of this plan. Land and groundwater uses in the Princeton South DWSMA include a developed industrial park with a number of large businesses located within the City of Princeton and a mixture of rural residential properties, light industry, small businesses and some agriculture and undeveloped parcels located in Baldwin Township. State Highway 169 is a major transportation route located along the east side of the DWSMA down gradient of the city wells. The Baldwin Township area of the DWSMA has been an area of both small business and residential growth in the recent past, but has slowed with the recent economic slowdown.

In order for this plan and management strategies relative to the Princeton South DWSMA to be effective, the Princeton Public Utilities will need to work and communicate with City of Princeton staff and officials, Sherburne County Planning and Zoning Administration and SWCD, Baldwin Township Board on growth and development issues that may impact the city's wells and drinking water supply.

The Princeton Public Utilities will focus on implementing activities identified in this plan and continue to educate citizens and businesses about their source of drinking water and wellhead protection concerns. In order for this plan to be effective in protecting the city water supply, continued good working relationships with local residents and businesses; city, county and State resource staff will be needed in order to take the necessary steps to protect the city water supply. Princeton Public Utilities and the WHP Team will continue to work with Federal, State and local agencies and programs available to assist them in protecting the public water supply wells and aquifer and in the management of potential contaminants identified in the DWSMA. Additionally, the Utility will continue to work closely with the MN Rural Water Association and MDH will continue to provide technical support and assistance for WHP activities identified in this plan.

CHAPTER TWO

IMPACT OF CHANGES ON PUBLIC WATER SUPPLY WELL (4720.5220)

I. CHANGES IDENTIFIED IN:

A. **Physical Environment** - The geologic conditions that protect the water supply are such that changes in physical environment could have an effect on the aquifer within the DWSMA. Since there is a relationship between surface waters and the groundwater, physical changes in the environment can affect the groundwater quality. An example of such changes might be an increase of impervious areas which might slightly affect the recharge rates to the aquifer.

i. **North DWSMA –** Large scale changes in the physical environment within the North DWSMA are not anticipated during the 10-year period that this plan is in effect. The land within this DWSMA is as developed as it can be. One section that is not developed is on the east side where it is wetlands and cannot be developed because it is in the floodplain for the Rum River. See Exhibit 11 for the FEMA FIRM floodplain map for Princeton. Another section that is not developed is on the west part of the North DWSMA which is the clear zone for the Princeton Airport and also cannot be developed. See Exhibit 12 for the Airport Zoning Ordinance Map.

ii. **South DWSMA** – There is the possibility that portions of the South DWSMA could have changes within the next ten years. There is open space in Baldwin Township that is currently zoned as urban expansion by Sherburne County.

B. **Land Use** - Land uses that may be potential contaminant sources such as underground storage tanks or unused and unsealed wells will be addressed in the management portion of this Plan.

i. **North DWSMA** – Large scale land use changes are not anticipated in the North DWSMA as the area within the City limits is about as developed as it can get.

ii. **South DWSMA** - Since the two wells in the South DWSMA are surrounded by land that falls outside of the City of Princeton, the PUC will be very dependent on Baldwin Township for land use requirements. The Township is in the process of starting its own comprehensive and zoning plan, and the land use in the area around the wells could possibly change, so the PUC will have to work with Baldwin to ensure that the groundwater is being protected for both the private Township wells and the PUC's public supply wells. There is a large expansion planned by USDP located in the South DWSMA

within City limits that will likely result in higher water use on the municipal system.

C. **Surface Water** – As there is a direct hydraulic connection between surface water and the aquifer used by the public water supply system, any changes to the conditions of surface waters will probably have an impact on the quality or quantity of the public water supply. However, no significant changes in the surface water were identified at this time with both the North and the South DWSMA.

D. **Groundwater** - The public water supply system's wells have historically provided good quality and quantity of groundwater. Due to the fact that parts of both the North and South DWSMAs have area located outside of the City limits, it is imperative that Princeton work with Mille Lacs County and Princeton Township for the North DWSMA and also with Sherburne County and Baldwin Township for the South DWSMA.

II. IMPACT OF CHANGES

A. <u>Expected Changes in Water Use</u> -The Utility anticipates that its water use will increase around 3% during the first five years that this Plan is in effect. The Utility will re-evaluate its water-use patterns for the second five-year interval as part of its comprehensive planning activities and incorporate these results into future revisions of this Plan.

B. <u>Influence of Existing Water and Land Government Programs & Regulation</u> – There are a variety of local and State programs and tools available to the Princeton Public Utility to assist them in the protection of the city wells and aquifer used in the Princeton North and South DWSMA.

1. <u>Princeton North DWSMA</u> – The City of Princeton has land use controls in place that could be used to further regulate the placement of structures or contaminants in the majority of the Princeton North DWSMA. In the westerly portion of the DWSMA, Princeton Public Utilities will work with Mille Lacs County to address any land use changes or issues that may impact the public water supply wells. The Mille Lacs County Planning & Zoning, SWCD, NRCS and other local resource partners can provide local technical assistance to landowners on most of the potential contaminants identified in this plan and land use practices or programs to address them such as low interest loans for upgrading septic systems, cost share assistance or grants for private well sealing, agriculture management practices, and apply for potential clean water fund grants to assist in local groundwater protection as needed, etc. The Mille Lacs County Water Management Plan is another program directed at protecting water resources that can identify, promote and support WHP activities in the Princeton North DWSMA.

2. <u>Princeton South DWSMA</u> – The City of Princeton has land use controls in place that could be used to further regulate the placement of structures or contaminants in the northern one half of the Princeton South DWSMA. In the southern portion of the DWSMA, Princeton Public Utilities will work with Baldwin Township and Sherburne County to address any land use changes or issues that may impact the public water supply wells. Presently, Baldwin Township is in the process of adopting land use controls for the Township. Princeton Public Utilities and Baldwin Township will continue working together to protect the recharge area of the city water supply and water supply of Baldwin Township businesses and residents.

