

2013:

Village of Poynette Wellhead Protection Plan



VILLAGE OF
POYNETTE
— on —
ROWAN CREEK

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SECTION 1: INTRODUCTION

Introduction

The federal government created a uniform nationwide drinking standard for public water systems. In 1986 amendments to the Safe Drinking Water Act (SDWA) established the creation of state wellhead protection (WHP) programs. The goal of WHP is for communities to delineate and protect the land area, which contributes water to their wells in order to prevent contamination of their water supply wells. Under the section of NR 811.12(6) of the Wisconsin Administration Code, a wellhead protection plan shall be provided for all new wells for municipal water systems. A copy of NR 811.12(6) is included in Appendix A for reference.

Background Information

Poynette, Wisconsin is located approximately 25 miles north of Madison with Rowan Creek passing through the middle of the Village flowing west to the Wisconsin River. The municipal water system has 954 water services serving both residential and commercial properties. The system is served by two municipal wells, a ground reservoir, and a water tower. Well #2, constructed in 1966 has had an increase in the level of nitrates over the past several years requiring the abandonment of the well and the construction of a new well, designated as Well #4. The construction of Well #4 has required the implementation of a WHP plan in accordance with the requirements of NR 811.12. The WHP plan will be for the newly constructed Well #4 and the existing Well #3. Well #3 was constructed in 1969 for the Oconomowoc Canning Company and taken over by the Village as a municipal well in 1988. Information regarding the wells is included in the appendices.

SECTION 2: DELINEATION

Section 2 is information provided by Montgomery Associates Resource Solutions, LLC as included in a memorandum from Steve Gaffield on 12/20/2012. The memorandum in its entirety is included in Appendix D. The figures referenced in this section are included in Appendix D.

Direction of Groundwater Flow

The water table map of Columbia County (Sellwood, 2012) indicates that the direction of groundwater flow at the sites of Well 3 and Well 4 is northwest toward Hinkson and Rowan Creeks, respectively, and toward the Wisconsin River (Figure 1). Given the proximity to the creek, it is expected that groundwater flows in this direction in both shallow, glacial aquifer and the sandstone aquifer in which the wells are open. The groundwater model described below also indicates flow directions are similar in the glacial



and sandstone aquifers.

Zone of Influence

The zone of influence (ZOI) of a well is defined as the distance from a well where changes in the groundwater surface can be measured or inferred as a result of pumping. The WDNR standard procedure is to define the boundary of the ZOI as the distance at which drawdown is equal to 1 foot (WDNR, 2000), and NR 811 requires the calculation assumes 30 days of pumping with no recharge.

The extents of Zones of Influence (as calculated by the Theis Equation) for Well 3 and Well 4 are shown on Figure 2. Note that the Theis Equation was developed for confined aquifers. If unconfined or leaky aquifer conditions exist at these well sites, the actual Zone of Influence may be smaller than calculated.

Recharge Area

Recharge areas for Wells 3 and 4 were delineated using a MODFLOW model of the Poynette area developed for a study of Rowan Creek by the Wisconsin Geological and Natural History Survey (Gaffield et. al, 2007). This model was developed from the Dane County Regional Groundwater Model and has a closely spaced finite difference grid in the area around the Poynette wells. It simulates the glacial aquifer and the sandstone bedrock aquifer.

The recharge areas for both wells (Figure 3) extend a considerable distance upgradient to the southeast, terminating at the groundwater divide identified by the WGNHS on the Columbia County water table map. The recharge areas were delineated using backward particle tracking in the MODFLOW model, releasing clusters of particles around each well at 4 different depths in the sandstone aquifer.

Wellhead Protection Area

Wisconsin Department of Natural Resources guidance for wellhead protection areas (WDNR, 2000) states that the wellhead protection area must include the portion of the recharge area within a 5 year time of travel to the well, as well as at least a 1200-foot radius around the well. The 5-year zone of capture for Wells 3 and 4 were delineated using the MODFLOW model and backward particle tracking for a period of 5 years. This capture area was overlaid on the 1200-ft radius around the wells, and the wellhead protection areas were delineated using the more extensive of the two data sources (Figure 4). The 5-year capture zone includes flow paths in both the sandstone aquifer and the shallow glacial aquifer, and the shallow flow paths tend to extend farther upgradient the flow paths in the sandstone. This is a reflection of the higher hydraulic conductivity of the glacial aquifer.



