CITY OF RHINELANDER
WELLHEAD PROTECTION PLAN
WELLS #4, #5, #6, #7 & #8

June, 2015

Prepared for Rhinelander Water Utility
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Sourcewater Protection Program
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BACKGROUND

The City of Rhinelander has prepared this wellhead protection plan for the purpose of minimizing the risk of contamination to the municipal water supply. The plan establishes wellhead protection areas around each municipal water supply well which are designated for special protective measures intended to minimize the risk of the well becoming contaminated. The wellhead protection areas are generally the area determined by a hydrologic study to contribute groundwater to the well. Wellhead protection areas receive the most concerted protection efforts.

This plan supersedes previous wellhead protection plans and includes Rhinelander's existing wells #4, #5, #6 & #7 as well as the newly constructed Well #8. The water system serves the entire City with a year around population of 7,557(2013), which increases during the summer months. The system has an average demand of around 1.7 million gallons per day (gpd). Water use is higher in the summer due to increased tourist population and Lake State Yeast buying water for cooling water. To meet average demand, all wells are pumped eight to ten hours per day. Pumpage is controlled by a SCADA system. Water storage is provided by three elevated tanks with capacities of 300,000 gallons, 400,000 gallons & 500,000 gallons, and one reservoir at Wells #4 & #5 with a capacity of 1.25 million gallons that provides sufficient contact time for chlorine disinfection. Well construction details are as follows:

Table 1

Well #	WI Unique Well ID	Total Depth (ft)	Casing Depth (ft)	Open Interval (ft)	Well Diameter (in)	Pump Design Capacity (gpm)
4	BG535	80	50	30	26	1700
5	BG536	68	43	25	26	1700
6	BG544	91	60	31	18	1000
7	WK851	88	60	28	18	500
8	YK997	88	72	16	18	400

Wells #4 &#5 sit on the east side of County G, 1,000 feet south of the Pelican River on the City's south side. The wells were originally constructed in 1969 & 1977, and are the City's most productive wells. Both wells are equipped with vertical turbine pumps. Auxiliary power for the wells & reservoir comes from manual standby motors attached with right angle drives and a automatically activated natural gas generator to run control system and low voltage amenities.

Well #6 is a located 2,000 ft south of the Rhinelander Flowage at the intersection of Phillip & Lois Streets on the city's northwest side. The well was originally constructed in 1987. Well #6 is equipped with a shaft driven vertical turbine pump. Auxiliary power for the well comes from natural gas generator located permanently on site.

Wells #7 & #8 sit on the south edge of the Rhinelander-Oneida County Airport on the city's far west side. Well #7 was constructed in 2007 and Well #8 is a newly constructed well. Both wells are equipped with vertical turbine pumps. Water from Well #8 is pumped to the Well #7 well house where it is treated prior to pumping to the distribution system. Backup power for both wells comes from a natural gas generator located permanently on site.

All of Rhinelander's wells pump groundwater from the unconsolidated sand and gravel aquifer that lie below the City. Water from the wells is of an aggressive nature (pH around 6.5), but otherwise of good quality. Treatment consists of chlorination for disinfection, pH adjustment by caustic addition for corrosion control and fluoridation. Locations of the wells are shown in Figure 1 and lithologic logs and construction details for the wells are included in Appendix A. This plan was prepared in accordance with the Wisconsin Administrative Code, Chapter NR 811.12(6) for wellhead protection planning.

HYDROGEOLOGIC SETTING

Rhinelander is located on the Wisconsin River in southeastern Oneida County. The topography of the area was created by glaciers that covered the region. The land is characterized by ice-contact topography with rolling ground moraine, hills and ridges of end moraines & pitted outwash. The subsurface consists of a relatively thin layer of unconsolidated glacial drift of varying thickness overlying Precambrian bedrock. The glacial drift around Rhinelander consists of an inter-layered mixture of clay-rich glacial tills, outwash sands and gravels and silty glacial lake deposits with highly variable hydraulic conductivity. The bedrock consists of granite and metavolcanic rock that is effectively impermeable (Kammerer, 1998) and does not yield a useable amount of water. Examination of well logs around Rhinelander shows that depth to bedrock is generally about 80 ft, with a maximum depth of 300 ft. recorded in the northeast part of town, not far from the high school where granite crops out at the surface. There are silt and clay layers within the outwash; however, drillers' logs do not indicate that they are continuous. Therefore, it is assumed that the outwash deposits constitute a single aquifer which is under water table conditions.

The source of all groundwater is precipitation which infiltrates and recharges the aquifer. The rate of groundwater flow in an aquifer is determined by the hydraulic parameters of the aquifer. Important hydraulic parameters are described below and given in Table 2:

- Aquifer Thickness – Vertical thickness of water bearing porous medium.
- Effective Porosity – The ratio of void volume to the total volume of material (estimate)
- Hydraulic Gradient – The change in water table elevation (hydraulic head), divided by the change in distance in a given direction (calculation shown in Figure 2)
- Storage Coefficient – The volume of water that an aquifer releases from storage, per unit surface area of the aquifer, per unit change in head. Estimated for unconfined aquifers (Driscoll 1986, pp. 737).
- Transmissivity – The rate at which water is transmitted through a unit width of the aquifer under a unit hydraulic gradient. It is estimated using pump test data, and the "T-Guess" computer solution (Bradbury and Rothschild, 1985).
- Hydraulic Conductivity – The ease with which flow takes place through a porous medium. It is calculated by dividing the transmissivity by the aquifer thickness.

Table 2

Aquifer Hydrologic Parameters	Well #4	Well #5	Well #6	Well #7	Well #8
Aquifer Thickness (ft)	70	70	70	70	70
Effective Porosity	0.3	0.3	0.3	0.3	0.3
Hydraulic Gradient	0.003	0.003	0.003	0.003	0.003
Storage Coefficient	0.1	0.1	0.1	0.1	0.1
Transmissivity (ft2/sec)	0.47	0.72	0.13	0.063	0.061
Hydraulic Conductivity (ft/day)	580	889	160	78	75

The Aquifer hydraulic parameters are estimated using a pump test, which is conducted at the time of well construction, and can be found on the well construction report. A pump test provides an estimate of how much water an aquifer can yield, also known as the wells specific capacity. This is done by measuring drawdown, which is the difference between the static (pre-pumping) water levels and water levels after pumping the well at a given rate for a given period of time. The pumping test results are as follows:

Table 3

Pump Test	Well #4	Well #5	Well #6	Well #7	Well #8
Pumping Rate (gpm)	2000	2000	1000	580	400
Duration (hours)	12	24	12	24	28
Static Water Level (ft)	9	8.5	19	17	30
Pumping Water Level (ft)	24	20	46	52	66
Drawdown (ft)	15	11.5	27	35	36
Specific Capacity (gpm/ft)	133.3	173.9	37.0	16.6	11.1

GROUNDWATER FLOW DIRECTION

The direction of groundwater flow may be inferred from the regional topography and the slope of the water table. The water table is the upper limit of the aquifer and is measured in "head" or elevation above sea level. Wells provide measurement points of water table elevation. The water table is generally a subdued representation of the surface topography, where water moves from high points toward low areas where it discharges to lakes & rivers. There is no published regional water table map available; however one was constructed for Rhinelander's 2003 wellhead protection plan using water levels in area lakes, streams & wetlands. An updated version of this map is found in Figure 2. Additionally, water table elevations were estimated using the groundwater flow modeling software GFlow. The modeled water table contours are mapped in Figure 3. Both water table maps are in reasonable agreement and shown the water table as contour lines of equal head with a 20 ft & 5 ft contour intervals respectively. Groundwater flows approximately at right angles to the contour lines of equal head, in the direction of decreasing head. Blue arrows on the maps show the general direction of groundwater flow, which is generally from topographic highs northeast of Wells #7 & #8 and south of Wells #4 & #5 toward the Wisconsin and Pelican Rivers. Groundwater recharging the wells comes from precipitation that falls northeast of the wells. Precipitation infiltrates downward into the ground until it reaches the water table where it starts to move in a

horizontal direction. Actual groundwater flow paths are difficult to predict due to irregular bedrock depths and an intricate mixture of clay lenses and deposits of outwash, lake silt and glacial till.

ZONE OF INFLUENCE

The Theis equation is used to calculate the zone of influence (ZOI), which is a circle around each well that represents a cone of depression in the water table defined by a drawdown of 1 ft that would develop after 30 days of continuous pumping at full capacity, with no recharge to the groundwater. It assumes that the aquifer is homogeneous (the aquifer is equally permeable in all places and in all directions), the well fully penetrates the aquifer and drawdown is small compared to the saturated thickness. It simulates theoretical worst-case condition. Since the formula uses continuous pumping at full capacity and does not consider recharge to the aquifer, the calculation may be artificially large. When recharge is considered the ZOI becomes an elliptical shape extending farther upgradient and less downgradient. The circular radius of the calculated Zone of Influence around each well is mapped in Figure 4.

Theis Equation:

$$W(\mu) = \frac{sT}{114.6*Q}$$

$$r^2 = \frac{Tt\mu}{1.87S}$$

Where:

$W(\mu)$ = Well Function
s = Drawdown (1 ft)
Q = Maximum Pumping Capacity
T = Transmissivity (gpd/ft)
S = Storativity
μ = From lookup table based on $W(\mu)$
t = 30 days continuous pumping
R = Radius of the cone of depression

Zone of Influence (ZOI) Calculations:

Well #4 $W(\mu)$= 1 X 303620 / 114.6 X 1700 W(μ)= 1.5585

μ = 0.13

r = √(303,620 X 30 X 0.13 / 1.87 X 0.1) ZOI radius= 2,516 feet

Well #5 $W(\mu)$= 1 X 465,120 / 114.6 X 1700 W(μ)= 2.3874

μ = 0.054

r = √(465,120 X 30 X 0.054 / 1.87 X 0.1) ZOI radius= 2,007 feet

Well #6 $W(\mu)= \frac{1 \times 83{,}980}{114.6 \times 1000}$ W(μ)= 0.7328

μ = 0.38

$r = \sqrt{\left(\frac{83{,}980 \times 30 \times 0.38}{1.87 \times 0.1}\right)}$ ZOI radius= 2,263 feet

Well #7 $W(\mu)= \frac{1 \times 40{,}698}{114.6 \times 580}$ W(μ)= 0.7103

μ = 0.39

$r = \sqrt{\left(\frac{40{,}698 \times 30 \times 0.39}{1.87 \times 0.1}\right)}$ ZOI radius= 1,596 feet

Well #8 $W(\mu)= \frac{1 \times 39{,}406}{114.6 \times 400}$ W(μ)= 0.8596

μ = 0.32

$r = \sqrt{\left(\frac{39{,}406 \times 30 \times 0.32}{1.87 \times 0.1}\right)}$ ZOI radius= 1,422 feet

ZONE OF CONTRIBUTION (RECHARGE AREA)

In order to protect the groundwater reaching Rhinelander's municipal wells, it is important to determine where water pumped from the wells comes from. Groundwater captured by the wells is recharged by infiltration of precipitation in an area extending primarily up gradient from each well. The entire land area that contributes water to a well is known as the "zone of contribution" (ZOC) or recharge area. Several methods can be used to delineate the recharge area, ranging from a simple fixed radius to the use of complex computer models. The recharge area for Rhinelander's wells was delineated by Wisconsin Rural Water Association for the purposes of this report using the groundwater flow model GFlow. Assumptions used in the model include hydraulic conductivity (K) of 110 ft/day, porosity of 0.3, aquifer thickness of 80 ft. Pumping rates for each well were reached by dividing the average pumping rate evenly between each well (29,000 ft^3/day for each well).

The ZOC is broken down into "capture zones" equal to the 5-year Time of Travel (TOT) and Full capture zones. Water at the margin of the 5-year capture zone should take 5-years time to reach the well. The full capture zone is the entire land area that contributes groundwater to the well. The 5-year capture zone is particularly important because 5 years is generally determined to be an adequate amount of time needed for the geologic formation to degrade or dilute most contaminants, or contamination could be cleaned up before reaching the pumping well. The 5-year TOT capture zones represents an area where protecting the groundwater is the most important. The full capture zone should be protected as well; however protection measures can be less intensive in this area. The modeled capture zones are mapped in Figure 5 and the 5-year TOT capture zones are mapped along with the wellhead protection areas in Figures 7, 8 & 9.

Sensitivity Analysis

Groundwater modeling for this report was done using a calculated hydraulic conductivity (K) value of 110 ft/day. Based on well drawdown calculations and previous geologic studies of the area, this is considered a good average K for the region. During development of Well #8, the pump test resulted in K value higher than 110. A pump tests measures the K of the most conductive zone which a well encounters and is not necessarily representative of the entire aquifer. Due to natural heterogeneity, wells will likely encounter several zones that are more or less conductive (higher or lower K). Due to this natural variability, a groundwater model run was conducted with a K value twice that of the calculated K value of 110 ft/day, which is 220 ft/day. Results of this model run were compared to the original model run. The higher K extends the 5-year capture zones a bit further upgradient, which are mapped in Figure 6. Based on the results of the sensitivity analysis, the wellhead protection areas previously established provide a sufficient protection area.

POTENTIAL CONTAMINANT SOURCES

In order to design the most appropriate management strategy, it is necessary to know what possible sources of contaminants are present around each well. These are locations where human activity or land use has created the potential to release contaminates into the groundwater aquifer. Potential contaminant sources within ½ mile of each well were identified in the Source Water Assessment prepared by the Wisconsin Department of Natural Resources (WDNR, 2003) as well as a records review and field reconnaissance.