   Sherburne County has similar resource departments (Planning and Zoning, SWCD, NRCS, etc.) and partners as described in the Princeton North DWSMA who are available to assist Princeton Public Utilities address many potential contaminant issues and activities identified in this plan in the Princeton South DWSMA. Examples of technical assistance may include: private septic system management and upgrade support in the unsewered area; promotion and use of hazardous waste facilities by local businesses, education and awareness about storm water management practices, and apply for potential clean water fund grants that may be available to assist in local groundwater protection efforts, etc. The Sherburne County Water Management Plan can also be used to identify, promote and support WHP activities in the Princeton South DWSMA.

3. <u>State & Federal Agencies and Programs</u> - State agencies can provide a variety of regulatory and technical assistance for WHP Plan implementation. The MDH

regulates the construction of wells and can assist the city with well code and construction issues in the DWSMA. The DNR issues appropriation permits and regulates high capacity water users. In the event a high capacity water user or irrigation well is being constructed in the DWSMA, the city will work with the DNR and MDH to determine what, if any impact the new high capacity water user may have on the city wells.

The MDH is administering a Source Water Protection Grants Program available to assist communities implement activities identified in their WHP Plans. The City of Princeton has identified the grants program as a primary resource available to assist them implement several activities identified in this plan to assist them improve and protect the city water supply.

C. **Administrative, Technical, and Financial Considerations** - The Princeton Public Utilities assembled a Wellhead Protection team for the purpose of developing this plan. Many of the activities during the planning process have been accomplished through their efforts, with assistance from studies provided by other units of government, and a local business that completed an environmental review in the Princeton South DWSMA.

For this plan to be effective:

1. The Princeton Public Utilities will need to continue to raise public awareness about the issues affecting the quality or quantity of their drinking water supply through educational programs.

2. Administrative duties will remain with the Wellhead Protection Manager who will report activities to the Princeton Public Utilities Commission and the City. The Wellhead Protection Manager with the assistance of utility staff will coordinate and assist with wellhead protection implementation activities or action plans described in Chapter 5 and conduct meetings as necessary.

3. Princeton Public Utilities will devote the time and resources necessary to implement wellhead protection activities. This may be done through the establishment of a line item in the utility budget for WHP activities, designating funds within the water utility budget, application for SWP grants, in-kind time devoted to attending local wellhead protection meetings, etc. Other sources of funding or in-kind services available to help achieve goals of this plan include: 1) Mille Lacs and Sherburne County and Baldwin Township are available to promote and support groundwater protection activities to area residents and businesses, 2) both counties and Baldwin Township will assist Princeton Public Utilities in helping to identify land use changes or issues which may affect groundwater resources utilized by City of Princeton residents and businesses, 3) MDH who will assist with WHP monitoring and data collection and well sealing and construction issues, and 4) MDH SWP Grants can be applied for by the Princeton Public Utilities to financially support the implementation of some of the high priority activities identified in this plan, and 5) MRWA and MDH for overall on-going technical support for wellhead protection implementation.

4. The costs of implementing wellhead protection activities will be evaluated on an annual basis to determine whether the original cost estimates match the scope of the management practices identified in the plan. The WHP Manager

and Utility Board will discuss plan implementation costs and explore opportunities with MDH, State and local resource partners as to ways to offset costs of plan implementation as needed.

Princeton Public Utilities recognizes the importance of working closely with other units of government. Therefore, the WHP Manager will coordinate at least one annual meeting with the WHP Team members and State and local Resource Partners / agencies involved in the development of this plan to discuss activities, opportunities and / or grants available to help implement activities and meet objectives outlined in this plan.

CHAPTER THREE

ISSUES, PROBLEMS, AND OPPORTUNITIES (4720.5230)

I. IDENTIFY WATER USE AND LAND USE ISSUES, PROBLEMS, AND OPPORTUNITIES RELATED TO:

A. **The Aquifer Serving the Public Water Supply Wells** - The aquifer used by the Princeton Public Utilities can be affected by a variety of potential contaminant sources and land use activities identified in this plan. Although both Princeton North and South have variable vulnerability, both DWSMA's will be managed as having a high vulnerability to land use contaminants as determined by the WHP Team. At this time, no significant land use issues or problems have been identified.

The Princeton North DWSMA is more highly urbanized and activities focus on residential practices such as promoting and sealing any former private wells in the area, storm water management activities, residential hazardous waste management and septic maintenance and upgrades in this area not served by sanitary services. Another consideration for the Princeton North DWSMA and aquifer is the location of Highway 169 up-gradient of primary Well No. 7. Spill response in and along State Highway 169 and making MNDOT and local responders aware of the DWSMA is a step the utility will pursue. The Princeton Public Utilities previously installed tank containment for the above ground diesel tanks used to operate generators to provide power to the city in the event of an emergency are located near Well No. 7. Continued monitoring and use of containment structures in this area is important to directly protect the well and aquifer in this area.

Water and land use issues related to the aquifer serving Princeton South DWSMA can be characterized differently due to more commercial and industrial land uses in the industrial park north and area adjacent to Wells 8 and 9. More emphasis is placed on industry and business storm water management practices and the potential impact run-off to the city storm water ponds may have on the aquifer. Providing businesses with information and tools to improve the management and handling of hazardous waste is an opportunity for Princeton Public Utilities to help make them more aware of these types of services and their importance in improving environmental safety and protect local drinking water resources. Class V wells and their impact on groundwater is another issue businesses will be made aware of in the un-sewered area of Baldwin Township and consider in the management of their operation. Princeton Public Utility has an opportunity to work with Baldwin Township in the development of local controls and how they may be used to provide additional protection of the aquifer and city wells. The MDH will continue to support and work with Princeton Public Utilities to assist in monitoring for any changes in groundwater quality and their impacts on the city wells.

B. The Well Water - The Princeton Public Utilities will work with the MDH to continue monitoring the quality and quantity of the water produced from the public water supply wells. As part of plan implementation efforts, Princeton Public Utilities will work with MDH to establish a groundwater quality monitoring network around the new public water

supply Well Nos. 8 and 9. The MDH Hydrologist will work with the utility to identify wells and assist in establishing monitoring parameters.