SECTION 3: RISK ASSESSMENT

Inventory of Potential Contamination Sources

The location of potential contamination sources within ½ mile of Well #3 and Well #4 and the recharge area are shown in Appendix E. The potential contamination sources and the distances from the wells are listed in the following tables. The potential contamination sources were identified as listed on the Public Water Supply Potential Contaminant Use Inventory Form 3300-215, Rev. 01/2009 and in accordance with the “A Guide for Conducting Potential Contaminant Source Inventories for Wellhead Protection”, May 1999. Each of the potential sources is shown on the Potential Contamination Sources map in Appendix E.

Well No. 3		
Potential Contamination Source	Code	Distance and Direction
Agricultural Farming	AFP	1,000' Southwest 1,900' Southwest
Road Salt Storage	BSS	2,600' South
Paint Shop	CPS	2,400' South
Railroad Track	CRT	500' East
Fuel Storage Tank	GFA	2,160' South
Sewer Lines(municipal)	GSL	800' East
Sewer Lines(Non-municipal)	GSN	230' South
Sewage Tank	GST	230' South 800' East
Plastics Manufacturer	IPC	2,500' South
Golf Course	MGC	2,100' East
ERRP Site	WRP	2,500' South
Wastewater Lagoon	WWL	1,100' South

Well No. 4		
Potential Contamination Source	Code	Distance and Direction
Agricultural Farming	AFP	2,100' Southeast
Railroad Track	CRT	1,200' East
Printing	CPR	1,080' Northeast
Sewer Lines(municipal)	GSL	60' South
Sewage Tank	GST	1,400' South 1,000' Northeast
Wastewater Treatment Plant	WWP	700 Northwest
Wastewater discharge to surface water	WWO	1,740 Northwest

Multiple agricultural farm areas are scattered throughout the recharge areas.



SECTION 4: WELLHEAD PROTECTION PLAN IMPLEMENTATION

Management Plan

The management plan will include public education, a water conservation program, wellhead protection ordinance, private well abandonment, and a contingency plan. A portion of the recharge area for each of the wells is outside of the Village limits and beyond the jurisdictional control of the Village.

Public Education – The Village will undertake the activities listed in the Public Education section of this plan. The education will target Village residents and farmers within the recharge area.

Water Conservation Program – The Village will promote water conservation as outlined in the Water Conservation Program section of this plan.

Wellhead Protection Ordinance – The Village is currently going through the process of creating a wellhead protection ordinance in accordance with the Draft Poynette Well Recharge Overlay Zoning Provisions. A copy of the draft ordinance is included in Appendix H.

Private Well Abandonment – The Village has a well abandonment ordinance currently in effect. The verbiage of the existing ordinance is included in Appendix I.

Contingency Plan – The Village will follow the contingency plan as outlined in the Contingency Plan section of this report.

Public Education

The public education program will consist of the following:

Public Meetings. There have already been several public meetings throughout the construction of Well No. 4 and during the well site selection process. Potential contamination of the Village wells has been a topic at several of these meetings as the new well was required due to high nitrate levels.

Open House. An open house will be held at the new well upon completion of construction. The Wellhead Protection Plan will be available for review at the open house.

Public Information Materials. The Wellhead Protection Plan will be available for public review at the Village Hall and the Poynette Library. Once a year a letter will be sent with the billing statement informing the residents of the Wellhead Protection Plan and may include other information on water conservation and the protection of the water supply.



Water Conservation Program

Information on water conservation will be available at the Village offices and water conservation information could be periodically included with the water bills.

The Village does not have a prepared sprinkling ban, but if the need arises they will institute a sprinkling ban that meets the needs at the time. An example of a sprinkler ban as provided by the WDNR is included in Appendix J for reference.