A variety of contaminants can be released from the potential sources identified at Rhinelander. Sewage from sanitary sewers and septic systems contain both domestic and industrial wastewater. While industrial wastewater can have many types of pollutants, the contaminants of most concern in domestic wastewater include pathogens and nitrate. Pathogens (primarily bacteria and viruses) are filtered somewhat as they move through the ground and are viable for a limited time. Pathogens are treated using continuous disinfection. Nitrate, on the other hand, travels very easily in groundwater with little attenuation. Nitrates are also present in fertilizers applied on agricultural land and lawns. Pesticides applied to lawns and fields are in a class of chemicals known as synthetic organic compounds (SOCs) which can be attenuated somewhat in topsoil and unconsolidated sand & gravel. Another class of chemicals, known as volatile organic compounds (VOCs) can be released from a variety of sources, including fuel tanks and auto repair shops. VOCs have mobility similar to that of SOCs. Chloride can be released from road salt, sewage, landfills, manure storage or spreading and septic system leachate and is also very mobile. There are several known private wells in the area. Wells that don't meet construction code or are improperly sealed are a significant threat to groundwater quality because they can act as a direct conduit for contaminants to move from the surface to the groundwater.

Wells #4 & #5

Wells #4 & #5 are surrounded by a mixture of forest and low density un-sewered residential. The well has a history of periodic bacterial contamination which may come from private septic systems or the Pelican River to the north. Bacteria is the primary contaminant of concern; however it is treated using continuous disinfection. Highway 8 runs 1,500 ft south of the well which should not pose a threat of chloride from road salt; however a large spill could threaten the wells. An active contamination cleanup is being conducted at Rhinelander's former city landfill sits over ½ mile to the east on the far side of the Pelican River. Studies have shown that contamination from this site is unlikely to cross the river and reach the well.

Well #6

Well #6 is surrounded by municipally sewered residential on the north, east and southwest, and forest to the west. Residential land use typically poses little threat, provided that fertilizer is used properly, hazardous household waste is disposed of properly and sanitary sewers are in good repair. There are several other potential contaminant sources more than ½ mile up-gradient from the well, but the distance greatly reduces the risk to the well.

Wells #7 & #8

Wells #7 & #8 are surrounded by Oneida County/Rhinelander Airport's airfield to the north and forest with several un-sewered residents to the south and west. The small number of septic tanks should pose very little threat to the wells. All of the bulk fuel/oil storage and aircraft maintenance occurs at least a mile to the east near the airport terminal and should pose very little risk to the wells. In the event of an emergency situation, aircraft fire extinguishing agents & aircraft fuel could pose a significant threat to the wells. There are several commercial industries ½ mile to the southeast, which is hydraulically down gradient from the wells.

Potential contaminant sources are mapped in Figures 10, 11 & 12 and for the area within ½ mile of each well, Appendix A contains a comprehensive inventory with distances and direction from the nearest well. This inventory should be updated periodically by utility personnel in the space provided.

WELLHEAD PROTECTION AREA

This plan establishes a wellhead protection area (WHPAs) around each well. The WHPAs are established to clearly define the areas most critical for protecting the wells from contamination. They should be the primary focus of efforts to protect the City water supply.

The WHPAs include the full 5-year TOT capture zone. WHPAs were established by previous wellhead protection plans for Wells #4, #5 & #6 (2003) and Well #7 (2008). Based on the most current information available and the hydrogeologic modeling conducted for this plan, the previously established wellhead protection areas are reasonable and will continue to be used. The WHPA's include the full 5-year TOT capture zones with a reasonable buffer to account for intrinsic uncertainty in aquifer parameters and groundwater flow. The DNR suggests the boundary of a WHPA be a minimum of 1,200 ft from a municipal well. This suggestion is met for all of Rhinelander's wells. The WHPA boundary is normalized to convenient geographic & political boundaries to simplify implementation. The WHPA is mapped along with the modeled 5-Year TOT in figures 7, 8, & 9.

MANAGEMENT STRATEGY

Implementation of the wellhead protection plan happens by taking specific actions to protect the City water supply. This includes addressing any specific issues and solutions identified in the wellhead protection plan or by the steering committee. The steering committee has developed an implementation plan which lays out specific implementation activates along with the responsible party and a timeline for completion.

Blue-shaded blocks indicate activities already in place and ongoing

Activity	*Responsible Party*	*When Implemented*	*Comments*
SOURCE MANAGEMENT ACTIVITIES			
Wellhead Protection Ordinance	City of Rhinelander - Planning & Zoning Dept.	Ongoing	Rhinelander currently has an updated wellhead protection ordinance in place.
Town of Crescent & Town of Pelican WHP Ordinance	Public Works Director	Summer/Fall 2015	Rhinelander will seek cooperation from the Towns of Crescent & Pelican with implementing the wellhead protection ordinances in the portion of the WHP areas outside the city's corporate limits.
Work with Rhinelander-Oneida County Airport on Emergency Response	Public Works Director	Summer/Fall 2015	Rhinelander will attempt to work with the Rhinelander-Oneida County Airport on emergency notification of the utility within the airport's emergency response plan.

EDUCATION AND OUTREACH ACTIVITIES			
Annual Consumer Confidence Report	Public Works Director	Annually	Rhinelander Utilities develops and distributes an annual consumer confidence report.
Educational Brochures	Public Works Director	Ongoing	The city will make educational brochures available at either city hall or the utility office.
WATER CONSERVATION ACTIVITIES			
Leak Detection	Water Department	Ongoing	Water bills are screened for anomalies that indicate leaks and leak detection surveys are conducted as needed.

STEERING COMMITTEE

A steering committee has been formed to oversee implementation of this plan. At the time of plan implementation, the steering committee consists of the following individuals:

Tim Kingman, Public Works Director, City of Rhinelander

Joseph Salzer, Water/Wastewater Utility Committee Chairperson, City of Rhinelander

Sherrie Belliveau, Water/Wastewater Utility Committee, City of Rhinelander

Tom Kelly, Water/Wastewater Utility Committee, City of Rhinelander

George Kirby, Water/Wastewater Utility Committee, City of Rhinelander

Mark Pelletier, Water/Wastewater Utility Committee, City of Rhinelander

Andrew Aslesen, Source Water Specialist, Wisconsin Rural Water Association

Local governmental entities that have jurisdiction in the planning area are the City of Rhinelander, Town of Crescent, Town of Pelican and Oneida County. Cooperation with these entities will be sought in implementing this plan, with specific responsibilities including:

City of Rhinelander-Plan implementation through implementation plan outlined above, and enforcement of wellhead protection ordinance.
Town of Crescent-Cooperation will be sought with the Town of Crescent to protect the portion of Rhinelander's wellhead protection area that lies outside the city.
Town of Pelican-Cooperation will be sought with the Town of Pelican to protect the portion of Rhinelander's wellhead protection area that lies outside the city.
Oneida County-consideration of protection of Rhinelander Wells in any county ordinances and planning activities

CONTINGENCY PLANNING

Contingency planning is done to minimize the disruption of water service in the event of emergencies. In the event that Rhinelander's water supply becomes contaminated, the procedures laid out in the Emergency Response Plan (ERP), developed by Rhinelander Utilities and stored at the wastewater treatment plan and at city hall, will be followed. The ERP provides a regularly updated, comprehensive list of all necessary contacts for water system employees, emergency management agencies, contractors, and state agencies; as well as emergency procedures, including emergency alternate water sources and emergency disinfection procedures.

With any one well out of service, the remaining wells could meet the average daily demand of around 1.7 million gallons. The City has a total storage capacity of 2 million gallons that could provide approximately one day worth of water. Additionally, emergency water use restrictions on irrigation and industrial use could be implemented to conserve water.

The following is an abbreviated list of emergency contacts.

EMERGENCY CONTACT		PHONE NUMBERS
Local:	Rhinelander DPW-Tim Kingman	715-437-0282
	Rhinelander Water Dept.-Bradley Vick	715-781-2453
	Fire Department	911 or 715-365-5400
	Police Department	911 or 715-365-5300
	Ambulance (EMS)	911 or 715-365-5300
	DNR Representative-William Dobbins	715-365-8923
County and Regional:		
	Oneida County Sheriff	911 or 715-361-5100
	Oneida County Emergency Management	715-361-5167
	Oneida County Health Department	715-369-6111
	DNR-Regional Spill Coordinator	715-392-7822
State:	DNR-State Spill Response	800-943-0003
	State Lab of Hygiene	608-263-3280

