

City of Clearwater

Wellhead Protection Plan Part II

Inventory of
potential
contaminant
sources
(PCS)

Action
plan for
managing
PCS

Alternate
water
supply &
contingency
strategy

May 1, 2009

City of Clearwater

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PUBLIC WATER SUPPLY PROFILE

Public Water Supply

Name: **City of Clearwater**

Address: **605 County Road 75, Post Office Box 9, Clearwater MN 55320**

Telephone Number: **320-558-2428**

Fax Number: **320-558-2794**

E-Mail

Population Served: **1,735**

PWS ID Number: **1860025**

General Information

Unique Well Number(s) and Name(s) for Primary Well(s):

Unique Well No. 190794, Name: Well No. 2, City of Clearwater;

Unique Well No. 655937, Name: Well No. 4, City of Clearwater;

Unique Well No. 552736, Name: Well No. 3, City of Clearwater.

Unique Well Number(s) and Name(s) for Emergency Well(s)

Wellhead Protection Manager

Name: **Mr. John Schmidt**

Address: **605 County Road 75, Post Office Box 9, Clearwater MN 55320**

Telephone Number: **320-558-2428**

Fax Number: **320-558-2794**

E-Mail: johnnyschmidt@frontiernet.net

Consultant

Name: **Cynthia Smith-Strack, Municipal Development Group**

Address: **25562 Willow Lane, New Prague, MN 56071**

Telephone Number: **888-763-4462** Fax Number: **888-763-4462**

E-Mail: cstrack@municipaldevelopmentgroup.com

DOCUMENTATION LIST

PROCEDURAL STEP (CONTENT)	DATE PERFORMED
PRELIMINARY WHPA REVIEW	MAY 7, 2003
DATE IN PROGRAM	APRIL 2, 2004
FIRST SCOPING MEETING	MAY 9, 2006
FIRST SCOPING NOTICE	JUNE 7, 2006
LGU/MDH NOTICE OF INTENT	MARCH 27, 2007
AQUIFER TEST PLAN RECEIVED	APRIL 11, 2007
AQUIFER TEST PLAN APPROVAL	MAY 15, 2007
DELINEATION & VULNERABILITY ASSESSMENT SENT TO PWS	SEPTEMBER 6, 2007
DELINEATION & VULNERABILITY ASSESSMENT RECEIVED	NOVEMBER 2, 2007
DELINEATION & VULNERABILITY ASSESSMENT APPROVAL	JANUARY 2, 2008
DELINEATION & VULNERABILITY ASSESSMENT SENT TO LGU	MAY 21, 2008
PUBLIC INFORMATIONAL MEETING	JUNE 2, 2008
PART I APPROVAL NOTICE RECEIVED FROM MDH	OCTOBER 1, 2008
SCOPING 2 MEETING 2 (4720.5340, SUBP. 1)	JULY 15, 2008
SCOPING 2 DECISION NOTICE (4720.5340, SUBP. 2)	JULY 24, 2008
REMAINING PORTION OF PLAN SUBMITTED TO LOCAL GOVERNMENT UNITS (4720.5350)	JUNE 1, 2009
REVIEW RECEIVED FROM LOCAL GOVERNMENT UNITS (4720.5350, SUBP. 2)	JUNE - AUGUST 1, 2009
CONSIDER COMMENTS FROM LOCAL GOVERNMENT UNITS (4720.5350, SUBP. 3)	JUNE – AUGUST 1, 2009
PUBLIC HEARING CONDUCTED ON PART I AND PART II WHP PLAN (4720.5350, SUBP.4)	SEPTEMBER 8, 2009
PART II WHP PLAN SUBMITTED TO MDH (4720.5360, SUBP. 1)	NOVEMBER 9, 2009

Executive Summary



The fundamental goal of wellhead protection (WHP) is to prevent contaminants from entering public wells. Suppliers of public drinking water are required to undertake wellhead protection measures and planning under the 1989 Groundwater Protection Act (state) precipitated by the 1986 Safe Drinking Water Act Amendment (federal).

DWSMA

- Acronym for Drinking Water Supply Management Area
- Reflects a scientifically calculated wellhead protection area boundary as closely as possible

WHPA

- Acronym for Wellhead Protection Area
- Surface/subsurface area around a public drinking water well from which the water is pumped into the well

EXECUTIVE SUMMARY

This portion of the wellhead protection (WHP) plan for the City of Clearwater addresses sections 4720.5220 through 4720.5290 of MN Rules and includes:

- The results of the Potential Contaminant Source Inventory,
- A discussion of the impact of changes upon public water supply wells,
- A summary of issues, problems, and opportunities as they relate to public water supply wells,
- The Potential Contaminant Source Management Strategy,
- The Emergency/Alternative Water Supply Contingency Plan, and
- The 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 well(s) and the aquifer within the DWSMA. An updated source water assessment with a new protection area (SWPA) also is included. Part 1 of the WHP plan was completed by the Minnesota Department of Health (MDH) on behalf of the City of Clearwater. The MDH approved Part I on October 1, 2008. The boundaries of the WHPA/DWSMA are shown in Figure 1.

In addition, the Part I report documents the vulnerability assessments for the vulnerability of the DWSMA to contamination by activities occurring at the wells were determined to be vulnerable because of local geologic conditions sampled from Well No. 4 (655937).

The vulnerability of the DWSMA to contamination by activities occurring at focus on all potential contaminant sources located within the DWSMA. focus on WHP education and awareness; agriculture land use BMPs; practices; stormwater management; transportation corridor and spills; wellhead management zone; and wellhead protection recognition and

"VULNERABILITY"

Refers to how susceptible the drinking water supply source (i.e. in this case underground) is to contamination by activities at the land surface.

city's wells and DWSMA. The land surface is high. All three municipal and the presence of tritium in water

the land surface lends itself to a keen Management Strategies in Chapter Five industrial/commercial management monitoring and data collection; inner planning.

Chapter One of this document addresses the required data elements (geology, water quality, and water quantity) indicated by MDH in the Scoping 2 Decision Notice and the data's degree of reliability.

Chapter Two of this document addresses the possible impacts that changes in the physical environment, land use, and water resources have on the public water supply. Growth and intensification of land uses are expected to continue over the next ten years. The national economic slowdown of 2007-09 has impacted the pace of growth within the City of Clearwater as has limited sewer treatment capacity. When the economy rebounds and a treatment capacity expansion is complete, a historical normal rate of growth is expected to return.

Chapter Three of this document addresses issues, problems and opportunities. A issue central to the Plan is the fact the public water source is moderately to highly sensitive to potential sources of contamination. The need to add an additional public drinking water well, major transportation corridors which traverse the community, and the potential construction of a new high voltage transmission line through the community were also identified and addressed within the Plan.

Chapter Four contains s single, comprehensive drinking water protection goal along with objectives for achieving the goal. The goal of this Plan is to **"promote**