Wellhead Protection Ordinance

The Village is in the process of reviewing and adopting the Well Recharge Zoning Overlay Provisions. A copy of the overlay provisions is included in Appendix H.

Private Well Abandonment

Title II – Chapter 5, Section 5.09 Abandonment of Wells is a current Village Ordinance. The ordinance section is included in Appendix I for reference.

Contingency Plan

The Village needs to have a contingency plan for providing safe water in the event that one of the wells is contaminated or if there is a spill or major leak within the wellhead protection area.

The Village has two municipal wells. Well No. 3 has a capacity of 1,000 gallons per minute (gpm) or 1,440,000 gallons per day. Well No. 4 has a capacity of 600 gpm or 864,000 gallons per day. According to the 2011 annual report from the Public Service Commission the maximum one day usage for the year was 284,000 gallons per day and the average daily usage was approximately 171,000 gallons. The Village has the capability of supplying adequate water supply to the residents with the use of one of the two municipal wells.

If well contamination occurs the Director of Public Works shall be responsible to:

- Discontinue the use of the contaminated well.
- Assess the severity of the problem.
- Perform emergency chlorination if deemed necessary.
- Determine the cause of the contamination and corrective measures that can be taken. Other persons that may be consulted include:
 - Amy Kubly, WDNR; 608-275-3486
 - Erik Henningsgard, General Engineering Company; 608-742-2169
 - Wisconsin Rural Water Association; 715-344-7778
- Inform the public.
 - Request user to conserve water, if necessary.
 - Boil water notice, if necessary.



The Village will inform the residents by one or more of the following methods, depending on the severity of the emergency:

- Hand deliver or mail a notice to each user.
- Post notice at post office, library, and Village offices.
- Notice in Poynette Press newspaper.
- Broadcast announcement on radio.

If both municipal wells were out of service the Village could supply potable water for Village residents either by bulk purchases of bottled water from Walmart in Portage or by purchase of water from the Village of Arlington to be trucked to the Village. The Wisconsin Rural Water Association could provide food grade water trucks to be available for trucking of the water. The numbers for contact of each of the entities is listed below.

Portage Walmart: (608) 742-1432
Village of Arlington: (608) 635-2474
WRWA: (715) 344-7778

Spills or Leaks

There are two categories of spills and leaks; emergency and non-emergency. Reporting requirements are different for the two types. The WDNR's Hazardous Substance Spills Reporting Requirements is included in Appendix F.

Emergency Spills/Discharges

Emergency spills/discharges include all discharges of hazardous substances that adversely impact, or threaten to adversely impact public health, welfare, or the environment. Emergency discharges within the wellhead protection area have the potential to contaminate the source water. Emergency discharges must be immediately reported to the WDNR.

In the event of an emergency discharge within the wellhead protection area the following agencies shall be notified:

Poynette Public Works:

- **Director of Public Works; Mike Paulcheck; cell 608-635-5120 (7:00 am – 3:00 pm M-F)**
- **Water Superintendent; Dane Brue; cell 608-635-5123 (7:00 am – 3:00 pm M-F)**
- **On call public works; 608-635-3226 (after hours)**

WDNR Hotline: 1-800-943-0003

Poynette Dekorra Fire Department:

- **608-635-2151**
- **911**



When calling give the following information:

- Location of the spill (street address)
- Substance spilled and quantity (25 gallons of diesel fuel, 50 gallons of liquid fertilizer, etc.)
- Cause of incident (broken hose, truck roll over, etc.)
- Surface water affected (Rowan or Hinkson Creek)
- Person or firm responsible and telephone number
- Action taken at the scene.

Non-Emergency Discharges

Non-emergency discharges include the discharge of hazardous substance that are found by testing such as groundwater contamination caused by a leaking underground storage tank. These discharges are to be reported by fax or email to the DNR regional office. A copy of the Notification For Hazardous Substance Discharge (Non-Emergency Only) (Form 4400-225) can be found on the WDNR's website at <http://dnr.wi.gov/topic/Spills/Report.html> or a copy of the form is included in Appendix G.