Figure 1 – Municipal Divisions and City of Rhinelander Well Locations

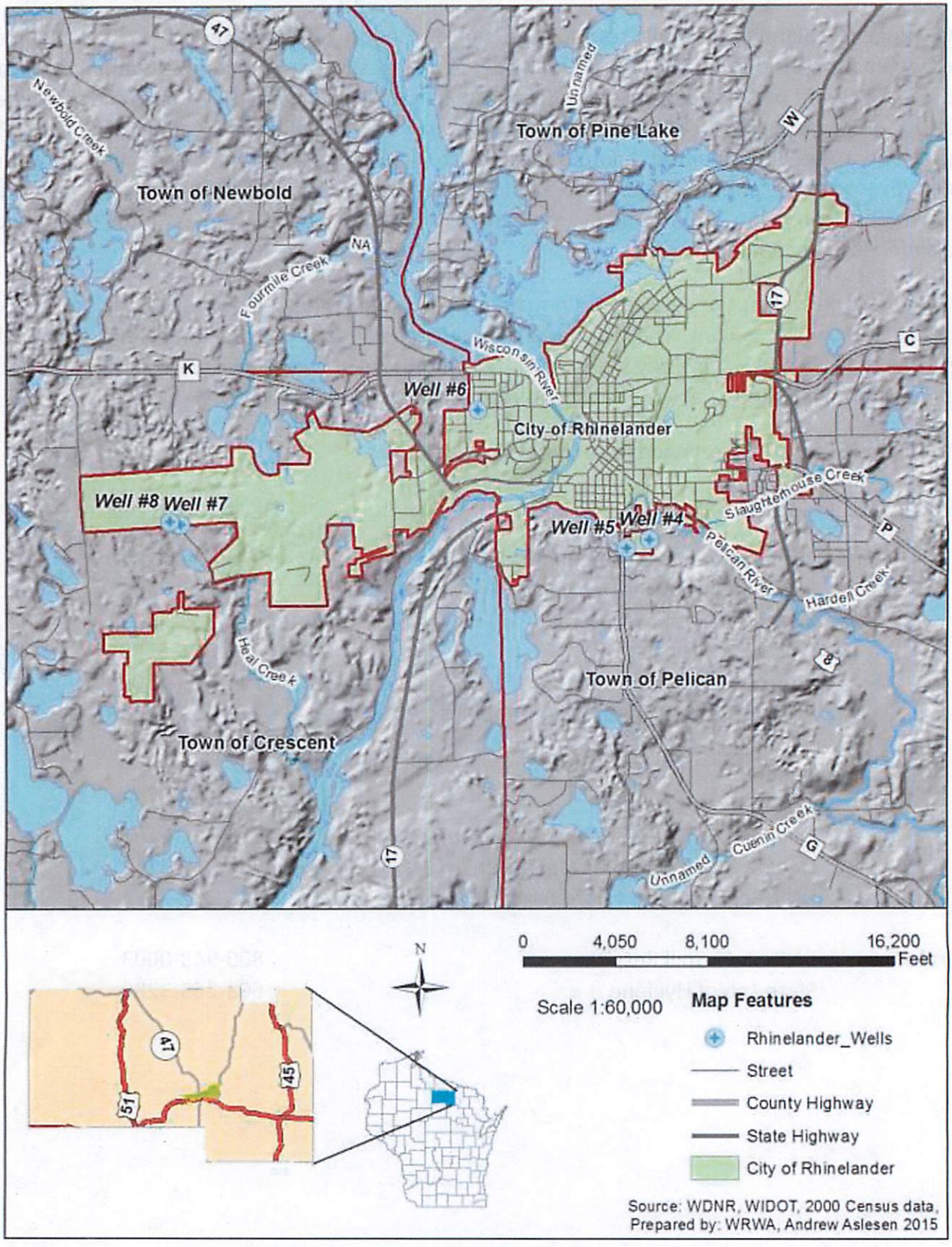


Figure 2 –Water Table Map Developed for 2003 Wellhead Protection Plan

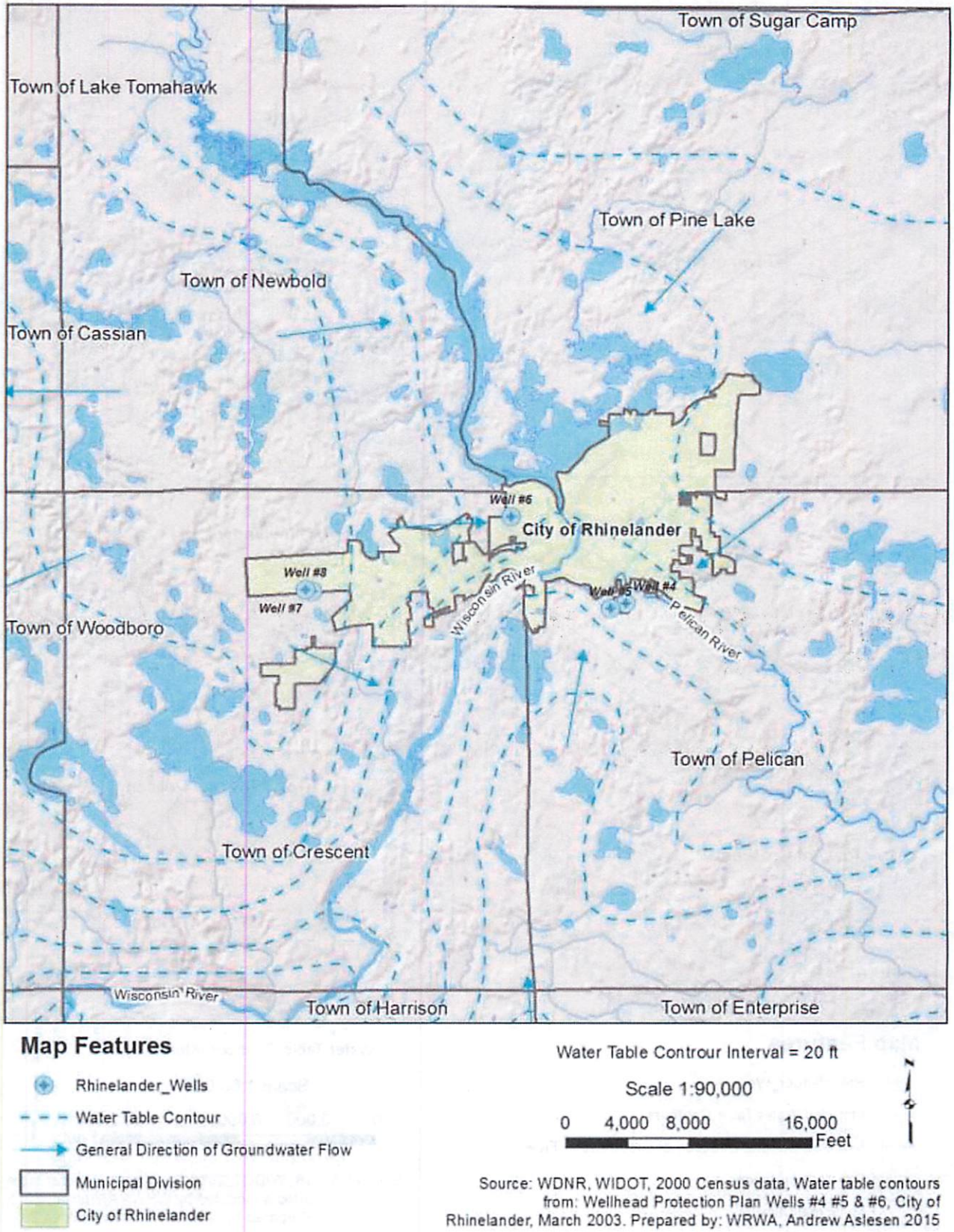


Figure 3 – Water Table Map Developed by Groundwater Flow Modeling

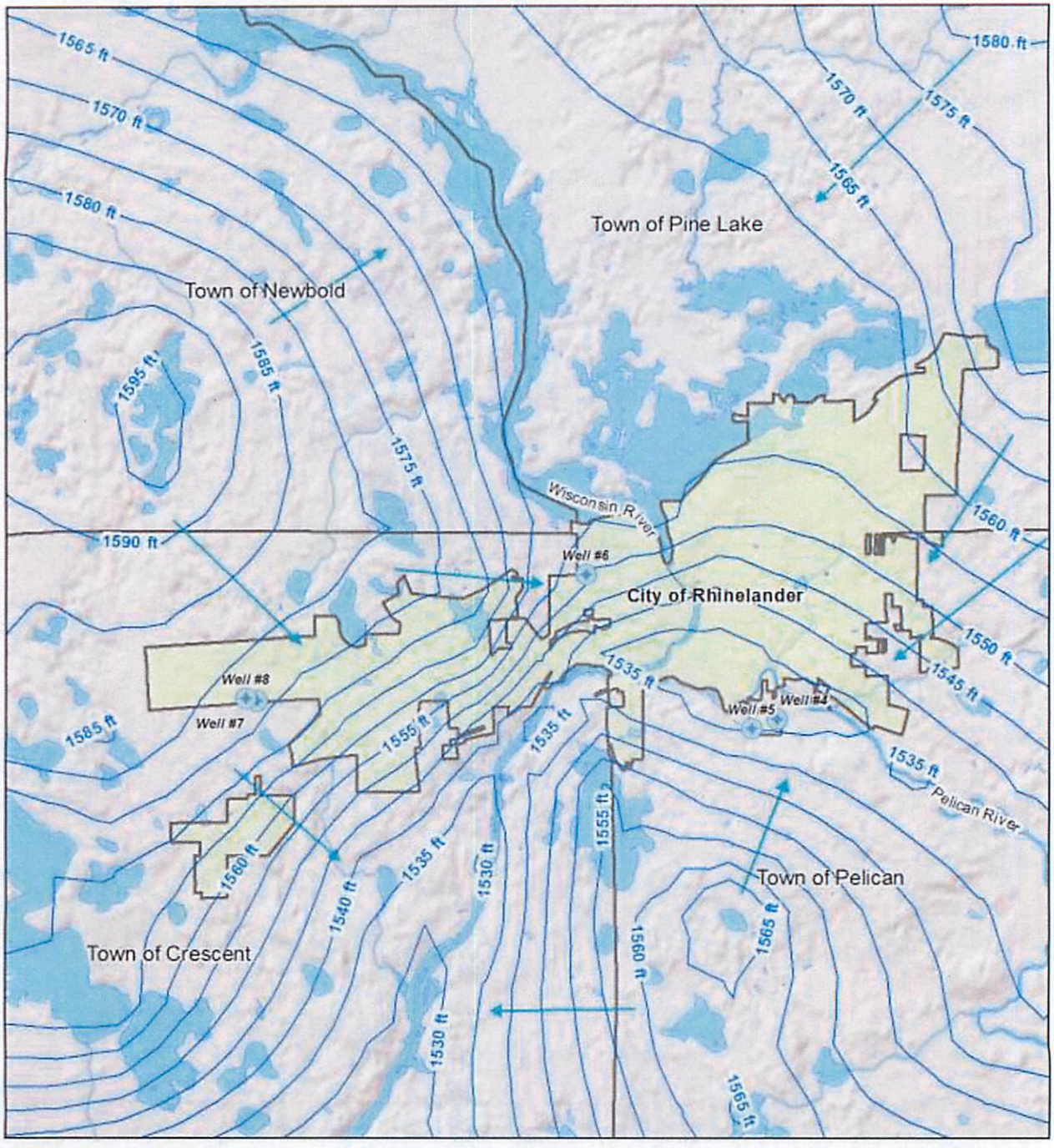


Figure 4 – Zone of Influence (ZOI)

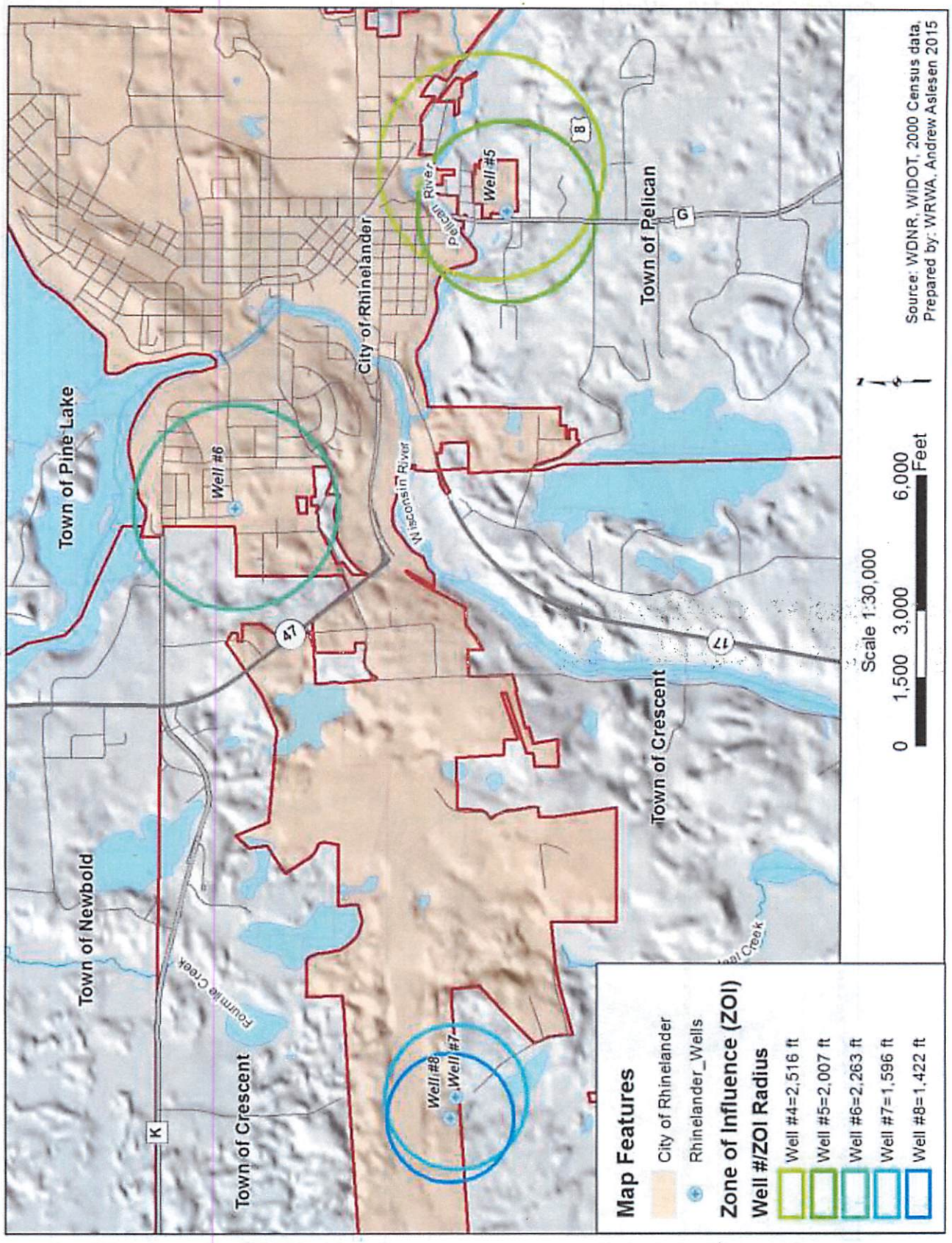
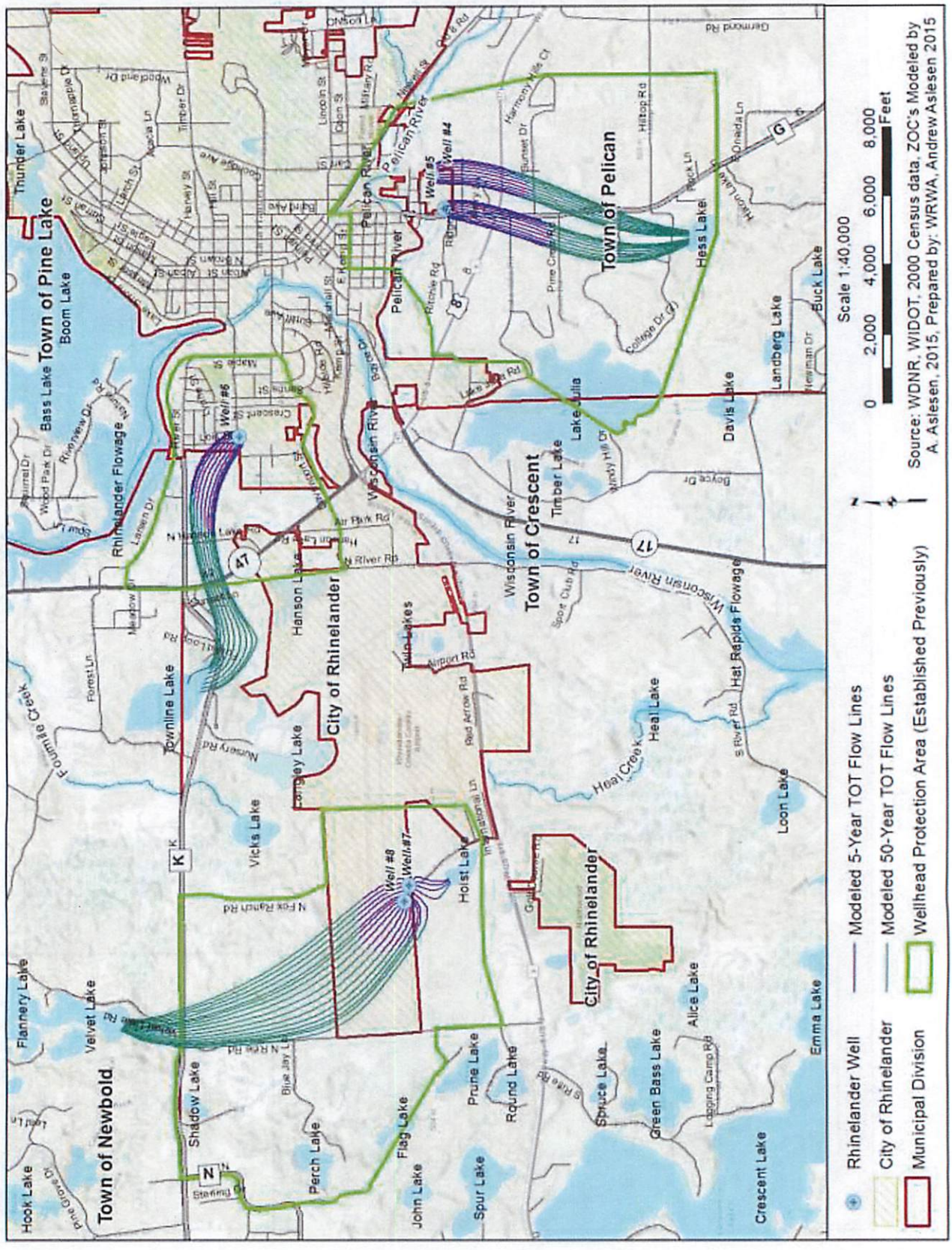