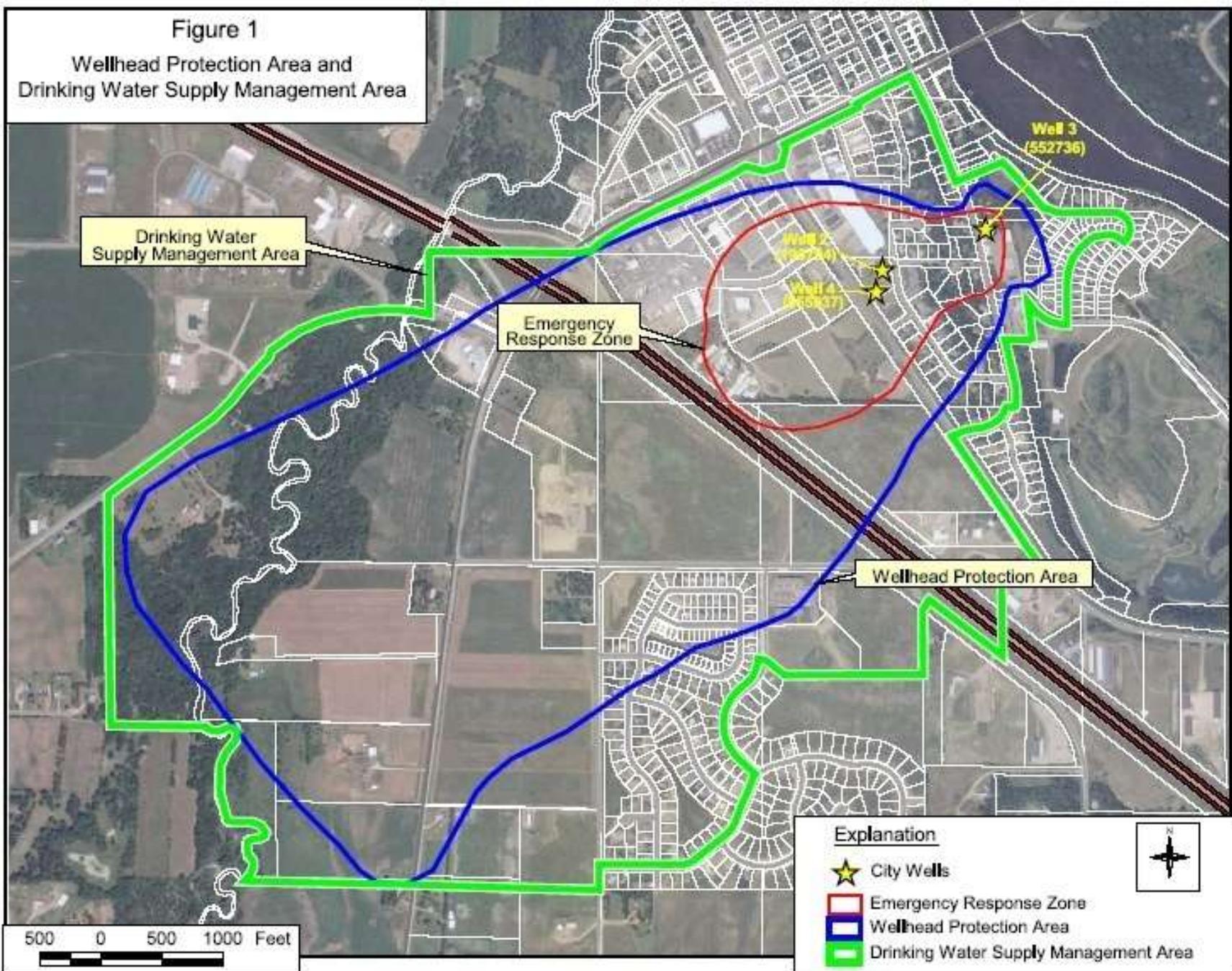
and further public health, safety, and welfare by maintaining a potable drinking water supply for all residents, visitors, and property owners through the promotion of activities which protect the source aquifer". Objectives to be employed to attain the comprehensive goal include: public education/information campaign; voluntary adoption of best management practices; coordination/cooperation with State and County resource staff; review/potential modification of existing programs, processes, and land use controls; continuous collection of data; and, emergency and contingency planning.

Chapter Five contains specific action steps to satisfy objectives identified in Chapter Four. Planned actions are aimed toward educating property owners and the general public about groundwater issues, gathering information about other wells, collecting data relevant to wellhead protection planning, working within the Plan framework to locate a new public drinking water well, working with emergency response providers to proactively plan for a contaminant spill adjacent to a major transportation facility, and to address the potential construction of a high voltage transmission line through the community.

Chapter Six includes a guide to evaluate the implementation of the identified management strategies of Chapter Five. The wellhead protection program for the City of Clearwater will be evaluated every years through a meeting of the wellhead protection team and a subsequent report to the City Council. In addition, the Plan shall be updated in the event a new public drinking water well is sited. The Plan will be completely updated in ten years.

Chapter Seven contains an emergency/contingency plan to address the possibility that the water supply system is interrupted due to either emergency situations or drought. The City does not have a Water Conservation Plan approved by the Department of Natural Resources, therefore, this Section follows guidelines as recommended by the MDH.

Figure 1
Wellhead Protection Area and
Drinking Water Supply Management Area



Explanation	
★	City Wells
Red Line	Emergency Response Zone
Blue Line	Wellhead Protection Area
Green Line	Drinking Water Supply Management Area

Chapter 1

DATA ELEMENTS AND ASSESSMENT (4720.5200)

This Chapter summarizes the 'science' of wellhead protection. Included is a discussion of how existing surface features and subsurface geologic conditions impact groundwater quality and its vulnerability to contamination from activities occurring on the land's surface.

I. REQUIRED DATA ELEMENTS

A. Physical Environment Data Elements

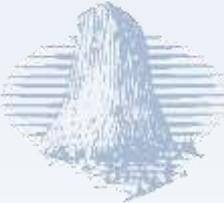
1. Precipitation

The county-wide average annual precipitation during the five-year period from 2002-2006 is approximately 32.5 inches. This information was obtained from the Minnesota Climatology Working Group, consisting of the University of Minnesota and the Minnesota Department of Natural Resources. The average annual precipitation calculated from observations recorded at a Soil and Water Conservation District (SWCD) station (T. 122 N R. 27 W S. 32) located about 6 miles from the Clearwater wells, is approximately 32.2 inches for the same period of record. From these annual averages, an initial estimate of groundwater recharge from precipitation is about 8 inches per year (by assuming a 25 percent infiltration to the aquifer). This is comparable to aquifer recharge calculations by the U.S. Geological Survey (2007), which range from 6.4 to 6.55 inches per year in the geographic area that includes the WHPA, and to the recharge rate (7.2 inches per year) used in the calibrated WHPA model for the city of Clear Lake (located approximately 3 miles northeast of Clearwater).



2. Geology

The subsurface data used in this report and the determination of subsurface stratigraphic relationships were derived almost entirely from the construction records of water wells. The level of detail describing subsurface geologic conditions encountered during drilling varies between water well contractors. This variability affects the quality of interpretations made in correlating subsurface units described in wells. Other challenges encountered were:



- a) not all wells are drilled to the same depth or aquifer, and
- b) the distribution of wells throughout the city is not uniform. In addition, static water levels (as reported on well records) are measured at different times and may affect the interpretation of ambient groundwater flow.

Geologic cross-sections (Appendix B) show the distribution of the geologic materials beneath the land surface and their stratigraphic relationships. They were prepared using well record data that is contained in the CWI database. As part of this project, approximately 20 private and public wells were field located and entered into the CWI database. Also, the geological maps and studies that were used to further define local hydrogeologic conditions are provided in the section of this report entitled "Selected References." In particular, information provided in the Wright County Aggregate Resources and Quaternary Geology map (1990) and the Geologic Atlas of Stearns County (1995) was important for this project.

3. Soils

The soils in the Clearwater area are predominately comprised of Dorset sandy loams with 0 to 2 percent slopes and are characterized as somewhat excessively drained, with very low to medium runoff potential. Permeability through the soil horizon ranges from rapid to moderately rapid. The Dorset soils occur along the hillside between the city's wells, but with a steeper slope (20-35 percent). Digitized soils data for Wright County was obtained from the Natural Resources Conservation Service and used in the development of this Part I Report.



4. Water resources

Information regarding the locations and elevations of area rivers, lakes, and wetlands was used in the preparation of this report. Additionally, the watershed units geographically located within the recharge area for the city's wells were also identified and assessed. All of the water resources information is in the public domain and is available in electronic format from the Minnesota Department of Natural Resources (DNR), the Minnesota Land Management Information Center, and the U.S. Fish and Wildlife Service.



B. Land Use Data Elements



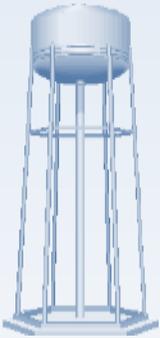
1. Land use.

Geographic land use information from the Minnesota Land Management Information Center was used in determining the boundaries of the Drinking Water Supply Management Area. In addition, digitized parcel information was obtained from Wright County Government Services and was useful in determining the locations of private wells.

2. Public utility services.

Well construction and use information was obtained from the City of Clearwater, its consulting engineers, and well drillers previously contracted by the city. Historical water use information was also obtained from the Department of Natural Resources.

C. Water Quantity Data Elements



1. Surface water quantity.

There are no known surface water conflicts caused by groundwater pumping. Information from the DNR indicates that there are currently no protected waters identified in the DWSMA.