The Princeton Public Utilities WHP plan acknowledges that the placement of additional high-capacity wells, increased pumping from existing wells, or significant changes in current groundwater appropriations within the DWSMA may have an impact on 1) groundwater availability to all users, and/or 2) increased risk that contamination may enter the part of the aquifer used by the public water supply well(s), or 3) change the delineated WHP area and the DWSMA boundaries. The Princeton Public Utilities, DNR and MDH will work collaboratively to address any of these issues should they occur which may impact the public water supply wells or existing delineation efforts.

C. The Drinking Water Supply Management Area - The Princeton Public Utilities will need to work with multiple jurisdictions and resource partners since the Princeton North and South are located in different counties. This will require more time needed to coordinate implementation of this plan. The Princeton Public Utility has involved both Mille Lacs and Sherburne County resource staff and partners in the development of this plan which benefits long term plan implementation efforts. Baldwin Township residents and township board members have participated in WHP Team meetings and assisted in plan development activities. Similarly, they are supportive of plan implementation efforts in the Princeton South DWSMA as activities to protect the city water supply benefits township residents and businesses. The Princeton Public Utility will continue to create awareness and educate the public and citizens about wellhead protection and work with resource partners towards the successful implementation of activities identified this plan.

II. IDENTIFICATION OF:

A. Problems and Opportunities Disclosed at Public Meetings and in Written Comment - Each unit of government was sent a copy of the system's delineated WHPA, DWSMA and vulnerability assessment for the wells and Princeton North and South DWSMA's. Additionally, the Princeton Public Utilities held an informational meeting on WHP for Baldwin Township Officials and residents on May 23, 2011. On December 20, 2011 a public meeting was held at city hall and no comments from the public were received. To date, no comments from other local units of government have been received. Mille Lacs and Sherburne County resource staffs have provided support and input into the development of this plan. Baldwin Township officials and citizens have participated in the development of this plan. The general public has been given opportunities to participate in the planning process and to comment at the Public Informational Meeting. Minor concerns from the general public have been addressed in the development or implementation of this plan.

B. Data Elements - The first part of this WHP Plan describes regional and local geologic conditions used to assess and determine aquifer and well vulnerability to surface or near surface contamination. The first part of this plan provides several recommendations for data collection activities that could be completed to reduce uncertainties associated with the Princeton Public Utilities WHP delineation. See page 19 of the Part I, WHP Plan for specific recommendations to help better understand local aquifer characteristics. These items are also referred to in Chapter 5 of this plan.

C. <u>Status and Adequacy of Official Controls, Plans, and Other Local, State, and Federal Programs on Water Use and Land Use</u> - The City of Princeton, Mille Lacs County and Sherburne County may use local land use controls to further regulate land uses and related contaminant sources within the DWSMA to protect the wells and water supply. In the near future, Baldwin Township will also have the ability to regulate land uses in the Princeton South DWSMA. However, at this time the Princeton Public Utility and City wish to use existing programs and processes already in place to protect the public water supply.

The Princeton Public Utilities WHP Team is confident that local issues may be adequately addressed through existing processes. These include: public education, adoption of best management practices, proper tank and spill management, monitoring; water conservation and good communication with landowners in the in the Princeton North and South DWSMA.

The MDH SWP Grant and other grant opportunities will be explored to assist the Princeton Public Utility in the implementation of this plan.

CHAPTER FOUR

WELLHEAD PROTECTION GOALS (4720.5240)

The public water supply system has enjoyed a sufficient and safe water supply in the past, and through the implementation of this WHP proposes to continue supplying safe, potable water for its customers into the future. The water supply is classified as moderately to very highly vulnerable by the Minnesota Department of Health based upon the geology and characteristics of the aquifer. The overall goals of this report are to:

1. Prevent contamination of the aquifer

2. Manage the aquifer cooperatively to assure sustainable water supplies for all users.

The WHP team identified the following goals to be achieved with the action items contained in this Plan:

A. Maintain or improve on the current level of water quality to meet or exceed all State and Federal standards.

B. Educate public officials, landowners, and the public about the importance of wellhead protection to protect the public drinking water supply.

C. Provide and promote activities that protect the public water supply aquifer and increase public awareness of the Wellhead Protection Program and groundwater protection issues.

D. Provide ongoing collection of data to support future wellhead protection efforts.

E. Increase general public awareness of groundwater problems.

F. Promote public health, economic development, and community infrastructure by insuring a potable drinking water supply for all residents of the community.

G. Assess the impact of existing and planned wells within the DWSMA on the public water supply aquifer.

H. Ensure protection of the public water supply aquifer.

I. Maintain water quality and integrity of the public water supply system's wells.

Therefore, the Utility would like to concentrate management efforts on the following goals to create awareness of groundwater protection and help prevent future contamination of the aquifer:

1. Manage wells and tanks
2. Try to eliminate septic systems within the DWSMA in the City limits of Princeton
3. Inform the public about groundwater issues
4. Collect additional data relating to local groundwater issues
5. Concentrate on providing a better quality drinking water supply to the Public.

CHAPTER FIVE

OBJECTIVES AND PLANS OF ACTION (4720.5250)

I. ESTABLISHING PRIORITIES - The aquifer supplying the system's drinking water supply has been identified as moderately to highly vulnerable to contamination from land use activities. A number of factors must be considered when WHP measures are selected and prioritized (part 4720.5250, subpart 3). Such factors include:

- Contamination of a public water supply well;
- Quantities of the potential contamination sources;
- Location of the source in relation to the well;
- Capability of the geologic material to absorb a contaminant;
- Existence and effectiveness of official controls;
- Time required to obtain cooperation; and
- Administrative, legal, technical, and financial resources needed.