Figure 5 –Zone of Contribution, Modeled 5-Year TOT capture zones at calculated Hydraulic Conductivity (K=110 gal/min)



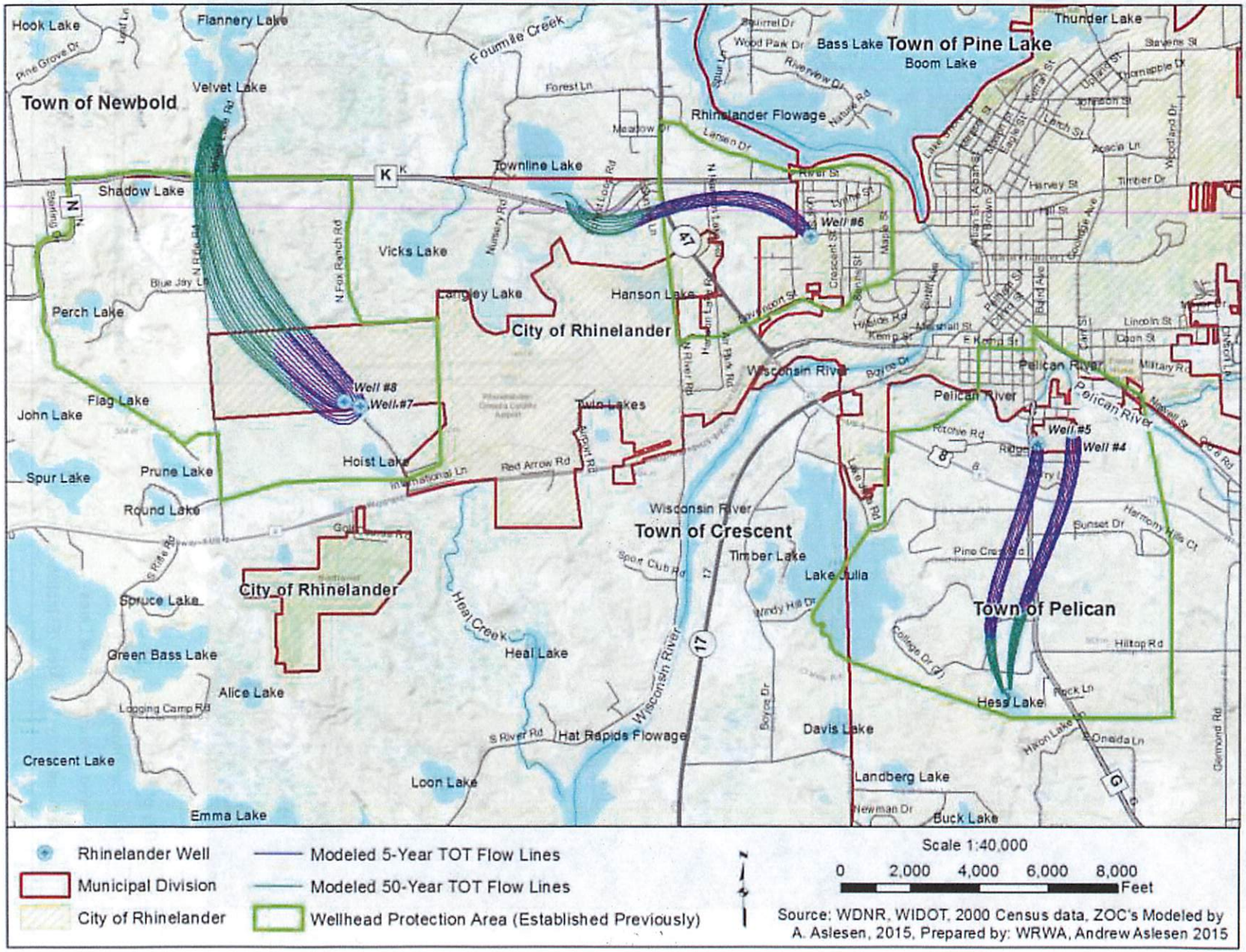
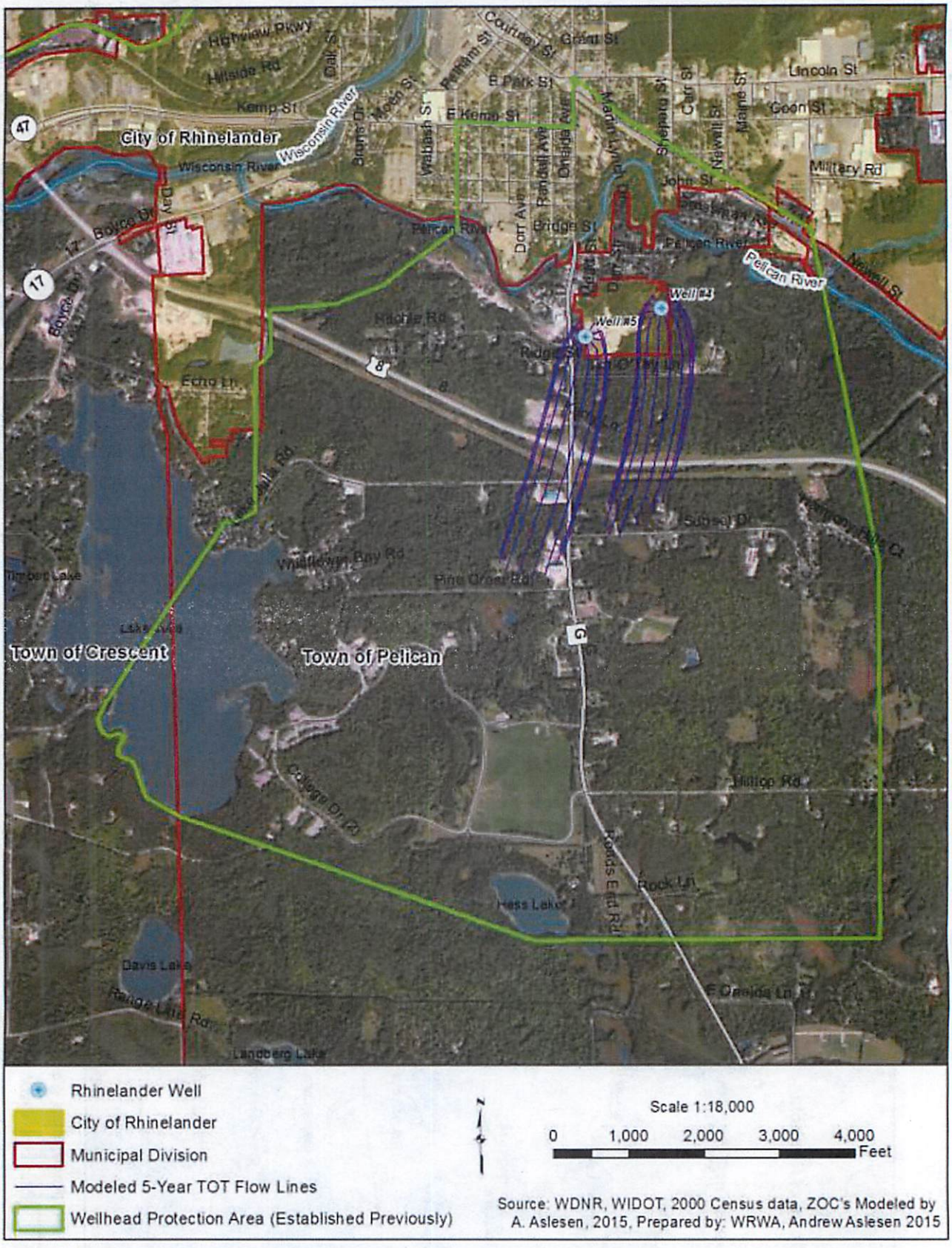


Figure 6 – Zone of Contribution, Modeled 5-Year TOT capture zones at 200% calculated Hydraulic Conductivity (K=220 gal/min)