2. Groundwater quantity.

The DNR permits high-capacity wells and documents their pumping volumes in the State Water Use Database System (SWUDS). It is important to identify other high-capacity wells in the vicinity of the City of Clearwater wells because they may affect the boundaries of the capture zones in the WHPA. Information from two high-capacity wells located west of Clearwater (in Stearns County) was assessed as part of this delineation effort; neither had an impact on the capture zone boundaries for the city's wells. No other high-capacity wells in the database were identified in the vicinity of the city's WHPA.

D. Water Quality Data Elements

1. Surface water quality.

The Minnesota Pollution Control Agency has identified stretches of the Clearwater River and Mississippi River as impaired for dissolved oxygen, and fecal coliform and fish IBI (index of biological integrity), respectively. However, this should have no impact on the city wells because there is no direct connection between them and surface water.



2. Groundwater quality.

Water quality information was obtained from the MDH database for all of the city's wells (190794, 552736, and 655937), including former Well 1 (147271), which has been sealed. The source water used by the public water supplier is considered susceptible to potential sources of contamination principally because of the geologic setting and the tritium content of the well water. The presence of tritium in the well water indicates that the city's wells are recharged over a time period of years, rather than centuries or longer. The land uses within the drinking water supply management area may potentially contribute contaminants that may present a health concern to the users of the public water supply.

The following statement on the following page summarizes the potential contaminants for which a source of drinking water may be at risk:

“One or more contaminants regulated under the federal Safe Drinking Water Act for this public water supply system have been detected in the source water. Historically, trace levels of nitrate nitrogen and low levels of volatile organic compounds have been detected in water sampled from Well 3 (552736). In addition, low levels of nitrate nitrogen have also been detected in water from Wells 2 and 4 (190794 and 655937). However, the water supplied to users meets state and federal drinking water standards for potability”.

An assessment of aforementioned data elements and there susceptibility to activities on the land’s surface is found on the following pages. It is noted the nature and condition of existing surface and sub-surface land formations have been assessed as being highly susceptible to activities occurring at the surface level.

Management of uses occurring at the land’s surface within the DWSMA is central to this Plan because mitigating potential contaminants/sources of contaminants promotes public health, safety, and welfare.



II. ASSESSMENT OF DATA ELEMENTS

A. Use of the Well

The Comprehensive Plan (2006) reports average daily usage for the approximately 1,700 residents is 211,000 gallons per day equating to an average of about 125 gallons per capita per day. The Comprehensive Plan reports maximum daily demand of over 550,000 gallons per day or approximately 325 gallons per day. The City's Comprehensive Plan forecasts continued expansion (land area) and intensification (density) of the urban area.

General information regarding the public water supply is included in Part I of this plan within the source water assessment.

B. Quality and Quantity of Water Supplying the Public Water Supply Well

Water usage within the City of Clearwater is expected to increase over the next ten years due to increased growth in all land use types.

Historically, trace levels of nitrate nitrogen and low levels of volatile organic compounds (VOC) have been detected in water sampled from Well 3 (552736 and Well 2 (190794). In addition, low levels of nitrate nitrogen have also been detected in water from Wells 2 and 4 (190794 and 655937). The detection of VOC's illustrates contaminants produced by land surface activities (residential, commercial, industrial activity by-products) have reached the source of groundwater from which the public water is derived. It is further noted that Well 3 is high in iron, a naturally occurring (i.e. not manufactured) element.

The water supplied to users has and continues to meet state and federal drinking water standards for potability. In addition, the amount of VOC's detected in drinking water has decreased over time although the generator (i.e. source) of the VOC's has not been discovered.

C. Land Use and Groundwater in the DWSMA

The City of Clearwater is located in northern Wright County with a small segment of the community and DWSMA within eastern Stearns County. The DWSMA impacts the following minor civil divisions: City of Clearwater, Lynden Township (Stearns), and Clearwater Township (Wright).

Land use within the DWSMA is varied but primarily includes vehicular oriented highway commercial, industrial, single family urban residential, and agricultural/low density rural residential uses.

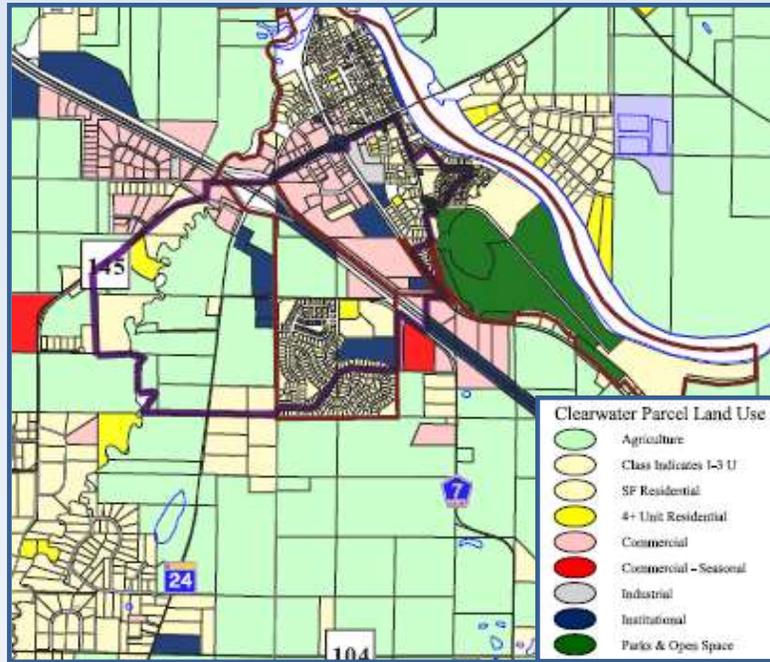
Table 1-1 illustrates land uses by acreage and percentage within the DWSMA.

TABLE 1-1 EXISTING LAND USE IN DWSMA	
Land Use Category	Acres
Rural Residential/Agricultural	160
Low/Medium Urban Residential	125
Commercial	80
Industrial	35
TOTAL	400

Existing Land Use: City of Clearwater

Figures 1.1 illustrates existing land use within the DWSMA. The future land use information is from the 2006 Clearwater Comprehensive Plan update.

**Figure 1.1
Existing Land Use In DWSMA**

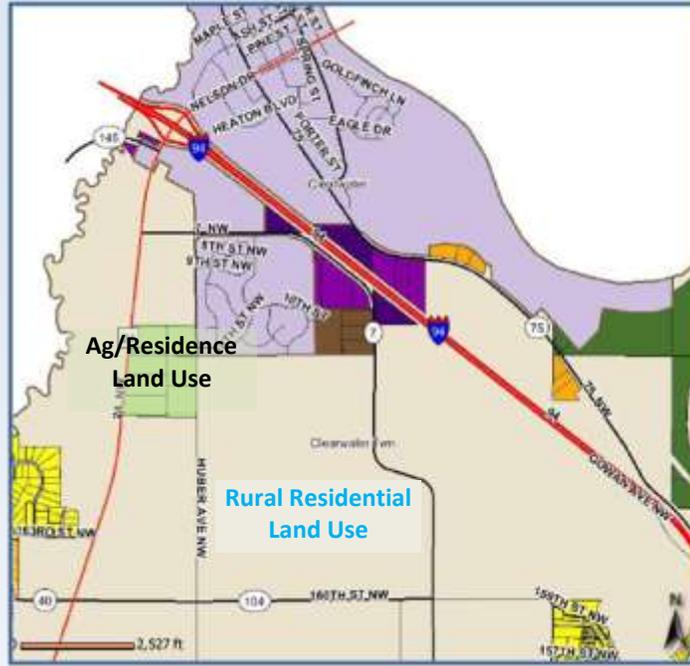


The City of Clearwater and Clearwater Township have entered into an Orderly Annexation Agreement (OAA) for areas external to the corporate limits but within the DWSMA. The OAA does not require annexation prior to development. When annexation is not required, development occurs under a land use plan/ordinances approved by Wright County which has zoning authority over the lands within Clearwater Township. The OAA does require review by a joint review board comprised of City, Township, and County Officials; however, the review board has historically not required annexation and/or extension of municipal services prior to development.