Plans of Action for the Princeton Public Utility's Wellhead Protection Plan will be divided into the following categories:

A. Education and Outreach
B. Municipal Well Management and High Capacity Wells
C. Residential Management Practices
D. Industrial/Commercial
E. Agricultural Activities
F. Transportation
G. Land Use Planning
H. Monitoring and Data Collection
I. Coordination

MEASURE	Priority	A. Education and Outreach	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Place article in city newsletter and local paper describing what WHP is and efforts the utility is taking to protect the local water supply.	WHP Mgr. & Staff	Staff time	X	X	X	X	X	X	X	X	X	X
2		Distribute the MN Rural Water Association's "Where Does My Drinking Water Come From?" brochure to landowners in the DWSMA and keep on file in the utility office, city hall, and at the Baldwin Town Hall.	WHP Mgr. & Staff	$100 staff time & materials	X									
3		Develop a WHP page or tab on the City website.	WHP Mgr. City webmaster	Staff Time	X									
4		Annually post and update education material on the website (continuous). Identify how to establish and maintain WHP web page on city website. Select WHP education items from the MN Rural Water Association source water protection.				Continuous as material is developed								
5		Install WHP Signs near major transportation corridors. Do a short news release or article about the placement of signs.	WHP Mgr. & staff	$100-150 per sign		X								
6		Annually work with Baldwin Township to distribute WHP education information to township residents and businesses. This may include using the township website, mailings, postings at the town hall, etc.	WHP Mgr., Utility Staff, Baldwin Twp. Staff	Staff Time	Continuous as material is developed									
7		Annually provide the MRWA Water Week educational materials to the local 4th Grade School Teacher and obtain their participation.	WHP Mgr., MRWA, 4th Grade Teachers	Staff time	X	X	X	X	X	X	X	X	X	X
8		Provide a tour of the city water treatment plant and educate students about their source of drinking water, what WHP is and steps the city is taking to protect the local water supply.	WHP Mgr., PPU Staff, School Officials	Staff Time		X		X		X		X		X
9		Display WHP information at your Utility Department Open House, County Fair or other local event. Highlight practices or activities that citizens can do to support WHP efforts.	WHP Mgr., PPU Staff, MRWA	Staff Time	This is a continuous activity as opportunity arises.									
10		Provide information to businesses in the Princeton DWSMA's about what WHP is and drinking water protection efforts and activities.	WHP Mgr. & Staff	Staff Time	X				X					X
11		Collaborate with Sherburne and Mille Lacs County on groundwater and drinking water education activities identified in the WHP Plan. (Sherburne Environmental Ed Days, Mille Lacs Envirothon, etc.)	WHP Mgr., PPU Staff, County Staff	Staff Time	X	X	X	X	X	X	X	X	X	X

MEASURE	Priority	B. Municipal Well Management & High Capacity Wells	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Assist MDH staff in updating the Inner Well Management Zone (IWMZ) form every 3 – 5 years for the public water supply wells.	WHP Mgr., MDH	Staff Time			X					X		
2		Princeton Utilities will routinely monitor for and comply with all setbacks for new potential sources of contaminants within the 200' radius or IWMZ.	WHP Mgr., MDH	Staff Time	X	X	X	X	X	X	X	X	X	X
3		Contact and provide WHP information to each business located within 200' of the Princeton South PWS wells and 1 year time of travel area and make them aware of the importance of spill prevention and response.	WHP Mgr.	Staff Time	X									
4		Work with MDH to seal the test well located east of public water supply well No. 7.	WHP Mgr., MDH	$2,000			X							
5		Work with MDH Hydrologist to cross reference well sealing records with former city well records to substantiate the sealing of several old muni wells.	WHP Mgr., MDH	Staff Time				X						
6		Work with MDH Hydrologist to determine the location and status of old muni wells (Wells 4A- 4C and several other wells identified on the MDH Old Muni Well list). Apply for a MDH SWP Grant to help identify and seal any unsealed municipal wells identified.	WHP Mgr., MDH Hydrologist & Well Mgmt.	Staff Time						X				
7		Utility staff and MDH will coordinate efforts to identify proposed high capacity wells in the wellhead protection area, and/or major changes to groundwater appropriations for existing high-capacity wells.	WHP Mgr. MDH, DNR, City Staff	Staff time	X	X	X	X	X	X	X	X	X	X

MEASURE	Priority	C. Residential Management Practices	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Create a "WHP for residents Tab" on the City's WHP web page to keep and store new or existing information or items noted in this section for reference and citizen use.	WHP Mgr.; City Web person	Staff Time	X									
2		Distribute & make available information about proper well management and maintenance. Use information available from MN Rural Water Assoc. and MDH Well Owners Handbook.	WHP Mgr.; MDH, MRWA	Staff Time	X	This is a continuous activity as opportunity arises.									
3		Distribute and make available information on the importance of sealing unused wells and who to contact for potential well sealing cost share funds.	WHP Mgr.; MDH, MRWA, Sherburne or Mille Lacs Co SWCD	Staff Time		X	This is a continuous activity as opportunity arises.								
4		Coordinate a well sealing demonstration in the Princeton area. Video tape and interview the well driller, WHP Mgr. etc. about the importance of well sealing. Provide video on the website. Apply for SWP Grant to help fund activity.	WHP Mgr.; County, MDH, MRWA	Staff Time Possible SWP Grant			X							
5		Work with Sherburne County, Mille Lacs County or MDH to obtain grants or financial assistance to seal unused wells in the Princeton DWMSA's.	WHP Mgr.; County, MDH, SWCDs	Staff Time	X									
6		Work with MDA and County SWCD's to host a nitrate Testing Clinic at the Baldwin Township Hall to help promote water testing, public health and WHP activities.	WHP Mgr. MDA, SWCDs	Staff Time		X							X	
7		Distribute and make available information about what a properly functioning on-site septic system is and how to maintain your septic system.	WHP Mgr.; County P & Z, Extension, MRWA	Staff Time					X					
8		Provide information on financial opportunities to upgrade or repair on-site systems to businesses and residents in the DWSMA's.	WHP Mgr.; County's	Staff Time						X				
9		Hold a household hazardous waste day/event in cooperation with Baldwin Township and Sherburne County for local residents to promote proper hazardous waste management.	WHP Mgr.; County	Staff Time			X						X	
10		Coordinate with the Counties to promote the proper rates and application of fertilizers, pesticides and herbicides as a way to protect groundwater resources.	WHP Mgr., MDH, MRWA, County	Staff Time	X			X				X		
11		Promote proper use of the city storm water drains and ponds. Promote "do not dump" and connection of storm water and ground water resources in the Princeton DWSMA's.	WHP Mgr.; MDH, MRWA, City Staff, Civic Group	Staff Time		X							X	