Figure 7 – Wells #4 & #5, 5-Year Time of Travel and Wellhead Protection Area



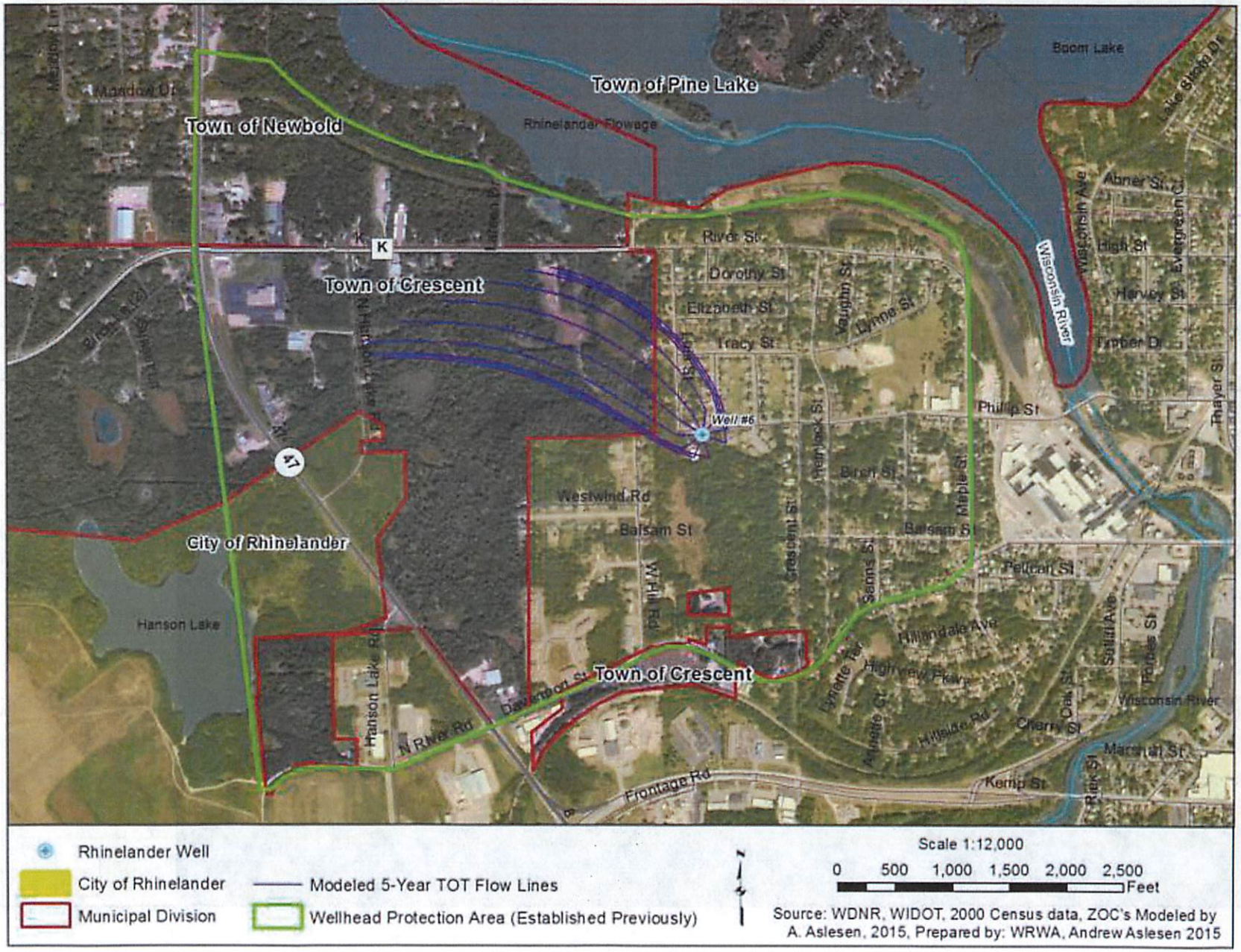


Figure 8 – Well #6, 5-Year Time of Travel and Wellhead Protection Area

Figure 9 – Wells #7 & #8, 5-Year Time of Travel and Wellhead Protection Area

Figure 10 – Wells #4 & #5 Potential Contaminant Sources

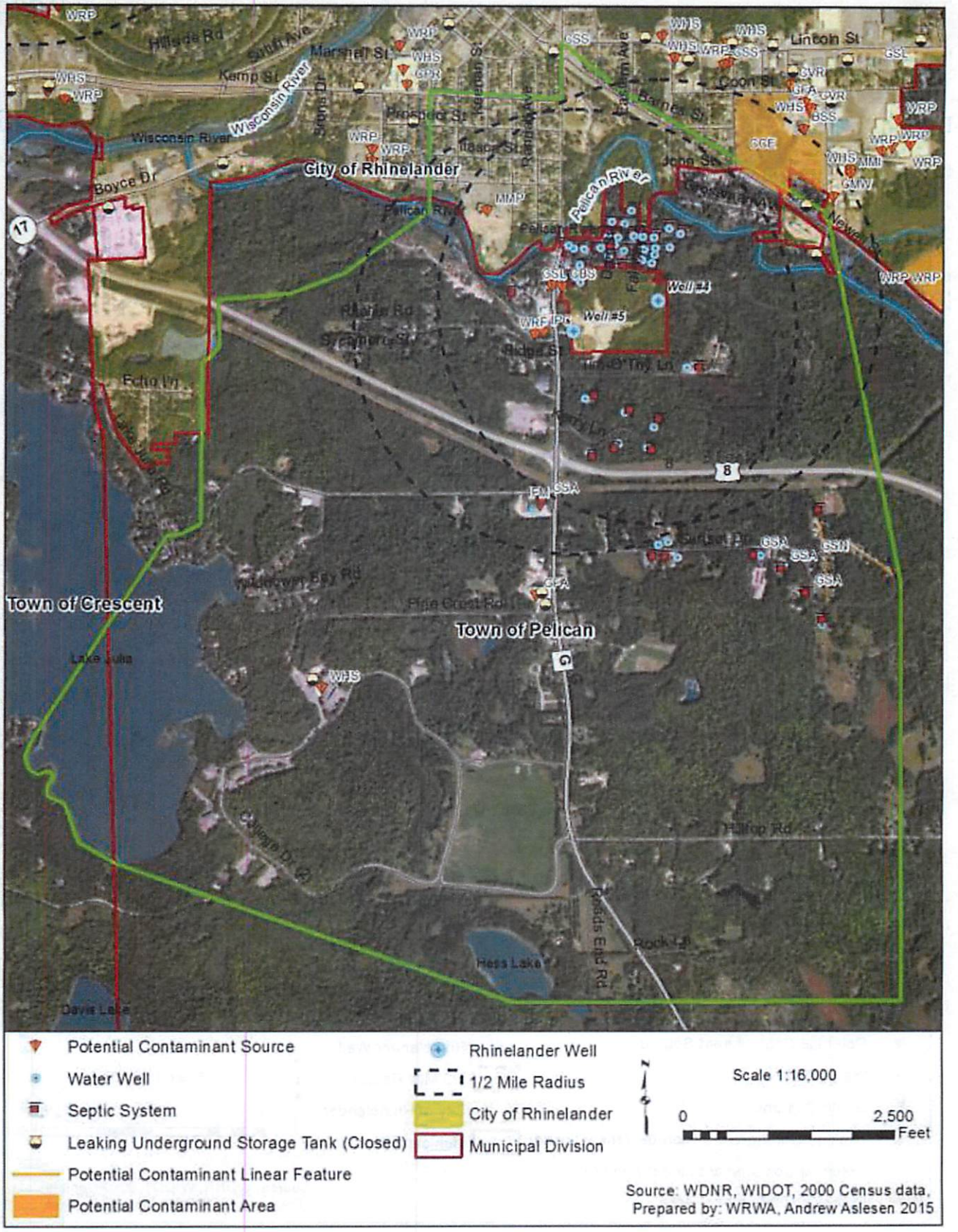


Figure 11 – Well #6 Potential Contaminant Sources

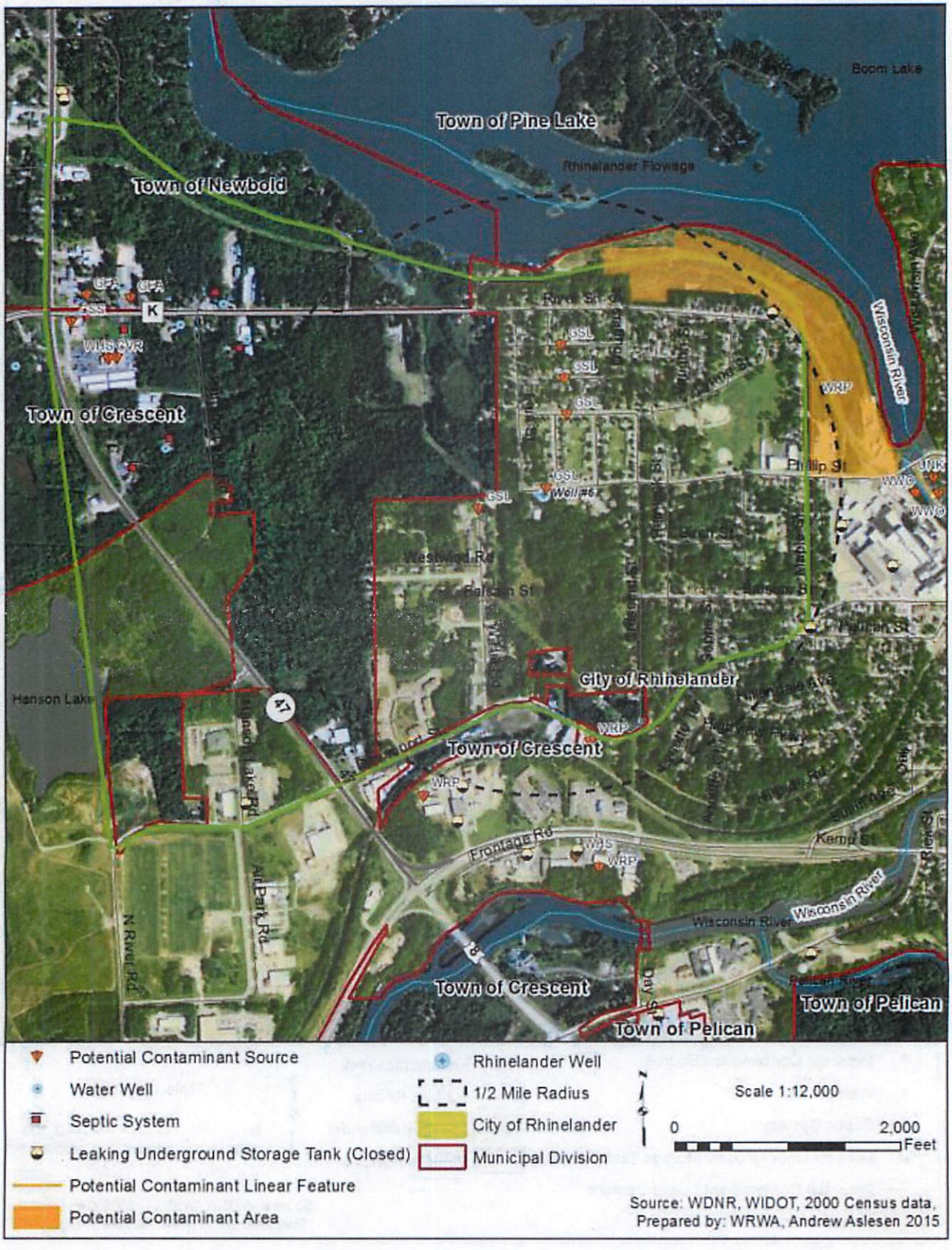
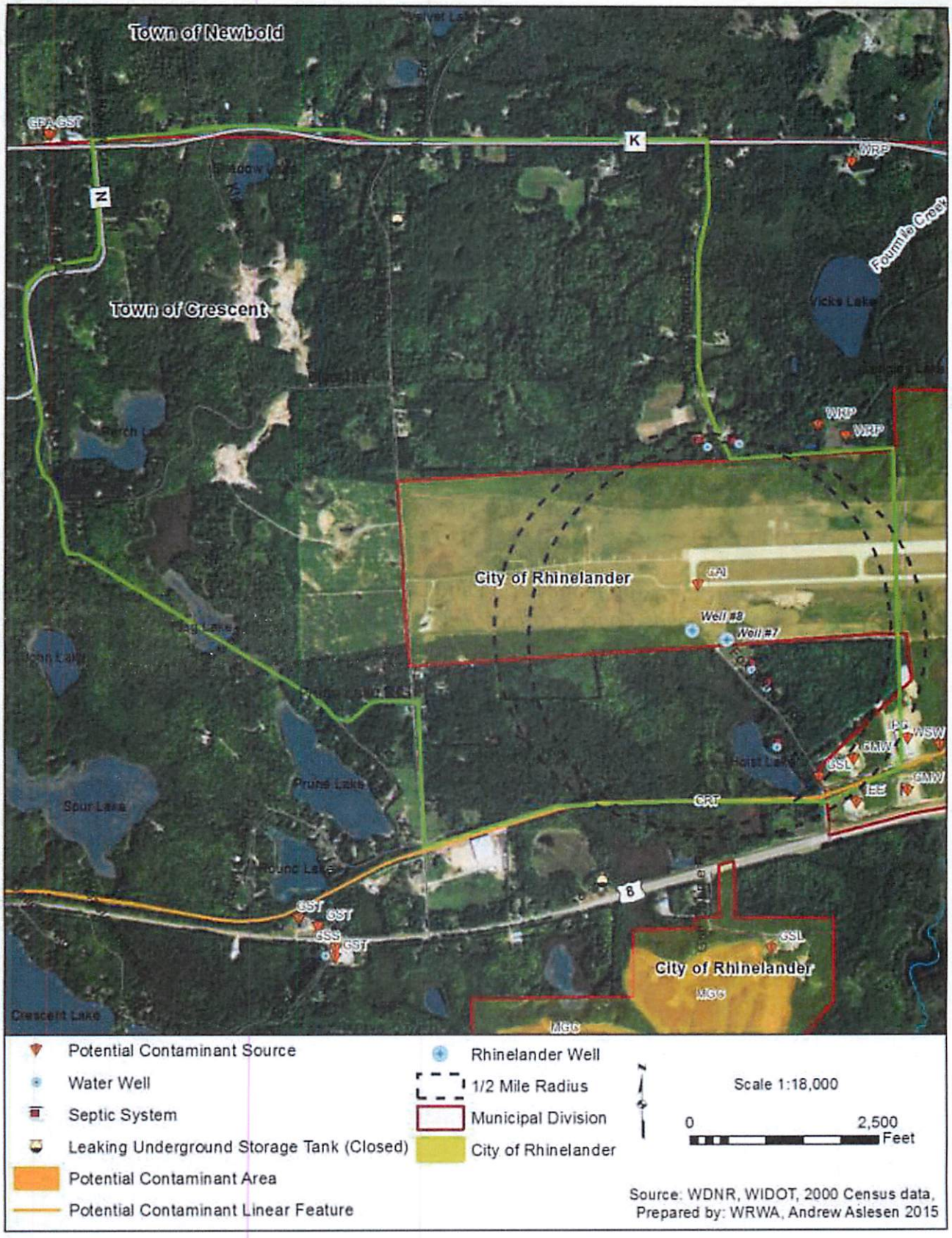


Figure 12 – Wells #7 & #8 Potential Contaminant Sources



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Appendix A – Potential Contaminant Source Inventory, Setbacks & List of Abbreviations

Potential Contaminant Sources Within ½ Mile of Wells #4 & #5

See Figure 10

	Code	Potential Contaminant Sources	Distance (ft)	Direction	Name/Owner	
1	IPC	Plastics Manufacturer/Molder	450	W		
2	WRF	Recycling Facility	480	W		
3	GWA	Water Well-Active	500	N/S/W	Multiple	
6	GSA	Sewage Absorption Area	500	N/S/W	Multiple	
4	CBS	Auto Body Shop	540	N/NW		
5	GSL	Sewer Line (Municipal)	550	N/NW	W17935 Reed St.	
7	MMP	Medical Installation	1,700	NW		
8	CCE	Cemetary	1,850	NE	City of Rhinelander	
9	IFM	Funiture or Wood Manufacturing/Refinishing	2,000	S		
10	CMW	Machine/Metal Working Shop	2,400	NE		
	WLS	**Leaking underground storage tank**	**Dist (ft)**	**Direction**	**BRRTS ID #**	**Status**
1		Wagner Shell	1,960	E/NE	03-44-000767	Closed
2		Dairy King	2,090	NE	03-44-258525	Closed

Updates to Wells #4 & #5 potential contaminant source list

Date	Updated By	Code	Potential Contaminant Source /Name/Owner	Distance (ft)	Direction

Potential Contaminant Sources Within ½ Mile of Well #6

See Figure 11

	Code	Potential Contaminant Sources	Distance (ft)	Direction	Name/Owner	
1	GSL	Sewer Line-Municipal	100	N,E,S,W	Multiple, City of Rhinelander	
	WLS	**Leaking underground storage tank**	**Dist (ft)**	**Direction**	**BRRTS ID #**	**Status**
1		Spur Gas Station/Remington Oil	2,580	NE	03-44-001108	Closed
2		Central Wisconsin Electric Co	2,650	E/SE	03-44-000462	Closed
3		Rhinelander Paper Co	2,660	E	03-44-000953	Closed
	WRP	**ERRP Site**	**Dist (ft)**	**Direction**	**BRRTS ID #**	**Status**
1		Rhinelander Paper Co - COGEN	1900	NE	02-44-000589	Closed
2		Sinclair Bulk Plant (Former)	2,200	S	02-44-219007	Closed

Updates to Well #6 potential contaminant source list

Date	Updated By	Code	Potential Contaminant Source /Name/Owner	Distance (ft)	Direction

Potential Contaminant Sources Within ½ Mile of Wells #7 & #8

See Figure 12

	Code	Potential Contaminant Sources	Distance (ft)	Direction	Name/Owner	
1	GWA	Water Well-Active	500	SE	3320 Fox Ranch Rd S.	
2	GSA	Sewage Absorption Area	500	SE	3320 Fox Ranch Rd S.	
3	CAI	Airport	600	N	Rhinelander-Oneida County Airport	
4	GWA	Water Well-Active	800	SE	3308 Fox Ranch Rd S.	
5	GSA	Sewage Absorption Area	800	SE	3308 Fox Ranch Rd S.	
6	GWA	Water Well-Active	1,500	SE	3271 Fox Ranch Rd S.	
7	GSA	Sewage Absorption Area	1,500	SE	3271 Fox Ranch Rd S.	
8	CRT	Railroad	2,150	S	Canadian National	
9	GWA	Water Well-Active	2,500	N	3539 Fox Ranch Rd N.	
10	GSA	Sewage Absorption Area	2,500	N	3539 Fox Ranch Rd N.	
11	GWA	Water Well-Active	2,550	N	3538 Fox Ranch Rd N.	
12	GSA	Sewage Absorption Area	2,550	N	3538 Fox Ranch Rd N.	
13	GSL	Sewer Line	2,560	SE	City of Rhinelander	
14	CMW	Machine/MetalWorking Shop	2,700	SE	John Deere /Superior Diesel	