Existing Land Use: Clearwater Township, Wright County

Figure 1.2 on the following page illustrates existing zoning within the DWSMA and Clearwater Township is primarily rural residential and/or ag residence. Existing zoning allows for subdivision of rural lots (i.e. independent wells/septics) within the DWSMA in Clearwater Township into parcels of one acre in size.

Figure 1.2
Existing Zoning Clearwater Township



Existing Land Use: Lynden Township, Stearns County

Existing land uses within portions of Lynden Township included in the DWSMA are primarily limited to rural residential and agricultural in nature. It is noted land uses in Lynden Township south of Interstate 94 and west of the Clearwater River just west of the DSWMA include several incidences of small-lot light industrial establishments. Land use and planning authority within Lynden Township are retained at the Township level. The City of Clearwater does not have an OAA in effect with Lynden Township. The Clearwater Comprehensive Plan includes a growth management goal of negotiating with the Township toward those ends.

D. Potential Contaminant Source Inventory (PCSI) in the DWSMA

Potential sources of contamination located within the DWSMA were reviewed by the WHP Team. The MDH Potential Contaminant Source Inventory (PCSI) utilizing State databases combined with local knowledge was used to identify most of the contaminant sources.

A listing of parcels identified as having potential contaminant sources is shown in **Appendix A**. The listing includes PCSI site addresses, PCSI site users, parcel owners, property owners, addresses, parcel identification numbers, and map identification codes commensurate with the PCSI Map.

A summary of potential contaminants follows:

- Three high capacity wells,
- 27 domestic wells,
- One unused wells,
- 15 independent septic systems,
- Eight hazardous waste generators,
- One registered storage tank,
- One reported leakage from an underground storage tank,
- 14 underground storage tanks,
- Two cemeteries,
- Two sanitary sewer lift stations,
- Seven stormwater ponds, and
- Three monitoring wells

Chapter 2

IMPACT OF FUTURE (CHANGES) ON PUBLIC WATER SUPPLY WELL(S) (4720.5220)

This Chapter summarizes future changes potentially impacting the physical environment, the type/density of land uses, the quality/quantity of surface waters, and/or the quality/quantity of groundwater within and in close proximity to the Drinking Water Supply Management Area.

I. IDENTIFY AND DESCRIBE EXPECTED CHANGES

A. Physical Environment

No physical changes in the environment are anticipated within the next ten years, however, additional stormwater ponds may be required pursuant to additional subdivision and property development.

At this time the Minnesota Department of Transportation has approved a preferred alignment for a new interstate connection between Interstate 94 and T.H. 24. The preferred alternative is not within the DWSMA but is just south of the current City of Clearwater corporate limits. However, a land resources inventory included in the Wright County Northwest Quadrant Land Use Plan reveals sizable mineral resources within the DWSMA. Such mineral resources could be used in conjunction with construction of the new segment of roadway. The proposed interstate construction may begin in 15 to 20 years should funding become available.

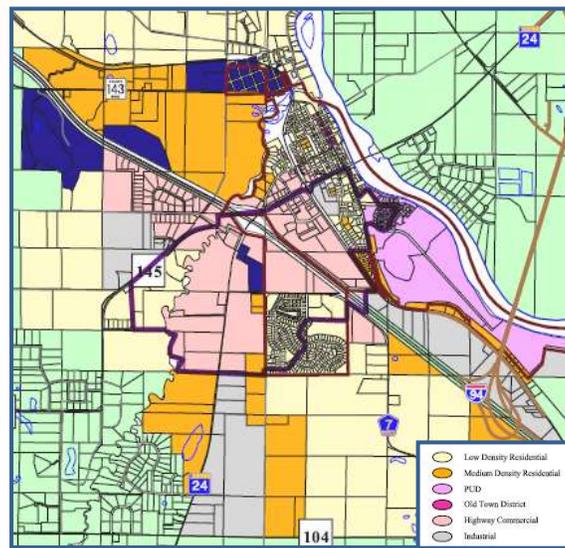
B. Land Use

Future Land Use: City of Clearwater

The 2006 Comprehensive Plan guides future land use within an anticipated growth boundary. The growth boundary includes portions of the DWSMA. Applicable portions of the future land use map are illustrated in Figure 2.1. The map illustrates anticipated expansion of vehicular oriented commercial uses adjacent to T.H. 24. Tiered residential uses of declining densities radiate outward from higher intensity commercial and industrial land uses and high traffic corridors.

The future land use map illustrates an intensification of vehicular oriented commercial uses within the DWSMA adjacent to T.H. 24 south of Interstate 94. The predominant existing land use in that particular area at this time is rural residential/agricultural. It is noted the Comprehensive Plan requires extension of municipal services to areas within the future land use map prior to further development contingent on annexation to the corporate limits.

Figure 2.1
Future Land Use In DWSMA



Future Land Use: Clearwater Township, Wright County

A portion of the DWSMA lies within Clearwater Township in Wright County. Wright County is currently reviewing a draft “Northwest Quadrant Land Use Plan” which includes portions of the DWSMA within Clearwater Township. The future land use plan contemplates the area within the DWSMA will host urban development with centralized services. The future land use plan does not guide the area to any specific future use but does indicate consistency with the local Comprehensive Plan is encouraged.

Local controls including zoning, subdivision, shoreland management, and flood plain management within Clearwater Township are administered by Wright County.

The City of Clearwater has an Orderly Annexation Agreement (OAA) in effect with Clearwater Township. However, the effectiveness of the OAA is limited in that the agreement only requires annexation if an independent septic system is failing. New wells and septic systems have been placed within the OAA in several places, some of the new wells/septics impact the DWSMA.

Future Land Use: Lynden Township, Stearns County

A portion of the DWSMA lies within Lynden Township in Stearns County. Although the future land use map contained in the 2006 Clearwater Comprehensive Plan guides lands within the DWSMA and Lynden Township toward future uses, the Town of Lynden retains full zoning authority within the area. Lynden Township has developed a Comprehensive Plan including proposed future land uses for portions of Lynden Township included in the DWSMA. The Comprehensive Plan calls for future “concentrated growth” within the portion of Lynden Township included in the DWSMA. The text of the plan, updated in January of 2009 describes ‘concentrated growth’ as:

“The purpose of this district is to provide high-density growth and affordable housing near the center of growth areas that can be more readily provided services and to allow additional development in areas that are more urban in character. The land within this district will be land that is not agriculturally desirable, and in need of special considerations because of its unique natural or topographical characteristics. For this reason clustering of developments may be requested. It is also intended that this district will allow residential development, near lakes and rivers, consistent with the County Shoreland Overlay District”.

The Lynden Township Comprehensive Plan does not define whether the area will be rural (i.e. non centralized utilities) or urban in nature; however, it is presumed the area will be concentrated rural growth in that the Township does not provide centralized services.

C. Surface Water

The quantity of surface water within the DWSMA is not anticipated to change within the next ten years.

D. Groundwater

Previous plans/studies by the City of Clearwater have defined a need to construct a new drinking water well or a water treatment plan. The City is currently investigating potential alternatives and timing of the additional well or facility.

II. POTENTIAL IMPACT OF EXPECTED CHANGES

A. **Expected Changes in Areas Identified in Section I of this Chapter.**

Physical Environment

Changes in the physical environment are not anticipated within the ten year scope of this plan. Mining of granular material could occur within or in close proximity to the DWSMA if/when a new interstate corridor linking Interstate 94 and Highway 10 is constructed. The potential project exceeds the duration of this plan and is dependent on funding availability. Therefore, this plan will not address mining within the DWSMA. In the event construction becomes imminent, MnDOT shall be advised of the WHP Plan and/or the Plan shall be updated.

Land Use

Future land use within the DWSMA is expected to increase in intensity and density. Primary expansion is expected to be residential, vehicular-oriented commercial, and industrial sectors. The impact of said intensification will require careful scrutiny of developments within the DWSMA in order to preserve drinking water quality.

Groundwater

The City is planning on construction of a new public water well and/or a water treatment facility within the next ten years based on previous planning efforts. The search for a new well location and/or water treatment facility location will be enhanced by the WHP Plan and associated documentation contained herein. In addition, information discovered when searching for a potential well will be incorporated in future revisions of this plan.