MEASURE	Priority	D. Industrial / Commercial	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Mail Princeton WHP Brochure and letter to businesses in the Princeton DWSMA's explaining what WHP is and give examples of how they can help protect groundwater and drinking water resources. (See Ed. & Outreach Measure # 2, plus tailor letter to businesses)	WHP Mgr.; MRWA MDH	Staff Time	X						X			
2		Create a "WHP Information for businesses" tab on the City WHP web page as a place to store and provide information to businesses about WHP.	WHP Mgr.; City Webmaster		X									
3		Provide tank owners information on tank management and containment practices available on the MPCA, MRWA websites. Include State Duty Officer reporting information for spills and importance of clean up.	WHP Mgr.; MPCA, Duty Officer, MRWA	Staff Time			X					X		
4		Provide the MPCA tanks unit with maps of the DWSMA's and request to be notified regarding changes in the monitoring or abatement of any of the LUSTs identified. Request to be notified in the event of any tank related spill.	WHP Mgr.; MPCA	Staff Time		X								
5		Provide businesses in the un-sewered commercial areas information about Class V Wells and their impact on the aquifer and city wells. Educate owners about the hazards of floor drains and how they are a Class V Well if draining into the ground or connected to their septic system.	WHP Mgr., MRWA, MDH	Staff Time			X					X		
6		Support storm water best management practices in the Princeton Industrial Park that protect groundwater quality.	City Planner, City Engineer, Sherburne and Mille Lacs Co SWCD	Staff Time				X				X		
7		If a suspected Class V Well is identified, work with the MDH and local resource partners to determine alternative disposal strategies and options for the business.	WHP Mgr., MDH, County	Staff Time			X	This is an activity if a Class V Well is identified.						
8		Work with Mille Lacs and Sherburne to promote proper management and disposal of hazardous waste among businesses in the DWSMA's. Obtain information from Sherburne and Mille Lacs Counties on local disposal options and provide to businesses.	WHP Mgr., County Solid Haz. Waste Dept.'s	Staff Time			X							X
9		Inform businesses about the use of MN Technical Assistance Program for hazardous materials management and resource recovery alternatives. (Website: http://www.mntap.umn.edu/)	WHP Mgr., MNTAP	Staff Time			X	This is an activity as opportunity arises						
10		Promote the importance of WHP and drinking water protection activities at civic meetings and individual meetings with business owners as the opportunity arises.	WHP Mgr.	Staff time	X	X	X	X	X	X	X	X	X	X

MEASURE	Priority	E. Agricultural Activities	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Work to develop a list of parcels and landowners of land actively being farmed in each DWSMA. Mail information to landowners or growers about WHP and BMPs.	WHP Mgr.; SWCD, NRCS	Staff Time		X								
2		Work with Sherburne and Mille Lacs County SWCD, NRCS to promote proper agronomic rates and timing of fertilizers among crop producers in the DWSMA's.	WHP Mgr., SWCD, MDA, NRCS	Staff Time				X						
3		Promote the use of conservation programs such as the Federal Continuous sign-up CRP or MN WHP RIM Program to retire sensitive cropland or marginal lands in the DWSMA's. Make landowners aware of their eligibility for these programs.	WHP Mgr.; SWCD, FSA, NRCS	Staff Time			X							
4		Request NRCS send a letter to crop producers in the DWMSA about nutrient management planning and eligibility under the federal Farm Bill programs to fund the practice.	WHP Mgr.; NRCS	Staff Time					X					
5		Request assistance to work directly with any producers or assist with Ag related issues and practices identified in the Princeton DWSMA's.	WHP Mgr.; MDA, SWCDs, NRCS	Staff time	This is an activity as the need or opportunity arises									
6		Provide information to agricultural landowners within the WHP area about the need for the proper handling and disposal of agricultural chemicals and fertilizers.	WHP Mgr.; MDA MRWA	Staff Time			X							

MEASURE	Priority	F. Transportation	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Install WHP Signs along major transportation corridors. Do a news release about the placement of signs. (See A-5)	WHP Mgr.	Staff Time, Cost of Signs	X									
2		Provide a map of the Princeton DWSMA's to the Princeton Fire Dept. NE Sherburne Fire and Rescue, First Responders, Sherburne and Mille Lacs County Sheriff's Dept. & Emergency Managers. Describe WHP and emphasize the importance of spill clean-up & response. Request WHP and DWSMA's be mentioned at fire and first responder training events.	WHP Mgr.; Fire Depts., 1st Responders, Sheriff Dept. Emergency Mgr.'s	Staff Time			X							
3		Send MNDOT a map of the Princeton DWSMA's. Remind them of the vulnerable aquifer and groundwater protection concerns when considering future road improvement and storm water management practices.	WHP Mgr.; MNDOT					X						
4		Send a letter and remind City, County and Township Public Works staff about WHP and how land use practices can directly impact the groundwater aquifer.	WHP Mgr.; City, County Baldwin Twp.	Staff Time		X								

MEASURE	Priority	G. Land Use Planning	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Request all local units of government with land use and water resource planning authority incorporate a map of the DWSMA, aquifer and well vulnerability information contained in the Princeton WHP Plan.	WHP Mgr.; City, Counties, SWCD, Baldwin & Princeton Twp.	Staff Time	X									
2		Work with city planner to evaluate and update as needed city water hook-up policies and ordinances to encourage the use of the city water supply.	WHP Mgr.; City Planner		X									
3		Provide financial assistance, if available, to existing property owners (parcels) identified with a SSTS located in the DWSMA in the city to properly abandon their SSTS per MPCA requirements when they hook up to the municipal sanitary system. (See PCSI list)	WHP Mgr.; City Planner	Staff Time		X								
4		Provide financial assistance, if available, to existing property owners (parcels) identified with a private well in the DWSMA in the city to seal their private well(s) when they hook up to the municipal water supply system. (See PCSI list)	WHP Mgr., City Planner	Staff Time				X						
5		Evaluate when and where the expansion of sanitary sewer and water may be appropriate in the DWSMA's based on groundwater contamination risks and concerns, future growth planning and other public health considerations.	WHP Mgr.; City Planner, County Planner MDH	Staff Time			X					X		
6		Work with Baldwin Township to identify how their comprehensive plan and zoning ordinance can be used to protect drinking water in the DWSMA. (Ex. lot size req.'s, setbacks, contaminant risk concerns, density, use of community septic systems, etc.)	WHP Mgr.; City Planner Baldwin Township, Sherburne Co.	Staff Time	X						X			
7		Request that Baldwin and Princeton Township and Sherburne and Mille Lacs County notify Princeton Public Utilities regarding land use permits, changes in land use planning or zoning in the DWSMA.	WHP Mgr.; Counties, Townships	Staff time	X									