Updates to Wells #7 & #8 potential contaminant source list

Date	Updated By	Code	Potential Contaminant Source /Name/Owner	Distance (ft)	Direction

NR 811.12(5) Required Setback Distances From Community Water Supply Wells and Potential Sources of Contamination

Potential Contaminant Source	Minimum Setback Distance (ft)
Emergency Power System Operated by The Same Facility Operating Well And Has a Double Wall Above Ground Storage Tank With Continuous Electronic Intersticial Leak Monitoring	10
Storm Sewer Main or Sanitary Sewer Main Constructed of Water Main Class Material	50
Sanitary Sewer Main Not Constructed of Water Main Class Materials	200
Lift Station	
One or Two Family Residential Fuel Oil UST[1] or AST[2]	
POWTS Treatment Tank or Holding Tank	
Any farm UST[1] system or other UST[1] system with double wall and with electronic interstitial monitoring for the system, any farm AST[2] with double wall, or single wall tank with other secondary containment and under a canopy; other AST[2] system with double wall, or single wall tank with secondary containment and under a canopy and with electronic interstitial monitoring for a double wall tank or electronic leakage monitoring for a single wall tank secondary containment structure*	300[3]
Septic Tank (<12,000 gpd)	400
Cemetery	
Storm Water Retention or Detention Pond	
Farm UST[1] system or other UST[1] system with double wall and with electronic interstitial monitoring for the system, any farm AST[2] with double wall, or single wall tank with other secondary containment and under a canopy or other AST[2] system with double wall, or single wall tank with secondary containment and under a canopy; and with electronic interstitial monitoring for a double wall tank or electronic leakage monitoring for a single wall tank secondary containment structure*	600[6]
Land Application of Municipal, Commercial, or Industrial Waste	1,000
The Boundary of a Land Spreading Facility for Spreading of Petroleum-Contaminated Soil Regulated Under ch. NR 718 While Facility is in Operation	
Industrial, Commercial, or Municipal Wastewater Treatment Plant Treatment Units, Lagoons, or Storage Structures	
Manure Stacks or Storage Structures	
Septic Tank (>12,000 gpd)	
Solid Waste Storage, Transportation, Transfer, Incineration, Air Curtain Destructor, Processing, Wood Burning, One Time Disposal or Small Demolition Facility	1,200
Sanitary Landfill	
Any Property With Residual Groundwater Contamination That Exceeds CH. NR140 Enforecement	
Coal Storage Area	
Salt or Deicing Material Storage Area	
Single Wall Farm UST or Single Wall Farm AST or Other Single Wall UST or AST That Has or Has Not Received Written Approval From The Department of Commerce or Its Designated Local Program Operator*	
Bulk Fuel Storage Facilities	
Bulk Pesticide or Fertilizer Handling or Storage Facilities	

Footnotes On Page 2

•These requirements apply to tanks containing gasoline, diesel, bio-diesel, ethanol, orther alternative fuel, fuel oil, petroleum product, motor fuel, burner fuel, lubricant, waste oil, or hazardous substance

[1] UST-Underground Storage Tank

[2] AST-Above Ground Storage Tank

[3] These installations shall meet the most restrictive installation requirements of s. Comm 10.260 and receive written approval from the department of commerce or its designated Local Program Operator under s. Comm 10.110

[4] For USTs s. Comm 10.260 states the 600ft setback distance may be reduced by 50% if all of the following features are provided and maintained in addition to the features in the tank-type column: tank system construction of corrosion-resistant material, such as fiber-reinforced plastic, or steel with a fiber-reinforced plastic wrap or jacket; non-discriminating sump sensors; testable secondary containment spill bucket; continuous electronic liquid-filled, pressure, or vacuum interstitial monitoring with automatic system shut-down; audible and visual high-level alarm at 90% full, and automatic shut-off at 95%; all fueling area protected by canopy; and downspouts for drainage of rainwater do not discharge into a fueling area.

[5] For ASTs s. Comm 10.260 states the 600ft setback distance may be reduced by 50% if all of the following features are provided and maintained in addition to the features in the tank-type column: either continuous non-discriminating electronic interstitial monitoring for double wall, or continuous non-discriminating electronic sensor for other secondary containment; audible and visual high-level alarm at 90% full, and either automatic shut-off at 95% or no latch-open device is used with any manual-shutoff nozzle; all dispensing by suction pump fuel transfer; all motor vehicle fueling limited to private or fleet use; all fueling area protected by canopy; and downspouts for drainage of rainwater do not discharge into a fueling area.

[6] These installations shall meet the standard double wall tank or single wall tank secondary containment installation requirements of s. Comm 10.260 and receive written approval from the department of commerce or its designated Local Program Operator under s. Comm 10.110

CONT CODE	CONTAMINANT SOURCE	DESCRIPTION	SPECIFIC CONTAMINANTS
AAH	Animal housing		Livestock sewage wastes, nitrates, phosphates, chloride, chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests, coliform bacteria, viruses
AFA	Animal Feedlot		Livestock sewage wastes, nitrates, phosphates, chloride, chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests, coliform bacteria, viruses
AFP	Agricultural farming	Active farming operations	Pesticides, fertilizers
AIA	Irrigation system	Agricultural irrigation	Pesticides, fertilizers
AMH	Agriculture milkhouse		Livestock sewage wastes, nitrates, phosphates, chloride, chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests, coliform bacteria, viruses, acids
AMS	Manure storage	Lined and unlined manure storage facilities	Livestock sewage wastes, nitrates, phosphates, chloride, chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests, coliform bacteria, viruses
BCT	Chemical storage	500 gallon or more	Specific to chemical product stored at site
BFS	Fertilizer storage/mixing	Feed mill, agricultural co-op	Nitrates
BFT	Petroleum storage	500 gallon or more	Specific to petroleum product stored at site
BGS	Grain storage site		Fungicides
BPS	Pesticide storage / mixing / load	Feed mill, agricultural co-op	Herbicides, insecticides, rodenticides, fungicides, avicides
BSS	Road salt storage	Bulk storage sites	Sodium chloride, calcium chloride, waste oil
CAI	Airport		Jet fuels, deicers, batteries, diesel fuel, chlorinated solvents, automobile wastes, heating oil, building wastes
CBS	Auto body shop		Paints, solvents
CBY	Boat yard		Diesel fuels, batteries, oils, septage from boat waste disposal areas, wood preservatives, paints, waxes, varnishes, automotive wastes
CCE	Cemetery		Leachate (formaldehyde), lawn and maintenance chemicals
CCW	Car wash	Car washes in unsewered areas	Soaps, detergents, waxes, miscellaneous chemicals
CDC	Dry cleaning		Solvents (tetrachloroethylene, petroleum solvents, freon), spotting chemicals (trichloroethane, ammonia, rust removers)
CLD	Laundromat	Laundromats in unsewered areas	Detergents, bleaches, fabric dyes
CMP	Plating facility	Jewelry and metal plating	Cyanide, heavy metals
CMW	Machine / metal working shop		Solvents, metals, organics, sludges, cutting oils, degreasers
CPH	Photo processing	Only include processing facilities, don't include photo drop off sites	Cyanides, biosludges, silver sludges
CPR	Printing		Solvents, inks, dyes, oils, organics, chemicals
CPS	Paint shop		Paint, paint thinner, solvents
CRT	Railroad track		Spills
CRY	Rail yard		Spills
CSP	Seed production plant		Fumigants
CSS	Gas service station		Gasoline, oils, solvents, miscellaneous wastes
CSY	Scrap/junkyard		Oil, gasoline, antifreeze, PCB contaminated soils, lead acids batteries
CVR	Motor vehicle repair shop		Waste oils, solvents, acids, paints, automotive wastes,
GFA	Fuel storage tank - above ground	Non-service station tanks	Gasoline, diesel fuel, other petroleum products
GFB	Fuel storage tank - underground	Non-service station tanks	Gasoline, diesel fuel, other petroleum products
GSA	Sewage absorption area	Drainfields, mounds, dry wells	"
GSL	Sewer line (municipal)	Municipal sewer lines	Septage, coliform bacteria, viruses, nitrates
GSN	Sewer line (non-municipal)	Non-municipal sewer lines	"
GST	Sewage tank	Holding tanks, septic tanks, sumps	Septage, coliform bacteria, viruses, nitrates, heavy metals, synthetic detergents, cooking and motor oil, bleach, pesticides, paints, paint thinner, photographic chemicals, septic tank cleaner chemicals, chlorides, sulfate, calcium, magnesium, potassium, phosphate
GWA	Water well (active production)		Potential conduit
GWI	Water well (unused or improperly abandoned)		Potential conduit
IAS	Asphalt plant		Petroleum derivatives
ICM	Chemical production	Industrial chemical production facilities	Chemicals
IEE	Electrical and electronic products		Cyanides, metal sludges, caustics, solvents, oils, acids, alkalis,

	manufacturing		paints, methylene chloride, tetrachloroethylene, trichloroethane, acetone, toluene, PCBs
IES	Electroplating / metal finishing facility		Acids, alkaline solutions, cyanide, metallic salts, solvents, cyanide, heavy metal contaminated wastewater
IFM	Furniture or wood manufacturing / refinishing / stripping		Paints, solvents (toluene, methylene chloride), degreasing sludges
IFW	Foundry / smelting plant		Cyanides, sulfides
IGS	Gravel and Sand pits		Spills, miscellaneous chemicals, bacteria
IMQ	Mining / Mine waste		Cyanide, sulfides, metals, acids drainage
IPC	Plastics manufacturer / molder		Solvents, oils, organics and inorganics, paint wastes, cyanides, acids, alkalis, sludges, esters, surfactants, glycols, phenols, formaldehyde, peroxides
IPM	Paper mill		Metals, acids, minerals, sulfides, chemicals, sludges, chlorine, hypochlorite, chlorine dioxide, hydrogen peroxide
IPP	Pipeline (petro/chem.)		Petroleum, chemicals
ISQ	Stone quarries		Spills, miscellaneous chemicals, potential conduit, bacteria
ITP	Textile / polyester manufacturer		Chemicals
IWT	Wood preserving facility		Treated wood residue, preservatives (pentachlorophenol, chromate, copper arsenate,), tanner gas, paint sludges, solvents, creosote, coating wastes
MFT	Fire training facility		Chemicals
MGC	Golf course		Fertilizers, herbicides, pesticides for controlling mosquitoes, ticks, ants, gypsy moths, and other pests., automotive wastes
MGP	Manufactured gas plant / gasification plant		Petroleum VOCs, Benzo(a)pyrene, PAHs, cyanide
MLA	Laboratory (college, medical, school, private, etc.)		Biological wastes, disinfectants, acids, formaldehyde, miscellaneous chemicals
MMI	Military installation		
MMP	Medical Installation (e.g. Hospital)		X-ray developers and fixers, infectious wastes, radiological wastes, biological wastes, disinfectants, asbestos, beryllium, acids, formaldehyde, miscellaneous chemicals
MOT	Other (specify) _____		
WDR	Class V injection well	Any well, drilled or dug hole, used to inject fluids into the subsoil	Chlorides, pathogens, petroleum products, pesticides
WHS	Hazardous waste generator (SARA Title III) / RCRA authority clean-ups	Any facility listed on the SARA Title III list thought to pose a threat to the well / RCRA clean-ups	Hazardous waste
WIN	Incinerator (municipal)		Metals, combustion by-products
WLA	Landfill	Solid and hazardous waste sites listed in the DNR "Registry of Waste Disposal Sites in Wisconsin"	Leachate
WLS	Leaking underground storage tank (LUST)	LUST Sites included in the DNR "Leaking Underground Storage Tank List"	Gasoline, diesel fuel, other petroleum products
WRF	Recycling facility		Petroleum products, chemicals
WRP	ERRP Site	Sites on the DNR "Emergency and Remedial Response" list	Spills
WSI	Wastewater Spray Irrigation		Coliform bacteria, nitrate, chloride, pathogens, viruses
WSS	Sludge spreading	Municipal wastewater sludge, paper mill sludge	Viruses, coliform bacteria, heavy metals, dioxins
WSW	Storm water retention pond		Metals, petroleum products
WTS	Solid waste transfer station		Miscellaneous chemicals
WUC	Superfund site	Sites listed in the DNR "Superfund Sites in Wisconsin"	Miscellaneous contaminants
WWL	Wastewater lagoon	Treatment and/or storage lagoons	Coliform bacteria, viruses
WWO	Wastewater discharge to surface water	Surface water outfall	Coliform bacteria, viruses
WWP	Wastewater treatment plant		
WWS	Wastewater discharge to groundwater	Absorption and seepage cells, spray irrigation, subsurface systems, etc.	Coliform bacteria, viruses

Appendix B – Lithologic Logs and Well Construction Details

WISCONSIN UNIQUE WELL NUMBER **BG535**
Source: SWAP PROJECT KEYED

State of Wi-Private Water Systems-DG/2 — Form 3300-77A
Department Of Natural Resources, Box 7921 — (Rev 02/02)bw
Madison, WI 53707

Property Owner: RHINELANDER, CITY OF — Telephone Number: 715-369-1845
Mailing Address: BOX 658
City: RHINELANDER — State: WI — Zip Code: 54501
County of Well Location: 44 ONEIDA — NO — Co Well Permit No: W — Well Completion Date: January 27, 1970
Well Constructor: MILLER WELL & PUMP — License #: 208 — Facility ID (Public): 744012610
Address — Public Well Plan Approval#: 69-0381
City — State — Zip Code — Date Of Approval: 06/12/1969
Hicap Permanent Well #: 83304 — Common Well #: 004 — Specific Capacity: 133.3 gpm/ft

1. Well Location — Depth 80 FT
T=Town C=City V=Village: T of PELICAN — Fire#
Street Address or Road Name and Number: E OF CTH G #4
Subdivision Name — Lot# — Block #
Gov't Lot — or SE 1/4 of NW 1/4 of
Section 8 T 36 N R 9 E

2. Well Type 1 (See item 12 below)
1=New 2=Replacement 3=Reconstruction
of previous unique well # _____ constructed in _____
Reason for replaced or reconstructed Well?