B. **Impact of Existing Water and Land Government Programs & Guidelines.**

The City of Clearwater will tap a variety of resources and opportunities for assistance in WHP Plan implementation. Among them:

- Local controls (i.e. zoning ordinance, subdivision ordinance, shoreland and floodplain management ordinances, etc.);
- Capital improvement programming;
- County programs (e.g. septic system management, water planning, wetland management, etc.);
- Participation in programs for collection of hazardous material from households and business establishments.

Through the process of establishing this WHP Plan the local WHP Team and the City have elevated public interest in drinking water protection issues. A core value and strategic direction established in the management plan contained in Chapter 5 will be to continue to educate the public about drinking water protection issues.

C. **Administrative, Technical, and Financial Considerations.**

Reductions in local government aid from the state of Minnesota to local units of government including cities and counties coupled with decreasing property values resulting from the current recession could impact the WHP Plan in several ways. First, limited local budgets could lead to challenges and/or delays in implementing the work plan contained in Chapter Five. Second, the economic slowdown, surplus of residential units and/or lots, and challenges to development financing may slow the rate of growth anticipated in Clearwater and within the DWSMA. Finally, decreasing market values could lead to less consumer spending which could lead to difficult time for local retailers. In the event retailers fail, management of existing potential contaminant sources on vacant sites could be a focus for plan implementation.

Chapter 3

ISSUES, PROBLEMS AND OPPORTUNITIES (4720.5230)

This Chapter identifies issues, problems, and opportunities related to the aquifer serving municipal wells, the DWSMA, comments disclosed a public meetings, data resources, and local government controls, policies, and plans.

I. WATER/LAND USE ISSUES, PROBLEMS, AND OPPORTUNITIES (RELATED TO THE FOLLOWING)

A. The Aquifer Serving the Public Water Supply Well(s)

The water supply for the public water supplier comes from a glacial aquifer that exhibits semi-confined hydraulic conditions. The aquifer is about 40 feet thick and is overlain by about 10 to 20 feet of glacial deposits consisting of sandy clay. Generally, groundwater moves toward the Mississippi River and in a northeast direction in the wellhead protection area.

The aquifer used by the public water supplier is moderately to highly sensitive to potential sources of contamination because there are no laterally persistent layers of clay or other fine-grained materials to prevent or retard the vertical movement of contaminants. Areas of higher elevation were considered as part of the delineation of the city's wellhead protection area to account for the overland flow of storm- or melt-water that may potentially carry contaminants and recharge the aquifer. However, it was determined that potential runoff is already accounted for in the city's existing urban storm water network.

B. The Well Water

The City will continue to monitor for any changes in the quality or quantity of water produced by the public water supply wells.

C. The Drinking Water Supply Management Area

The City is aware that the addition of a new high capacity well in or near the DWSMA may require the review and subsequent modification of the WHPA and DWSMA. The City will continue to work with the MDH and DNR regarding the construction of any new high capacity wells or changes in groundwater appropriations.

The City will continue to work with Clearwater Township, Lynden Township, Stearns County, and Wright County regarding changes in land use in the DWSMA. The City will also work with aforementioned local governmental units to discuss potential impacts on groundwater quality and quantity on the public water supply well. The City will request to be notified in writing regarding any land use permit applications or land use changes within the DWSMA.

The City will continue to work cooperatively with State and local resource agencies towards the continued protection of groundwater and implementation of this WHP Plan.

Since the DWSMA is impacted by major transportation routes including Interstate 94, T.H. 24, and CSAH 75. The City will work to create awareness of spill prevention and response among local industry, the local fire department, and the public.

Important!

Previous planning activities by the City of Clearwater indicate a need to establish an additional public water well.

Information contained in this Plan can assist the process!

II. ASSESSMENT

1. Problems/Opportunities Disclosed at Public Meetings and Written Comment

POTENTIAL PROBLEM

Part of DWSMA is outside of the corporate limits and lies in two separate townships in two separate counties.

OPPORTUNITY!

Stearns and Wright County have active programs in place to assist with water quality management. Wright County has land use authority in Clearwater Township. Stearns County has partnered with Lynden Township to develop land use plans/policies that are consistent.

POTENTIAL PROBLEM

There is a need to expand public drinking water system by adding a new well there is a need to find a well site with lower levels of nitrates

OPPORTUNITY!

Information contained in this Plan can assist with determining a potential location for a new public water well. In addition, geological information discovered will continue to enhance the quality of WHP Plan updates.

POTENTIAL PROBLEM

Major transportation routes present a potential problem with materials carried through the DWSMA.

OPPORTUNITY!

Adequate spill response is needed and included in the objectives of Chapter Five. In addition, the objectives contained in Chapter 5 call for notification of Stearns and Wright County Public Works/Engineers, and MnDOT regarding a need to recognize the DWSMA and take appropriate measures during construction/reconstruction to adequately protect the drinking water supply.

POTENTIAL PROBLEM

The DWSMA applies to individual properties, but property owners didn't have input in the determining process.

OPPORTUNITY!

The DWSMA boundary itself is based on science; however, management of land within the DWSMA includes an opportunity for public comment. The goal is to protect and manage public water which is a finite, necessary resource.

POTENTIAL PROBLEM

Mn/DOT has proposed improvements to the interregional corridor connection (Highway 24) between I-94 & Highway 10 within the area of Clearwater & Clear Lake (Wright & Sherburne). Construction is expected within 15 - 20 years.

OPPORTUNITY!

The preferred interregional connection corridor is not within the DWSMA. In the event the removal of granular material used in conjunction with roadway construction affects the DWSMA, MnDOT/Subcontractors will be responsible for taking appropriate measures during construction/reconstruction so as to adequately protect the drinking water supply.

POTENTIAL PROBLEM

CapX2020, a joint initiative of 11 transmission-owning utilities in Minnesota, is proposing a new high voltage transmission line from Fargo to Monticello. Certain preliminary routes could impact the DWSMA.

OPPORTUNITY!

Construction activities related to a high voltage power line will be assigned responsibility for observing best management practices relating to drinking water protection.

POTENTIAL PROBLEM

The City/EDA are assisting property owners with developing an industrial area partially contain within the DWMSA.

OPPORTUNITY!

Any new plat and/or industrial activity would be reviewed in the context of this report as well as the City's zoning and subdivision ordinances. The resulting development would be serviced by municipal utilities.

2. Data Elements

Part I of the WHP Plan was completed by the Minnesota Department of Health and includes recommendations to potentially decrease the uncertainty related to delineation and vulnerability assessments. The recommendations are included in Chapter 5 of this Plan. As the recommendations are implemented and updated data becomes available it will be incorporated in future updates of this document.

3. Status/Adequacy of Official Controls, Plans, and Other Local, State, Federal Programs on Water Use and Land Use

The City of Clearwater, Wright County (on behalf of Clearwater Township), and Lynden Township in Stearns County have land use authority in portions of the DWSMA. Each entity has comprehensive land use plans, zoning and subdivision standards, and shoreland/floodplain management standards in place. Each local government unit administers land use and platting regulations and implements their respective comprehensive plans.

Local controls provide for the establishment of residential, commercial, industrial, and agricultural uses within the DWSMA provided specific performance standards are upheld. The local controls may be refined (e.g. simple amendment) to further the purposes described within the WHP Plan.

County level water management programs are in place in both Wright and Stearns Counties.

Chapter 4

WELLHEAD PROTECTION GOALS (4720.5240)

This Chapter establishes goals for the Wellhead Protection Plan. Goal statements are idealistic statements that are purposefully general in nature and intended to be attained at an undetermined future date.

I. THE OVERALL GOAL OF THIS PLAN IS TO:

THE OVERALL GOAL OF THIS PLAN IS TO:

PROMOTE AND FURTHER PUBLIC HEALTH, SAFETY, AND WELFARE BY MAINTAINING A POTABLE DRINKING WATER SUPPLY FOR ALL RESIDENTS, VISITORS, AND PROPERTY OWNERS THROUGH THE PROMOTION OF ACTIVITIES WHICH PROTECT THE SOURCE AQUIFER.