MEASURE	Priority	H. Monitoring & Data Collection	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Work with MDH Hydrologist to develop a groundwater quality monitoring plan to monitor groundwater quality near the Princeton South PWS wells.	WHP Mgr. MDH Hydro.	Staff Time,		X								
2		Work with MDH Hydrologist to help evaluate storm water and surface influence on the PWS wells. Develop a surface water monitoring plan as needed to determine influences.	WHP Mgr. MDH Hydro. City Engineer	Staff Time			X							

MEASURE	Priority	I. Coordination	Responsible Party/ Cooperators	Cost	Implementation time frame									
					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1		Hold annual meeting with the WHP Team and local resource partners involved in plan implementation to discuss new WHP issues, past year's accomplishments and activities planned for the upcoming year.	WHP Mgr.;	Staff Time	X	X	X	X	X	X	X	X	X	X
2		Annually coordinate an internal meeting with PPU staff, City Planner, Public works director to discuss WHP Plan implementation and coordination. Discuss funding needs and pursuit of SWP Grant funds to help implement activities identified in the WHP Plan.	WHP Mgr.; PPU Staff City Planner	Staff Time	X	X	X	X	X	X	X	X	X	X
3		Maintain a "WHP folder" that contains documentation of WHP activities completed and a date that it was done. Record cost to complete the activity.	WHP Mgr.; PPU Staff	Staff Time			X							
4		Complete an Evaluation Report every 2.5 years that evaluates the progress of implementing the measures identified in this plan and the impact of any contaminant release on the aquifer supplying the PWS Wells. Submit report to MDH.	WHP Mgr.; MDH	Staff Time			X			X			X	
5		Meet with Assistant City Engineer/ City MS4 Coordinator to discuss and coordinate MS4 and WHP activities when applicable.	WHP Mgr. Assistant City Engineer	Staff Time		X								

CHAPTER SIX

EVALUATION PROGRAM (4720.5270)

The success of the wellhead protection source management program must be evaluated in order to determine whether the plan is accomplishing what the Princeton Public Utilities Commission set out to do. The following activities will be implemented to:

- Track the implementation of the objectives identified in Chapter 5 of this Plan;
- Determine the effectiveness of specific management strategies regarding the protection of the public water supply;
- Identify possible changes to these strategies which may improve their effectiveness; and
- Determine the adequacy of financial resources and staff availability to carry out the management strategies planned for the coming year.

1. Princeton will continue to cooperate with the Minnesota Department of Health in the annual monitoring of the water supply to determine whether the management strategies are having a positive effect and to identify water quality problems that may arise that must be addressed.
2. Members of the Wellhead Protection Team and Utility staff will drive through the drinking water supply management area on a regular basis to identify any changes in land use or potential contaminant source management practices which may adversely impact the public water supply.
3. The Wellhead Protection Team will meet on an as-needed basis, with a minimum of one annual meeting, to review the results of each strategy implemented during the previous plan year, identify and discuss whether modifications are needed for those strategies and additional strategies for the coming plan year.
4. The Wellhead Protection Plan Manager will make an annual written report to the Public Utility Commission regarding progress in implementing the wellhead protection management objectives of this Plan. The annual reports will be compiled and used to review the overall progress in implementing source management strategies when the Wellhead Protection Plan is updated in 10 years. A copy of the report will be placed in the Princeton Public Utilities' Wellhead Protection file.

CHAPTER SEVEN

ALTERNATIVE WATER SUPPLY; CONTINGENCY STRATEGY. (4720.5280)

The Princeton Public Utility Water Supply Conservation Plan has been submitted and approved by the Minnesota DNR Division of Waters, Appropriation Permit Program. This approved Plan contains the required elements of the Minnesota Wellhead Protection Rule and is accepted as an equivalent to an Alternative Water Supply/Contingency Plan as defined in 4720.5280. Implementation of the Plan has begun with the aid and assistance of local emergency management agencies. A copy of the Plan is available for review at the Princeton Public Utilities Commission Office or by contacting Dave Thompson, Wellhead Protection Manager, Public Utilities Commission. The approval letter for this Plan is found in the Appendix as Exhibit 18.

APPENDIX

TABLES

TABLE 1 – Precipitation Data

TABLE 2 – North DWSMA Potential Contaminant Sources Inventory

TABLE 3 - South DWSMA Potential Contaminant Sources Inventory

EXHIBITS

1 **North DWSMA PCSI Map**
2 **South DWSMA PCSI Map**
3 **Princeton Comprehensive Land Use Map**
4 **Princeton Zoning Maps**
5 **Sherburne County Comprehensive Land Use Map**
6 **Sherburne County Zoning Map**
7 **North DWSMA Soils Map**
8 **South DWSMA Soils Map**
9 **North DWSMA Land Cover Map**
10 **South DWSMA Land Cover Map**
11 **FEMA Firm Floodplain Map**
12 **Airport Zoning Ordinance Map**
13 **Water Distribution Map**
14 **Sanitary Sewer Map**
15 **Stormwater Map**
16 **Consumer Confidence Report**
17 **LUG Notification List**
18 **DNR Water Conservation Plan Approval Letter**
19 **MDH Scoping 2 Decision Notice**