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

3. Well Serves: M — # of homes and or (eg: barn, restaurant, church, school, industry, etc.)
M=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole
High Capacity: Well? Property?

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties?
Well located in floodplain?
Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in . diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method — Lower Open Bedrock

Dia.(in.)	From (ft)	To (ft)
72.0	surface	20
66.0	20	36
61.0	36	48
57.0	48	80

Upper Enlarged Drillhole
1. Rotary - Mud Circulation
2. Rotary - Air
3. Rotary - Air and Foam
4. Drill-Through Casing Hammer
5. Reverse Rotary
6. Cable-tool Bit _ n. dia
7. Temp. Outer Casing _ in. dia. _____ depth ft. Removed ?
Other

6. Casing Liner Screen — Material, Weight, Specification, Manufacturer & Method of Assembly

Dia. (in.)		From (ft.)	To (ft.)
42.0	NEW 0 312 WALL	surface	40
26.0	NEW A53 GR B 0 375 WALL	2	50

Dia.(in.)	Screen type, material & slot size	From	To
26.0	SS-FIRST 20' IS 0.075 , REST IS 0.040 SLOTTED	50	80

7. Grout or Other Sealing Material

Method / Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CEMENT	surface	40.0	

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
G	GRAVEL	0	10
S	SAND	10	25
G	GRAVEL	25	80

9. Static Water Level
9.0 feet B ground surface A=Above B=Below

10. Pump Test
Pumping level 26.0 ft. below surface
Pumping at 2000.0 GP M 12.0 Hrs

11. Well Is: in. Grade A=Above B=Below
Developed?
Disinfected?
Capped?

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
If no, explain

13. Initials of Well Constructor or Supervisory Driller — Date Signed

Initials of Drill Rig Operator (Mandatory unless same as above) — Date Signed

Additional Comments? — Variance Issued?
Owner Sent Label? Y — More Geology?

Batch 560

WISCONSIN UNIQUE WELL NUMBER **BG536**
Source: SWAP PROJECT KEYED

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 7921
Madison, WI 53707

Form 3300-77A
(Rev 02/02)bw

Property Owner: RHINELANDER, CITY OF
Telephone Number: 715-369-1845
Depth 68 FT

Mailing Address: BOX 658

City: RHINELANDER
State: WI
Zip Code: 54501

County of Well Location: 44 ONEIDA
Co Well Permit No: NO W
Well Completion Date: April 19, 1978

1. Well Location
T=Town C=City V=Village: T of PELICAN
Fire#:
Street Address or Road Name and Number: CTH G WELL #5
Subdivision Name:
Lot#:
Block #:

Well Constructor: MILLER WELL & PUMP
License #: 208
Facility ID (Public): 744012610

Address:
Public Well Plan Approval#: 77-1209

City:
State:
Zip Code:
Date Of Approval: 11/14/1977

Gov't Lot: or SW 1/4 of NW 1/4 of
Section 8 T 36 N R 9 E

Hcap Permanent Well #: 83305
Common Well #: 005
Specific Capacity: 172.4 gpm/ft

2. Well Type 1 (See item 12 below)
1=New 2=Replacement 3=Reconstruction
of previous unique well # _____ constructed in _____
Reason for replaced or reconstructed Well?

3. Well Serves: M
# of homes and or (eg: barn, restaurant, church, school, industry, etc.)
M=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop B=Drillhole
High Capacity: Well?
Property?

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties?
Well located in floodplain?
Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in. diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Constructions Method

Dia.(in.)	From (ft)	To (ft)
72.0	surface	16
60.0	28	41
54.0	41	55
48.0	55	68

Upper Enlarged Drillhole
-- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
-- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
X -- 6. Cable-tool Bit n. dia
-- 7. Temp. Outer Casing Removed ? in. dia. ____ depth ft.
Other
Lower Open Bedrock

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
G	GRAVEL	0	60
S	SAND	60	65
G	GRAVEL	65	68

6. Casing Liner Screen Material, Weight, Specification Manufacturer & Method of Assembly

Dia. (in.)		From (ft.)	To (ft.)
36.0	NEW STEEL 0 375 WALL API 5L WELDED US STEEL	surface	35
24.0	NEW STEEL 0 375 WALL API 5L WELDED US STEEL	2	43

Dia.(in.)	Screen type, material & slot size	From	To
26.0	SS 0 080 24X26	43	68

7. Grout or Other Sealing Material

Method / Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CONCRETE	surface	35.0	

9. Static Water Level
8.5 feet B ground surface
A=Above B=Below

10. Pump Test
Pumping level 20.1 ft. below surface
Pumping at 2000.0 GP M 24.0 Hrs

11. Well Is: in. Grade
A=Above B=Below
Developed?
Disinfected?
Capped?

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
If no, explain

13. Initials of Well Constructor or Supervisory Driller — Date Signed

Initials of Drill Rig Operator (Mandatory unless same as above) — Date Signed

Additional Comments?
Owner Sent Label? Y
Variance Issued?
More Geology?

Batch 560

WISCONSIN UNIQUE WELL NUMBER **BG544**
Source: SWAP PROJECT KEYED

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 7921
Madison, WI 53707

Form 3300-77A
(Rev 02/02)bw

Property Owner: RHINELANDER, CITY OF
Telephone Number: 715-369-1645
Mailing Address: BOX 658
City: RHINELANDER
State: WI
Zip Code: 54501
County of Well Location: 44 ONEIDA
Co Well Permit No: NO W
Well Completion Date: November 5, 1987

1. Well Location Depth 91 FT
T=Town C=City V=Village: C of RHINELANDER
Fire#:
Street Address or Road Name and Number: PHILLIP ST #6
Subdivision Name:
Lot#:
Block #:
Gov't Lot or NE 1/4 of NE 1/4 of
Section 1 T 36 N R 8 E

Well Constructor: SYLVESTER R HAUPT
License #: 489
Facility ID (Public): 744012610
Address: 5847 3RD ST
Public Well Plan Approval#: 87-0879
City: AUBURNDALE
State: WI
Zip Code: 54412
Date Of Approval: 08/12/1987
Hicap Permanent Well #: 83313
Common Well #: 006
Specific Capacity: 36.6 gpm/ft

2. Well Type 1 (See item 12 below)
1=New 2=Replacement 3=Reconstruction
of previous unique well # _____ constructed in _____
Reason for replaced or reconstructed Well?

3. Well Serves: M # of homes and or (eg: barn, restaurant, church, school, industry, etc.)
M=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole
High Capacity: Well? Property?

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties?
Well located in floodplain?
Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in. diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method

Dia.(in.)	From (ft)	To (ft)
48.0	surface	12
36.0	12	25
28.0	25	91

Upper Enlarged Drillhole — Lower Open Bedrock
-- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
-- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
X -- 5. Reverse Rotary
-- 6. Cable-tool Bit _ n. dia
-- 7. Temp. Outer Casing Removed ? _ in. dia. ____ depth ft.
Other

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
ZW	CLAY GRAVEL TIMBERS BLDRS	0	25
GG	GRAVEL @ BOULDERS	25	58
NY	FINE SAND @ GRAVEL	58	91

6. Casing Liner Screen Material, Weight, Specification Manufacturer & Method of Assembly

Dia. (in.)		From (ft.)	To (ft.)
24.0	ASTM A53 GR B 0500 WALL WELDED	surface	60
18.0	ASTM A53 GR B 0 375 WALL WELDED	0	60

Dia.(in.)	Screen type, material & slot size	From	To
18.0	SS JOHNSON SCREEN	60	91

7. Grout or Other Sealing Material

Method / Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
NEAT CEMENT	surface	60.0	
GRAVEL PACK	0.0	91.0	

9. Static Water Level
19.0 feet B ground surface
A=Above B=Below

10. Pump Test
Pumping level 46.2 ft. below surface
Pumping at 1000.0 GP M 12.0 Hrs

11. Well Is: 32 in. A Grade
A=Above B=Below
Developed?
Disinfected?
Capped?

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
If no, explain

13. Initials of Well Constructor or Supervisory Driller: SH
Date Signed:
Initials of Drill Rig Operator (Mandatory unless same as above)
Date Signed:

Additional Comments?
Owner Sent Label? Y
Variance Issued?
More Geology?

Batch 560

WISCONSIN UNIQUE WELL NUMBER **WK851**
Source: ELECTRONICALLY

State of WI-Private Water Systems-DG/2 — Form 3300-77A
Department Of Natural Resources, Box 7921 — (Rev 02/02)bw
Madison, WI 53707

Property Owner: CITY OF RHINELANDER — Telephone Number: 715 –365 –8609
Mailing Address: 135 S STEVENS ST
City: RHINELANDER — State: WI — Zip Code: 54501
County of Well Location: 44 ONEIDA — NO — Co Well Permit No: W — Well Completion Date: February 8, 2008

Well Constructor: C T W CORP — License #: 364 — Facility ID (Public): 744012610
Address: 21500 W GOOD HOPE RD — Public Well Plan Approval#: 2007-0624
City: LANNON — State: WI — Zip Code: 53046 — Date Of Approval: 08/31/2007
Hicap Permanent Well #: 69572 — Common Well #: 007 — Specific Capacity: 16.6 gpm/ft

3. Well Serves: M (# of homes and or City; eg: barn, restaurant, church, school, industry, etc.)
M=Municip O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=DrilHole
High Capacity: Well? Y — Property? Y

1. Well Location
T=Town C=City V=Village: C of RHINELANDER — Fire#
Street Address or Road Name and Number: DEAD END OF SOUTH FOX RANCH RD
Subdivision Name — Lot# — Block #
Gov't Lot — or NW 1/4 of NW 1/4 of
Section 10 T 36 N R 8 E

Depth 88 FT

2. Well Type 1 (See item 12 below)
1=New 2=Replacement 3=Reconstruction
of previous unique well # _____ constructed in _____
Reason for replaced or reconstructed Well?
1 1=Drilled 2=Driven Point 3=Jetted 4=Other

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? Y
Well located in floodplain? N
Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in. diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method — Lower Open Bedrock

Dia.(in.)	From (ft)	To (ft)
24.0	surface	88

Upper Enlarged Drillhole
-- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
X -- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
-- 6. Cable-tool Bit _ n. dia
X -- 7. Temp. Outer Casing 24 in. dia. 88 depth ft. Removed ? X
Other

6. Casing Liner Screen Material, Weight, Specification — Manufacturer & Method of Assembly

Dia. (in.)	Material, Weight, Specification / Manufacturer & Method of Assembly	From (ft.)	To (ft.)
18.0	SEAH STEEL 70.59# ASME A53 WELDED 59.84 0.375 WALL	surface	60

Dia.(in.)	Screen type, material & slot size	From	To
18.0	SS WELDED 30 SLOT	60	88

7. Grout or Other Sealing Material
Method: Tremie Pipe - Pumped

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
Neat cement grout	surface	50.5	100
GROUT SEAL	50.5	55.8	

Geology Codes	8. Geology Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
T_SG	Tan/Brown, Sand,	0	88

9. Static Water Level
17.0 feet B ground surface (A=Above B=Below)

10. Pump Test
Pumping level 52.0 ft. below surface
Pumping at 580.0 GP M 24.0 Hrs

11. Well Is: 48 in. A Grade (A=Above B=Below)
Developed? Y
Disinfected? Y
Capped? Y

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? N
If no, explain: SCHEDULED FOR SPRING 2008

13. Initials of Well Constructor or Supervisory Driller: NJ — Date Signed: 2/26/08
Initials of Drill Rig Operator (Mandatory unless same as above): TP — Date Signed: 2/26/08

Additional Comments? — Variance Issued? N
Owner Sent Label? Y — More Geology?