The City water supply is located underground and is classified as vulnerable to contamination from surface land uses. The PCSI included in this Plan has identified several sources as potential threats to the drinking water. These include domestic wells, septic systems, transportation corridors, unused/unsealed wells, hazardous waste generators, underground storage tanks, stormwater ponds, and lift stations.

These uses will require management strategies for protection of drinking water. The City intends to continue to participate in public education programs pertaining to wellhead protection and further intends to continue to work towards improving public perception pertaining to protection of the public drinking water supply.

Objectives used to attain the aforementioned goal will affect the following policy areas:

- Public Education & Information
- Promotion & Voluntary Adoption of Best Management Practices
- Coordination & Cooperation with State & County Resource Staff
- Existing Programs, Processes, and Land Use Controls
- Data Collection
- Emergency & Contingency Planning

Chapter 5

OBJECTIVES AND PLAN OF ACTION (4720.5250)

This Chapter establishes a plan to attain goals espoused in Chapter Four. This is the most important part of Phase II of the WHP Plan in that it prescribes a series of activities and strategies the City will pursue to actively protect the public drinking water.

I. ESTABLISHING PRIORITIES FOR THE PLAN OF ACTION

- A. Phase I of the Wellhead Protection (WHP) Plan completed by Minnesota Department of Health (MDH) documents the vulnerability assessments for the city's wells, Wellhead Protection Area (WHPA) and Drinking Water Supply Management Area (DWSMA). The vulnerability of the DWSMA to contamination by activities occurring at the land surface is **high**. All three municipal wells were determined to be vulnerable because of local geologic conditions and the presence of tritium in water sampled from Well No. 4 (655937).

The vulnerability of the land surface located within the DWSMA for the Clearwater wells was evaluated primarily on the basis of:

1. Geologic logs from wells located in and around the DWSMA,
2. Geologic cross-sections constructed from the geologic logs, and
3. Groundwater quality and isotope data collected in area wells.

A **high vulnerability** rating has been assigned to the DWSMA. At several locations, well logs indicate that clay-till materials are present between the land surface and the buried sand aquifer; however, it is often described as "sandy" or otherwise having a component of silt or gravel. A moderate vulnerability rating was not achieved because these materials were generally less than 20 feet thick and, in most cases, there simply is not enough geologic information within the boundaries of the DWSMA to accurately assess whether the clay-rich till unit is laterally persistent. At this point in time, it is prudent to assign a high vulnerability rating to the entire DWSMA, given the available information.

Since the WHPA and DWSMA have been determined to be highly vulnerable to contamination by land use activities, a number of factors were considered by the Wellhead Protection Team, including (as required by Mn. Rules part 4720.5250, subpart 3):

Contamination of the public water supply wells by substances that exceed federal drinking water standards

1. Quantifiable levels of contamination resulting from human activity
2. The location of potential contaminant sources relative to the wells
3. The number of each potential contaminant source identified and the nature of the potential contaminant associated with each source
4. The capability of the geologic material to absorb a contaminant
5. The effectiveness of existing controls
6. The time required to get cooperation from other agencies and cooperators
7. The resources needed: staff, money, time, legal, technical

B. Based upon these factors, the WHP Team will concentrate management efforts on the following categories and subsequent strategies to create awareness about groundwater protection and help prevent future contamination of the aquifer:

1. WHP Education and Awareness
2. Residential Land Use Practices
 - a. Septic Systems/Lift Stations
 - b. Well Management
 - c. Turf Management
 - d. Residential Hazardous Waste / Chemical Mgmt.
3. Industrial/Commercial Management Practices
 - a. Septic Systems/Lift Stations
 - b. Well Management
 - c. Tank Management
 - d. Hazardous Waste/Chemical Management
4. Stormwater Management
5. Transportation Corridor and Spills
6. Monitoring and Data Collection
7. Inner Wellhead Protection Management Zone (IWMZ)
8. Wellhead Protection Recognition and Planning
9. Locate and Construct a New City Well

II. PLAN OF ACTION FOR POTENTIAL CONTAMINANT SOURCES

**THE CITY OF CLEARWATER'S
PCS PLAN OF ACTION FOLLOWS ON
THE NEXT SEVERAL PAGES**

Implementation Action Item

OBJECTIVE	DESCRIPTION														
A.	WHP Education and Awareness: Create awareness and general knowledge about the importance of wellhead protection through public education outreach efforts, dissemination of information to the public, and public discussion.														
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe										
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
One	City staff shall develop an informational flyer and distribute to property owners as identified in the Potential Contaminant Source Inventory (PCSI). The flyer will inform property owners of the importance of drinking water quality, include a map of the WHP Area and DWMSA (Figure 1 of this Plan), and who to contact for additional information. In addition, City Staff will post a link to WHP Plan on City website in conspicuous location.	High	City of Clearwater Staff County water planners MDH (templates)	Staff time, printing, and postage		X									
Two	City staff shall distribute a copy of the WHP Area and DWMSA Map (Figure 1 of this Plan Phase II) to all city staff, elected & appointed officials, consulting staff, volunteers & those receiving stipends (i.e. fire department), contracted parties (i.e. police, water, sewer, construction), and others involved in activities on behalf of the city. In addition the distribution shall include a copy of the Executive Summary contained in the Phase II plan and contact information for the WHP Manager.	High	City Staff	City Staff Time		X									
Three	City staff shall distribute copies of Chapter Seven of Phase II of the WHP Plan to the Fire Chief and the Wright County Sheriff's Department (WCSD) with a written request for both entities to distribute said copies to emergency & incident response personnel. The written request from City staff to the Fire Chief and the WCSD shall be request a copy(ies) of the information contained in Chapter Seven be retained in a readily accessible location.	High	City Staff	City Staff Time		X									
Four	City staff shall create a data file in which information and resources addressing a variety of land use best management practices shall be retained. City staff shall contact the MRW Association and the Dept. of Health regarding resources to place in the data file.	High	City Staff MRW Association MDH Wright and Stearns Counties	City Staff Time		X								X	

Implementation Action Item

OBJECTIVE	DESCRIPTION													
A.	WHP Education and Awareness: Create awareness and general knowledge about the importance of wellhead protection through public education outreach efforts, dissemination of information to the public, and public discussion.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Five	The Zoning Administrator and/or the Building Official shall distribute a copy of the DWSMA map (Figure 1 of this Plan) and a copy of the Executive Summary contained in this plan with zoning and/or building permit applications for properties within the DWSMA and the corporate limits. City staff shall send written correspondence to the Stearns and Wright County Environmental Services Offices requesting they do the same for properties within the DWSMA but outside of the corporate limits.	High	City Staff MRW Association MDH Wright and Stearns Counties	City Staff Time			X							
Six	City staff shall research information on sealing wells and well maintenance available from the Mn. Rural Water Assn. and MDH websites and proper use of septic systems which is available on the Minnesota Pollution Control Agency's website and may be available on the Stearns and/or Wright County websites. City staff shall create links to such information at the City website. In addition, staff shall print applicable information and retain in a file created for wellhead protection purposes. This file may be the same as created under Objective A, Action 4 of this section.	High	City Staff MRW Association MDH Wright and Stearns Counties	City Staff Time			X							
Seven	Following adoptions of the Clearwater WHP Plan, City Staff shall send a press release to the Clearwater Tribune for consideration of publication.	High	City Staff Templates for Press Releases available on MRWA website	City Staff Time	X									
Eight	The Zoning Administrator shall send a copy of the DWSMA Map and PCS1 to water planners at Wright County and Stearns County along with a request to notify the City of any zoning or building permit applications for property within the DWSMA.	High	City Staff	City Staff Time		X								