EXHIBIT 1
NORTH DWSMA PCSI MAP

EXHIBIT 2
SOUTH DWSMA PCSI MAP

EXHIBIT 3
PRINCETON COMPREHENSIVE LAND USE MAP

EXHIBIT 4
PRINCETON ZONING MAP

EXHIBIT 5
SHERBURNE COUNTY COMPREHENSIVE LAND USE MAP

EXHIBIT 6
SHERBURNE COUNTY ZONING MAP

EXHIBIT 7
NORTH DWSMA SOILS MAP

EXHIBIT 8
SOUTH DWSMA SOILS MAP

EXHIBIT 9
NORTH DWSMA LAND COVER MAP

EXHIBIT 10
SOUTH DWSMA LAND COVER MAP

EXHIBIT 11
FEMA FIRM FLOODPLAIN MAP

EXHIBIT 12
AIRPORT ZONING ORDINANCE MAP

EXHIBIT 13
WATER DISTRIBUTION MAP

EXHIBIT 14
SANITARY SEWER MAP

EXHIBIT 15
STORMWATER MAP

EXHIBIT 16
CONSUMER CONFIDENCE REPORT

EXHIBIT 17
LUG NOTIFICATION LIST

Local Units of Government Notification List:

1. Mr. Greg Anderson, Chairperson, Princeton Township
2. Ms. Susan Shaw, District Manager, Mille Lacs SWCD
3. Ms. Lynn Carter, Conservation Technician, Mille Lacs SWCD
4. Ms. Shannon Carpenter, District Conservationist
5. Ms. Tiffany Determan, Watershed Coordinator, Sherburne County SWCD
6. Mr. Jack Edmonds, Mille Lacs County Commissioner
7. Mr. Brian Bensen, Sherburne County Administrator
8. Mr. Jay Swanson, Chairperson, Baldwin Township Board
9. Mr. Larry Handshoe, Baldwin Township Board
10. Mr. Tom Rush, Vice-Chair Baldwin Township Board
11. Mr. Randy Atwood, Baldwin Township Board
12. Ms. Kimberly Good, Baldwin Township Board
13. Mr. Mark Wettlaufer, MDH
14. Mr. Jeremy Riddle, Mayor, City of Princeton
15. Mr. Mark Karnowski, City Administrator, City of Princeton
16. Mr. John Riebel, Sherburne County Commissioner
17. Ms. Rachel Leonard, Sherburne County Commissioner
18. Mr. Robert Minks
19. Mr. Dave Neiman, Minnesota Rural Water Association
20. Mr. Phil Peterson, Chairperson, Mille Lacs County Board
21. Ms. Nancy Riddle, Sherburne County Zoning Administrator
22. Ms. Lynn Waytashek, Sherburne County Assistant Zoning Admin
23. Mr. David Katzner, Sherburne County Zoning
24. Ms. Michele McPherson, Land Services Director Mille Lacs County
25. Mr. Cade Steffenson, Assistant Admin. Mille Lacs County
26. Mr. Jay Blake, City Planner, City of Princeton
27. Ms. Carie Fuhrman, Community Development Director, City of Princeton
28. Ms. Trudi Witkowski, MDH
29. Ms. Elaine Philippi, Baldwin Township Resident
30. Mr. Chuck Nagle, Baldwin Township Resident

EXHIBIT 18

DNR WATER CONSERVATION PLAN APPROVAL LETTER

EXHIBIT 19
MDH SCOPING 2 DECISION NOTICE

March 11, 2011

Mr. Dave Thompson
Princeton Public Utilities Commission
P.O. Box 218
Princeton, Minnesota 55371-0218

Dear Mr. Thompson:

Subject: Second Scoping Decision Notice

This letter provides notice of the results of the second scoping meeting held with you and members of your staff (Connie Wangen, Larry Handshoe and Scott Daniels); Michelle Stockness and Matt Ellingson with TKDA consultants; Dave Neiman, Minnesota Rural Water Association; Joel Stottrup, Princeton Union Eagle; and Gail Haglund and myself (Minnesota Department of Health) on March 9, 2011, at the Princeton Public Utilities conference room regarding Part II of your wellhead protection (WHP) plan. During the meeting, we discussed data elements that must be included and used to prepare the part of the WHP plan related to the management of potential contaminants in the approved drinking water supply management area. The enclosed Scoping 2 Decision Notice lists the data elements that were discussed at the meeting.

Princeton Public Utilities Commission has met the requirement to distribute copies of the first part of the wellhead protection plan to local units of government. We understand that Princeton Public Utilities Commission has held an informational meeting for the public, but **has not met the requirement** to submit documentation of the meeting to the Minnesota Department of Health (MDH). Princeton Public Utilities Commission will have until December 2, 2011, to complete its wellhead protection plan.

If a data element is marked on the enclosed notice as a data element that must be used and it does not exist, it is helpful if your plan notes this. We understand your consultant will be working with you to develop a draft of the remainder of the wellhead protection plan. I will be contacting you to review the progress of the development of Part II of your plan. If you have any questions regarding the enclosed notice, contact me by email at mark.wettlaufer@state.mn.us or by phone at 320/223-7342.

Sincerely,

Mark Wettlaufer

Mark Wettlaufer, Planner
Environmental Health Division
3333 West Division Street - Suite 212
St. Cloud, Minnesota 56301-4557

MJW:kmc
Enclosures
cc: David Schultz, MDH Engineer, St. Cloud District Office
Mark Karnowski, Administrator, City of Princeton
Byron Adams, Water Monitoring Section, Minnesota Pollution Control Agency
Joe Richter, Division of Waters, Minnesota Department of Natural Resources
Brian Williams, Pesticide & Fertilizer Mgmt. Division, Minnesota Department of Agriculture
Eric Mohring, Hydrologist, Board of Water and Soil Resources

SCOPING 2 DECISION NOTICE

э **Remainder of the Wellhead Protection Plan**

Name of Public Water Supply:		**Date:**
Princeton Public Utilities	**PWSID 1480008**	March 11, 2011
Name of the Wellhead Protection Manager:		
Mr. Dave Thompson, Manager, Princeton Public Utilities Commission		
Address:	**City:**	**Zip:**
P.O. Box 218	Princeton	55371-0218
Unique Well Numbers:		**Phone:**
219478 (Well 2) 578949 (Well 7) 751504 (Well 8)	749848 (Well 9) 184979 (Well 5- Emergency)*	763/389-2252

*Emergency wells only use the IWMZ Form for data collection.

Instructions for Completing the Scoping 2 Form

N	R	S	
X			**N = Not required.** If this box is checked, this data element is **NOT** necessary for your wellhead protection plan because it is not needed or it has been included in the first scoping decision notice. **Please go to the next data element**.