Batch 888888888

WISCONSIN UNIQUE WELL NUMBER **YK997**
SOURCE: ELECTRONICALLY

State of Wi-Private Water Systems-DG/2, Department Of Natural Resources, Box 7921, Madison, WI 53707 — Form 3300-77A (Rev 12/00)

Property Owner: Rhinelander, City of — Telephone Number: 715 – 365 – 8609
Mailing Address: 135 S Stevens Street
City: Rhinelander — State: WI — Zip Code: 54501
County of Well Location: 44 ONEIDA — Co Well Permit No: W — Well Completion Date: October 1, 2014

Depth 88 FT

1. Well Location: C (T=Town C=City V=Village) of RHINELANDER — Fire#
Street Address or Road Name and Number: SOUTH FOX RANCH ROAD
Subdivision Name — Lot# — Block #
Gov't Lot — or NW 1/4 of NW 1/4 of
Section 10 T 36 N R 8 E

Well Constructor: MUNICIPAL WELL & — License #: 13
Address: 1212 STORBECK DR
City: WAUPUN — State: WI — Zip Code: 53963
Hicap Well #: 74384 — Common Well #: 8
Facility ID (Public): 744012610
Public Well Plan Approval#: 20140277A
Date Of Approval: 07/11/2014
11.1 gpm/ft

2. Well Type: 3 (1=New, 2=Replacement, 3=Reconstruction) (See item 12 below) — GRN Status
of previous unique well # YG605 constructed in 2013
Reason for replaced or reconstructed Well? Test Well - Drill Over

3. Well Serves: M (M=Muni O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop B=Drillhole) # of homes and or Municipality (eg: barn, restaurant, church, school, industry, etc.)
High Capacity: Well? Y Property? Y
1 (1=Drilled 2=Driven Point 3=Jetted 4=Other)

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? Y
Well located in floodplain? N
Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in. diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft)	To (ft)
24.0	surface	72
18.0	72	88

Upper Enlarged Drillhole — Lower Open Bedrock
-- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
-- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
X -- 5. Reverse Rotary
-- 6. Cable-tool Bit ___ in. dia
X -- 7. Temp. Outer Casing Removed ? X — 24 in. dia 72 depth ft.
Other

8. Geology

Geology Codes	Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
_ASG	Coarse, Sand,	0	35
_MS_	Medium, Sand	35	55
_NSM	Fine, Sand, Silty	55	70
_MS	Medium, Sand,	70	80
_MS_	Medium, Sand	80	84
_MS	Medium, Sand,	84	88

6. Casing Liner Screen — Material, Weight, Specification — Manufacturer & Method of Assembly

Dia. (in.)		From (ft.)	To (ft.)
18.0	ASTM A53/.375 Wall	surface	72

Dia (in.)	Screen type, material & slot size	From	To
18.0	Johnson 304 SS Telesc. 40 slot	72	88

9. Static Water Level: 30.0 feet B (A=Above B=Below) ground surface
10. Pump Test: Pumping level 66.0 ft. below surface; Pumping at 400.0 GPM 28.0 hrs
11. Well Is: A (A=Above B=Below) Grade 24 in. Developed? Y Disinfected? Y Capped? Y

7. Grout or Other Sealing Material

Method	Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
Tremie Pipe - Pumped				

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? Y
If no, explain

Appendix B – City of Rhinelander Wellhead Protection Ordinance

ORDINANCE NO. #05-15 RECOMMENDED BY WATER/WASTEWATER COMMITTEE

AN ORDINANCE TO AMEND OR RECREATE SECTION 3.07.17 (3-9) OF THE MUNICIPAL CODE OF THE CITY OF RHINELANDER, RELATIVE TO COMMON COUNCIL MEETINGS.

THE COMMON COUNCIL OF THE CITY OF RHINELANDER DO ORDAIN AS FOLLOWS:

3.07.17. - Wellhead protection.

(1) *Construction of Section.*

(a) *Title.* This Section shall be known, cited and referred to as the "Wellhead Protection Ordinance" (hereafter WHP Ordinance).

(b) *Purpose and authority.*

1. The residents of the City of Rhinelander (hereafter City) depend exclusively on groundwater for a safe drinking water supply. Certain land use practices and activities can seriously threaten or degrade groundwater quality. The purpose of the WHP Ordinance is to institute land use regulations and restrictions to protect the City municipal water supply and well fields, and to promote the public health, safety and general welfare of the residents of the City.

2. These regulations are established pursuant to the authority granted to Cities by the Wisconsin Legislature in Wis. Stats. § 62.23(7) to adopt ordinances to protect groundwater.

(c) *Applicability.* The regulations specified in the WHP Ordinance shall apply within the City boundary limits.

(2) *Definitions.*

(a) *Existing facilities.* The term "existing facilities" means current facilities, practices and activities which may cause or threaten to cause environmental pollution within that portion of the City's wellhead protection area that lies within the corporate limits of the City. Existing facilities include but are not limited to the type listed in the Department of Natural Resources' form 3300-215, Public Water Supply Potential Contaminant Use Inventory Form.

(b) *Groundwater divide.* The term "groundwater divide" means a ridge in the water table or the potentiometric surface from which groundwater flows away at right angles in both directions. A groundwater divide is represented by the line of highest hydraulic head in the water table or potentiometric surface.

(c) *Groundwater Protection Overlay District.* The term "Groundwater Protection Overlay District" means that area described within the City's wellhead protection plan. A copy of the City's wellhead protection plan can be obtained from the City Clerk.

(d) *Recharge area.* The term "recharge area" means the land area which contributes water to a well by infiltration of water into the subsurface and movement with groundwater toward the well.

(e) *Time of travel.* The term "time of travel" means the determined or estimated time required for a contaminant to move in the saturated zone from a specific point to a well.

(f) *Well field.* The term "well field" means a piece of land used primarily for the purpose of supplying a location for construction of wells to supply a municipal water system.

(3) *Groundwater Protection Overlay District (hereafter District).*

(a) *Intent.* The area to be protected as a District is based on the delineated Wellhead Protection Areas in the City of Rhinelander Wellhead Protection Plan, Wells No. 4, No. 5, No. 6, No. 7 and No. 8, February 2015.

These lands are subject to land use and development restrictions because of their close proximity to the well fields and the corresponding high threat of contamination.

(b) *Permitted uses.* Subject to the exemptions listed in Subsection (3)(e) of this Section, the following are the only permitted uses within the District. Uses not listed are to be considered nonpermitted uses.

1. Parks, provided there is no on-site waste disposal or fuel storage tank facilities associated with this use.
2. Playgrounds.
3. Wildlife areas.
4. Nonmotorized trails, such as biking, skiing, nature and fitness trails.
5. Municipally sewered residential development, free of flammable and combustible liquid underground storage tanks.
6. Municipally sewered business development zoned B-1, except for the following uses:
   a. Above-ground storage tanks.
   b. Asbestos product sales.
   c. Automotive service and repair garages, body shops.
   d. Blueprinting and photocopying services.
   e. Car washes.
   f. Equipment repair services.
   g. Laundromats.
   h. Dry cleaning.
   i. Gas stations.
   j. Holding ponds or lagoons.
   k. Infiltration ponds.
   l. Nurseries, lawn and garden supply stores.
   m. Small engine repair services.
   n. Underground storage tanks.
   o. Wells, private, production, injection or other.
   p. Any other use determined by the City Zoning Administrator to be similar in nature to the above listed items.

(c) *Separation distances.* The following separation distances as specified in Wis. Admin. Code § NR 811.12(5)(d) shall be maintained and shall not be exempted as listed in Subsection (3)(e) of this Section.

1. 10 feet between a well and an emergency or standby power system that is operated by the same facility which operates the well and that has a double wall above ground storage tank with continuous electronic interstitial leakage monitoring. These facilities shall meet the installation requirements of Wis. Admin. Code § ATCP 93.260 and receive written approval from the department of safety and professional services or its designated Local Program Operator under Wis. Admin. Code § ATCP 93.110.

2. 50 feet between a well field and a storm sewer main or a sanitary sewer main where the sanitary sewer main is constructed of water main class materials and joints. Gravity sanitary sewers shall be successfully air pressure tested in place. The air pressure test shall meet or exceed the requirements of the 4 psi low pressure air test for plastic gravity sewer lines found in the latest edition of Standard Specifications for Sewer & Water Construction in Wisconsin. Force mains shall be successfully pressure tested with water to meet the AWWA C600 pressure and leakage testing requirements for one hour at 125% of the pump shut-off head..
3. 200 feet between a well and any sanitary sewer main not constructed of water main class materials, sanitary sewer manhole, lift station, one or two family residential fuel oil tank orPOWTS treatment tank or holding tank component and associated piping.
4. 300 feet between a well and any farm underground storage tank system or other underground storage tank system with double wall and with electronic interstitial monitoring for the system, which means the tank and any piping connected to it. These installations shall meet the most restrictive installation requirements of Wis. Admin. Code § ATCP 93.260 and receive written approval from the department of safety and professional services or its designated Local Program Operator under Wis. Admin. Code § ATCP 93.110. These requirements apply to tanks containing gasoline, diesel, bio-diesel, ethanol, other alternative fuel, fuel oil, petroleum product, motor fuel, burner fuel, lubricant, waste oil, or hazardous substances.
5. 300 feet between a well and any farm above ground storage tank with double wall, or single wall tank with other secondary containment and under a canopy; other above ground storage tank system with double wall, or single wall tank with secondary containment and under a canopy and with electronic interstitial monitoring for a double wall tank or electronic leakage monitoring for a single wall tank secondary containment structure. These installations shall meet the most restrictive installation requirements of Wis. Admin. Code § ATCP 93.260 and receive written approval from the department of safety and professional services or its designated Local Program Operator under Wis. Admin. Code § ATCP 93.110. These requirements apply to tanks containing gasoline, diesel, bio-diesel, ethanol, other alternative fuel, fuel oil, petroleum product, motor fuel, burner fuel, lubricant, waste oil, or hazardous substances.
6. 400 feet between a well and a septic system, tank, or drainfield, and receiving less than 12,000 gallons per day, a cemetery or a stormwater drainage pond.
7. 600 Six hundred feet between a well and any farm underground storage tank system or other underground storage tank system with double wall and with electronic interstitial monitoring for the system, which means the tank and any piping connected to it; any farm above ground storage tank with double wall, or single wall tank with other secondary containment and under a canopy or other above ground storage tank system with double wall, or single wall tank with secondary containment and under a canopy; and with electronic interstitial monitoring for a double wall tank or electronic leakage monitoring for a single wall tank secondary containment structure. These installations shall meet the standard double wall tank or single wall tank secondary containment installation requirements of Wis. Admin. Code § ATCP 93.260 and receive written approval from the department of safety and professional services or its designated Local Program Operator under Wis. Admin. Code § ATCP 93.110. These requirements apply to tanks containing gasoline, diesel, bio-diesel, ethanol, other alternative fuel, fuel oil, petroleum product, motor fuel, burner fuel, lubricant, waste oil, or hazardous substances.
8. 1,000 feet between a well and land application of municipal, commercial, or industrial waste; the boundaries of a landspreading facility for spreading of petroleum-contaminated soil regulated under Wis. Admin. Code § NR 718 while that facility is in operation; agricultural, industrial, commercial or municipal waste water treatment plant treatment units, lagoons, or storage structures; manure stacks or storage structures; or POWTS dispersal component with a design capacity of 12,000 gallons per day or more.

9. 1,200 feet between a well and any solid waste storage, transportation, transfer, incineration, air curtain destructor, processing, wood burning, one time disposal or small demolition facility; sanitary landfill; any property with residual groundwater contamination that exceeds Wis. Admin. Code § NR 140 enforcement standards; coal storage area; salt or deicing material storage area; any single wall farm underground storage tank or single wall farm above ground storage tank or other single wall underground storage tank or above ground storage tank that has or has not received written approval from the department of safety and professional services or its designated Local Program Operator under Wis. Admin. Code § ATCP 93.110 for a single wall tank installation. These requirements apply to tanks containing gasoline, diesel, bio-diesel, ethanol, other alternative fuel, fuel oil, petroleum product, motor fuel, burner fuel, lubricant, waste oil, or hazardous substances; and bulk pesticide or fertilizer handling or storage facilities.

(d) *Requirements for existing facilities.*

1. Existing facilities shall provide copies of all federal, State and local facility operation approvals or certificate and ongoing environmental monitoring results to the City.
2. Existing facilities shall provide additional environmental or safety structures/monitoring as deemed necessary by the City, which may include but are not limited to stormwater runoff management and monitoring.
3. Existing facilities shall replace equipment or expand in a manner that improves the existing environmental and safety technologies already in existence.
4. Existing facilities shall have the responsibility of devising and filing with the City a contingency plan satisfactory to the City for the immediate notification of City officials in the event of an emergency.

(e) *Exemptions and waivers.*

1. Individuals and/or facilities may request the City in writing, to permit additional land uses in the District.
2. All requests shall be in writing, whether on or in substantial compliance with forms to be provided by the City, and may require an environmental assessment report prepared by a licensed environmental engineer. Said report shall be forwarded to the City and/or designee for recommendation and final decision by the City Council.
3. The individual/facility shall reimburse the City for all consultant fees associated with this review at the invoiced amount plus administrative costs.
4. Any exemptions granted shall be conditional and may include required environmental and safety monitoring consistent with local, State and federal requirements, and/or bonds and/or securities satisfactory to the City.

(4) *Enforcement.*

(a) In the event that an individual and/or facility causes the release of any contaminants which endanger the District, the individual and/or facility causing said release shall immediately stop the release and clean up the release to the satisfaction of the City.

(b) The individual/facility shall be responsible for all costs of cleanup, including all of the following:

1. City consultant fees at the invoice amount plus administrative costs for oversight, review and documentation.
2. The cost of City employees' time associated in any way with cleanup based on the hourly rate paid to the employee multiplied by a factor determined by the City representing the City's cost for expenses, benefits, insurance, sick leave, holidays, overtime, vacation, and similar benefits.
3. The cost of City equipment employed.

4. The cost of mileage reimbursed to City employees attributed to the cleanup.

(c) Following any such discharge the City may require additional test monitoring and/or bonds/securities.

(d) Enforcement shall be provided pursuant to Section 1.01.07 of the City Municipal Code.

(Code 1993, § 17.17)

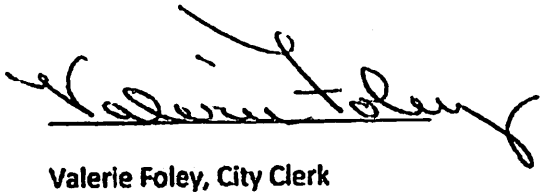
State law reference— Pure drinking water, Wis. Stats. Ch. 280.

STATE OF WISCONSIN)

) ss.

COUNTY OF ONEIDA)

I, Valerie Foley City Clerk of the City of Rhinelander, Wisconsin, do hereby certify that the foregoing ordinance was first read at a regular meeting of the Common Council of the City of Rhinelander, held at City Hall on March 9, 2015 At 6:00 p.m. By a vote of 8 Ayes and 0 Nays, and published in the Northwoods River News on March 31, 2015.



Valerie Foley, City Clerk
City of Rhinelander
Oneida County, Wisconsin