Implementation Action Item

OBJECTIVE	DESCRIPTION													
B.	Residential Land Use Practices: Create awareness and understanding of how land management practices by government officials and land use activities by individual property owners in residential areas may impact the drinking water supply; encourage best management practices.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	City staff shall distribute a copy of the DWSMA/WHP Area Map (Figure 1 of this Plan) and the Executive Summary from this Plan (Phase II) to existing elected officials and individuals appointed to the Planning and Zoning Commission. As elected and appointed officials change, new officials shall receive a copy of the DWSMA/WHP Area Map and the Executive Summary of this Plan.	Medium – High	City Staff	City Staff Time				X						
Two	The Zoning Administrator shall post a copy of the DWSMA Map on the wall of the City Council Chambers for reference purposes. The map shall be created by the MDH.	High	City Staff MDH has a laminated map available for display	City Staff Time		X								
Three	City Staff shall mail information from its data file regarding proper septic system maintenance collected under Objective A, Action Six of this Chapter to residential property owners included in the Potential Contaminant Source Inventory (PCSI).	Medium – Low	City Staff	Staff time, printing, and postage						X			X	
Four	Support Wright and Stearns County's efforts in managing ISTS by retaining information in a data file (created under Objective A, Action 4) regarding proper septic system management.	High	City Staff, County Staff	City Staff Time				X						
Five	City staff shall contact Stearns/Wright Counties regarding the availability of low-interest loans for the upgrading of septic systems within the PCSI which do not have municipal sanitary service available to them. Said information will be added to the data file created under Objective A, Action 4.	Low	City Staff	City Staff Time									X	

Implementation Action Item

OBJECTIVE	DESCRIPTION														
B.	Residential Land Use Practices: Create awareness and understanding of how land management practices by government officials and land use activities by individual property owners in residential areas may impact the drinking water supply; encourage best management practices.														
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe										
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Six	The City Administrator shall meet with representatives from Lynden Township and Stearns County Officials & Clearwater Township and Wright County regarding DWSMA and WHP.	Low	City Staff, County Staff, Twp Officials	City Staff Time											X
Seven	City staff shall mail information regarding private drinking water wells obtained under Objective A, Action Six of this Chapter to residential land owners with known private wells as identified in the PCSI.	Medium	City Staff	Staff time, printing, and postage				X							X
Eight	The City Administrator, the WHP Manager, the Zoning Administrator, and the Building Official shall on an on-going basis through casual visual observation, incidental contact with landowners, and/or permit review: (a) more precisely locate existing wells within the PCSI and/or identify new wells within the DWSMA. If such casual visual observation, incidental contact with landowners, and/or permit review identifies existing or new well not documented in the PCSI, such information shall be placed in the data file created under Objective A, Action Four and entered into the PCSI prior to 2018.	High	WHP Mngr, City Staff, Build. Off, PZ Admin, County Staff	Staff time		X									
Nine	The WHP Manager shall through casual visual observation and/or incidental meetings with landowners attempt to clarify the location and/or existence of potential contaminant sources contained in the PCSI and not previously verified.	Medium	WHP Manager	Staff time								X			

Implementation Action Item

OBJECTIVE	DESCRIPTION													
B.	Residential Land Use Practices: Create awareness and understanding of how land management practices by government officials and land use activities by individual property owners in residential areas may impact the drinking water supply; encourage best management practices.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Ten	The Zoning Administrator shall keep information on file (created under Objective A, Action 4) from the DNR and/or MDH regarding new high-capacity wells proposed for construction within the DWSMA or one-mile beyond the DWSMA, including public drinking water wells contemplated by the City. When a potential concern is verbalized by the MDH, the City Engineer shall investigate the potential impact of such high capacity wells on water quantity/quality.	Medium	City Staff, MDH Source Water Protection Unit	Staff time				X						
Eleven	City staff shall obtain information regarding Class V wells and there potential impact on drinking water. Information when obtained shall be placed in the data file created under Objective A, Action Four of this plan.	Low	City Staff Information available on website	Staff time, printing, and postage										X
Twelve	Through the City Newsletter, a note on utility bills, or a posting on the website, City staff shall remind property owners (in general) of proper lawn care management/maintenance (turf management) practices. The University of Minnesota Extension Service has information available regarding this topic at: http://www.extension.umn.edu/turfgrass/more.htm !	Medium - Low	City staff, UofM Extension Service	Staff time, printing, and postage					X			X		

Implementation Action Item

OBJECTIVE	DESCRIPTION													
B.	Residential Land Use Practices: Create awareness and understanding of how land management practices by government officials and land use activities by individual property owners in residential areas may impact the drinking water supply; encourage best management practices.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Thirteen	Through the City Newsletter, a note on utility bills, or a posting on the website, City staff shall alert the general public to hazardous waste drop off/pick up events occurring within the community.	Medium	City staff, Townships, Counties	Staff time				X					X	
Fourteen	The City Council and City Administrator shall discuss the potential of including a Household Hazardous Waste Collection Event in the City of Clearwater. If included in the City budget, the collection event will be organized.	Medium - Low	City staff, Townships, Counties	Staff time, public outreach, event costs					X					
Fifteen	The Zoning Administrator shall email the MDH a request to provide City Staff with new well construction information obtained from the MDH's well database.	High	City staff, MDH	City Staff & MDH time			X						X	
Sixteen	The WHP Manager shall field locate the new wells identified in the previous action item and add information to the PCSI.	Medium	City staff, MDH	City Staff & MDH time				X						X

Implementation Action Item

OBJECTIVE	DESCRIPTION													
C.	Industrial/Commercial/Agricultural Land Use Practices: Create awareness and understanding of how land management practices by government officials and land use activities by individual property owners in commercial/industrial areas may impact the drinking water supply; encourage best management practices.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	City Staff shall mail information from its data file regarding proper septic system maintenance collected under Objective A, Action Six of this Chapter to industrial, agricultural, and commercial property owners included in the Potential Contaminant Source Inventory (PCSI).	Medium - Low	City Staff	Staff time, printing, and postage						X			X	
Two	City staff shall mail a copy of the DWSMA/WHP A Map (Figure 1 of this Plan), the Executive Summary of this Plan, and the name of the WHP Manager to owners of storage tanks within the DWSMA	Medium - Low	City Staff	City Staff Time							X			
Three	City staff shall mail information regarding private drinking water wells obtained thru Obj. A, Action 6 of this Chapter to industrial, agricultural, and commercial land owners with private wells identified in the PCSI.	Medium	City Staff	Staff time, printing, and postage				X					X	
Four	The City Administrator, the WHP Manager, the Zoning Administrator, and the Building Official shall on an on-going basis through casual visual observation, incidental contact with landowners, and/or permit review: (a) more precisely locate existing wells within the PCSI and/or identify new wells within the DWSMA. If such casual visual observation, incidental contact with landowners, and/or permit review identifies existing or new well not documented in the PCSI, such information shall be placed in the data file created under Objective A, Action 4 & entered in the PCSI.	High	WHP Mngr, City Staff, Build. Off, PZ Admin, County Staff	Staff time		X								

Five	The WHP Manager shall through casual observation and/or incidental meetings landowners attempt to clarify the location & existence of potential contaminant sources in the PCSI but not previously verified.	Medium	WHP Manager	Staff time								X			
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Implementation Action Item

OBJECTIVE	DESCRIPTION														
C.	Industrial/Commercial/Agricultural Land Use Practices: Create awareness and understanding of how land management practices by government officials and land use activities by individual property owners in commercial/industrial areas may impact the drinking water supply; encourage best management practices.														
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe										
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Six	The Zoning Administrator shall ask the Planning Commission to update the zoning ordinance to discourage the placement of new underground storage tanks within the Emergency Response Zone.	High	City Staff, P&Z Administrator	City Staff Time		X									
Seven	The WHP Manager shall review/maintain an inventory of all hazardous waste generators within the DWSMA as included in the PCSI. If new hazardous waste generators are identified they shall be added to the PCSI.	Medium	City staff, WHP Manager	City Staff Time							X				
Eight	The Zoning Administrator and/or Building Official shall require applicants for commercial or industrial building/zoning permits submit in writing information about the quantity and/or presence of hazardous materials to be generated and/or stored on site. The documentation shall remain on file with the applicable property.	High	City Staff, P&Z Administrator, Bldg Official, County Zoning & Building	City Staff Time		X	X	X	X	X	X	X	X	X	X