N	R	S	
	X		**R = Required for the remainder of the plan.** If this box is checked, this data **MUST** be used for the "**remainder of the plan**."

N	R	S	
		X	**S = Submit to MDH.** If this box is checked, this data element **MUST** be included in your **wellhead protection plan and submitted to MDH**. If there is **NO** check mark in the **"S"** box but there is an Ax@ in the A**R**@ box, this data element **MUST** be included in your plan, but should **NOT be submitted to MDH**. This box will only be checked if MDH does not have access to this data element. This will help to reduce the cost by reducing the amount of paper and time to reproduce the data element.

Note: Any data elements required in the first scoping decision notice must also be used to complete the remainder of the wellhead protection plan.

DATA ELEMENTS ABOUT THE PHYSICAL ENVIRONMENT

PRECIPITATION			
N	**R**	**S**	An existing map or list of local precipitation gauging stations.
	X	**X**	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	An existing table showing the average monthly and annual precipitation in inches for the preceding five years.
	X	**X**	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
GEOLOGY			
N	**R**	**S**	An existing geologic map and a description of the geology, including aquifers, confining layers, recharge areas, discharge areas, sensitive areas as defined in Minnesota Statutes, section 103H.005, subdivision 13, and groundwater flow characteristics.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			
N	**R**	**S**	Existing records of the geologic materials penetrated by wells, borings, exploration test holes, or excavations, including those submitted to the department.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.			
N	**R**	**S**	Existing borehole geophysical records from wells, borings, and exploration test holes.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.			
N	**R**	**S**	Existing surface geophysical studies.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect the geology of the areas.			
SOILS			
N	**R**	**S**	Existing maps of the soils and a description of soil infiltration characteristics.
	X	**X**	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	A description or an existing map of known eroding lands that are causing sedimentation problems.
	X	**X**	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

WATER RESOURCES			
N	**R**	**S**	An existing map of the boundaries and flow directions of major watershed units and minor watershed units.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	An existing map and a list of public waters as defined in Minnesota Statutes, section 103G.005, subdivision 15, and public drainage ditches.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	The shoreland classifications of the public waters listed under subitem (2), pursuant to part 6120.3000 and Minnesota Statutes, sections 103F.201 to 103F.221.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	An existing map of wetlands regulated under Chapter 8420 and Minnesota Statutes, section 103G.221 to 103G.2373.
	X		
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	An existing map showing those areas delineated as floodplain by existing local ordinances.
	X	**X**	
Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

DATA ELEMENTS ABOUT THE LAND USE

LAND USE			
N	**R**	**S**	An existing map of parcel boundaries.
	X	**X**	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	An existing map of political boundaries.
	X	**X**	
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			
N	**R**	**S**	An existing map of public land surveys including township, range, and section.
	X		
Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.			

N	R	S	
	X	X	A map and an inventory of the current and historical agricultural, residential, commercial, industrial, recreational, and institutional land uses and potential contaminant sources.

Technical Assistance Comments: The inventory, mapping and management of land uses and potential sources of contamination for all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements, as follows:

Mixed Vulnerability - 1) All potential contaminant sources and facility designations as listed on the attachments, 2) a land use/land cover map and table, and 3) an inventory of the Inner Wellhead Management Zone (IWMZ).

All land uses and contaminants will be inventoried in the DWSMA(s) based on high vulnerability. Management strategies must be developed for all land uses and potential sources of contamination.

	R	S	
	X	X	An existing comprehensive land-use map.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X	X	Existing zoning map.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

PUBLIC UTILITY SERVICES

N	R	S	
	X	X	An existing map of transportation routes or corridors.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing map of storm sewers, sanitary sewers, and public water supply systems.

Technical Assistance Comments: It is not necessary to include a map of your public water supply system in your plan if you feel it would pose a threat to the security of your system. An existing map of the storm sewers and sanitary sewers in the Drinking Water Supply Management Area(s) must be included in the wellhead protection plan and must also be submitted to the MDH as part of the approval.

N	R	S	
	X	X	An existing map of the gas and oil pipelines used by gas and oil suppliers.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X	X	An existing map or list of public drainage systems.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing record of construction, maintenance, and use of the public water supply well and other wells within the drinking water supply management area.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

DATA ELEMENTS ABOUT WATER QUANTITY

SURFACE WATER QUANTITY

N	R	S	
	X		An existing description of high, mean, and low flows on streams.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing list of lakes where the state has established ordinary high water marks.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing list of permitted withdrawals from lakes and streams, including source, use, and amounts withdrawn.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing list of lakes and streams for which state protected levels or flows have been established.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X	X	An existing description of known water-use conflicts, including those caused by groundwater pumping.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

GROUNDWATER QUANTITY

N	R	S	
	X		An existing list of wells covered by state appropriation permits, including amounts of water appropriated, type of use, and aquifer source.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X	X	An existing description of known well interference problems and water-use conflicts.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing list of state environmental bore holes, including unique well number, aquifer measured, years of record, and average monthly levels.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

DATA ELEMENTS ABOUT WATER QUALITY

SURFACE WATER QUALITY

N	R	S	
	X		An existing map or list of the state water quality management classification for each stream and lake.

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing summary of lake and stream water quality monitoring data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; 3. organic chemicals; 4. sedimentation; 5. dissolved oxygen; and 6. excessive growth or deficiency of aquatic

Technical Assistance Comments: The management of the vulnerable parts of the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

GROUNDWATER QUALITY

N	R	S	
	X		An existing summary of water quality data, including: 1. bacteriological contamination indicators; 2. inorganic chemicals; and 3. organic chemicals.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element. Be sure to include the Nitrate Probability Mapping Study and use it to guide the management of the Drinking Water Supply Management Area(s).

N	R	S	
	X		An existing list of water chemistry and isotopic data from wells, springs, or other groundwater sampling points.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing report of groundwater tracer studies.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing site study and well water analysis of known areas of groundwater contamination.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about these data elements.

N	R	S	
	X		An existing property audit identifying contamination.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.

N	R	S	
	X		An existing report to the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency of contaminant spills and releases.

Technical Assistance Comments: The management of all the Drinking Water Supply Management Area(s) must reflect what is known about this data element.