Implementation Action Item

OBJECTIVE	DESCRIPTION													
D.	Stormwater Management: Create awareness and understanding of how stormwater management practices by government officials and activities by individual property owners may impact the drinking water supply; encourage best management practices.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	The WHP Manager shall review/maintain an inventory an inventory of all stormwater ponds included in the PCSI. If new stormwater ponds are identified they shall be added to the PCSI.	Medium	City staff, WHP Manager	City Staff Time							X			
Two	The City Council shall continue to implement stormwater management requirements included in the zoning and subdivision ordinances and Minnesota PCA standards. The Zoning Administrator shall request the Planning Commission review & consider updating the zoning ordinance relating to stormwater management.	High	P&Z Admin, City Engineer, Bldg Official	City Staff Time		X								
Three	City Staff, the Planning Commission and the City Council, shall discourage the siting of infiltration and seepage basins within the Emergency Response Zone and continue to carefully review stormwater management ponds proposed within the WPA or the DWSMA.	High	City Staff, P&Z Administrator, City Engineer, Bldg Official	City Staff Time	X	X	X	X	X	X	X	X	X	X

Implementation Action Item

OBJECTIVE	DESCRIPTION													
E.	Transportation Corridors and Spills: Create awareness and understanding of the impact of high-volume transportation corridors on the health of the drinking water, especially in the event of spillage of a potential contaminant.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	City Staff shall mail a copy of the DWSMA/WHP Area Map (Figure 1 of this Plan) to the Stearns and Wright County Highway Departments and the Regional MnDOT office. City staff shall enclose a letter requesting priority consideration of the DWSMA (relating to stormwater management, fuel/construction equipment management/repair, chemical use, etc.) when completing construction/reconstruction projects.	High	City staff, WHP Manager	City Staff Time		X								
Two	The City Administrator shall distribute information to the Fire Chief and Wright County Sheriff's Department regarding drinking water management in the event of a contaminant spill adjacent to a roadway within the DWSMA. The information distributed shall include instructions as to how drinking water will be provided to the public in the event the municipal drinking water system is contaminated or non-functional.	High	City Staff	City Staff Time	X									

Implementation Action Item

OBJECTIVE	DESCRIPTION													
F.	Monitoring and Data Collection: Conduct additional outreach and data collection so as to decrease uncertainty associated with delineation and vulnerability assessment.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	The WHP Manager and City Staff shall work with MDH to implement recommendations contained in Chapter 6, Phase I of this WHP Plan relating to improving the distribution of subsurface geologic information.	Medium	City Staff, WHP Manager, Public Works Department, City Engineer, and MDH.	City staff time & testing Lab costs by MDH				X						
Two	The WHP Manager and City Staff shall work with MDH to implement recommendations contained in Chapter 6, Phase I of this WHP Plan relating to addressing the connection between surface water features and the buried sand units serving the city wells.	Medium - Low	City Staff, WHP Manager, Public Works Department, City Engineer, and MDH.	City staff time & testing							X			
Three	The WHP Manager and City Staff shall work with MDH to implement recommendations contained in Chapter 6, Phase I of this WHP Plan relating to addressing any changes in the tritium signature of aquifer water in preparation for the WHP update.	Low	City Staff, WHP Manager, Public Works Department, City Engineer, and MDH.	City staff time & testing								X		
Four	The WHP Manager shall collaborate with the MDH when conducting any future pump tests, test drillings, or studies which may benefit WHP efforts and local geologic knowledge.	High	WHP Manager, Public Works, City Engineer, & MDH Source Water Protection	City Staff Time									X	

Implementation Action Item

OBJECTIVE	DESCRIPTION													
G.	Inner Wellhead Management Zone: Effectively manage a 200' radius around each public water supply well to reduce the likelihood of contaminants reaching the well at a level to cause human health impacts.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	The Zoning Administrator and/or the Building Official shall consult the MDH regarding best management practices if/when new potential contaminant sources (wells, septic, storage tanks, hazardous material generation, stormwater infiltration basins) are proposed within the IWMZ. The City will seek administration of MDH recommendations on a case-by-case basis.	High	City Staff, WHP Manager, MDH Regional Planner	City Staff Time	X									
Two	The City will monitor any non-conforming potential contaminant sources currently documented within the IWMZ. At this time there are no known non-conforming PCS within the IWMZ.	High	City Staff, WHP Manager, MDH Regional Planner	City Staff Time			X							

Implementation Action Item

OBJECTIVE	DESCRIPTION													
H.	Wellhead Protection Planning: Further disbursement and recognition of water planning efforts through inclusion in future drafts of planning documents.													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	The City Council and Planning Commission will include a map of the DWSMA and reference the WHP Plan (Phases I & II) when updating the 2006 Comprehensive Plan.	Low	City Staff, Consulting Planner	Staff									X	

Implementation Action Item

OBJECTIVE	DESCRIPTION													
I.	Locate and Construct A New Well													
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe									
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
One	The City Council and WHP Manager will use the information within this WHP Plan when planning for, locating, and construction a new public drinking water well.	Low	City Staff, City Engineer	Staff								X		

Implementation Action Item

OBJECTIVE	DESCRIPTION														
J.	CapX2020 High Voltage Transmission Line Construction														
Action	Description	Priority	Responsible & Assist. Parties	Costs	Implementation Timeframe										
					2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
One	The City Administrator, City Council, WHP Manager, Planning Commission, and Building Official will use the information within this WHP Plan when working with the CapX2020 project construction (if/when it occurs) so as to implement best management practices if/when project construction occurs.	Low	City Staff, City Engineer	Staff									X		

Chapter 6

EVALUATION PROGRAM (4720.5270)

This Chapter establishes a strategy to evaluate the efficacy of the WHP Plan and determine progress made on the plan of action described in Chapter Five.

I. IDENTIFY EVALUATION APPROACH

The success of the wellhead protection source management program must be evaluated as a means of assessing the efficacy of the WHP Plan. In addition to monitoring potential contaminant sources within the DWSMA, the City of Clearwater will also implement the following assessment strategies to determine the effectiveness of the WHP Plan:

1. Track the implementation of the objectives identified in Chapter 5 of this Plan;
2. Determine the effectiveness of specific management strategies regarding the protection of the public water supply; and,
3. Identify possible changes to these strategies which may improve Plan effectiveness.

II. EVALUATION FREQUENCY AND SUBMITTAL

To accomplish the aforementioned assessment strategies, the following activities will be conducted:

The City of Clearwater 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 in the future that must be addressed.

Members of the wellhead protection team and the WHP Manager 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.

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. The annual meeting will also be used to determine whether modifications are needed for those strategies, and additional strategies for the coming plan year.

The wellhead protection plan manager will make an annual written report to the City Council regarding the progress in implementing the wellhead protection management objectives identified in this plan. The annual reports will be compiled and used to review the overall progress in implementing source management strategies when the

City of Clearwater's WHP Plan will be updated in 10 years; however, a progress report shall be submitted to the MDH Regional Planner on a semi-annual basis (every two years).

In addition, a copy of the annual reports will be sent to the Minnesota Department of Health Source Water Protection Unit in St. Paul, MN and another copy will be placed in the City's Wellhead Protection file.

Chapter 7

ALTERNATIVE WATER SUPPLY CONTINGENCY STRATEGY (4720.5280)

This Chapter summarizes alternative water supply information and contingency strategies. An important component of this Chapter is itemized contact information which can be used in the event of an emergency.

I. PUBLIC WATER SUPPLY CHARACTERISTICS

A. Treatment

City water is not currently processed at a water treatment plant, however, water is disinfected with chlorine and fluoride is added for dental prophylaxis. Water treatment need was the subject of a water study completed in 2006. The study concluded that either (1) a (one million gallon) water treatment facility would be necessary to treat water from well number three, or (2) the City could retire well number three and construct a new well in the vicinity of wells number two and four. The City has not embraced either alternative at this time (May 2009).

B. Storage and Distribution

The city has two elevated storage facilities. The 'old' water tower was placed into service in 1978 and has a storage capacity of 100,000 gallons. The 'new' water tower was placed into service in 2004 and has a storage capacity of 300,000 gallons. Total elevated water storage available for domestic use and fire demand is 400,000 gallons. The Ten States Standard recommends a minimum storage capacity equal to the average daily consumption (211,000 gallons) and adequate capacity to meet all fire demands as determined by the State Insurance Services Offices. Forecast growth projects an average daily demand of 739,107 gallons per day by the year 2025, indicating additional storage facilities may be needed within the next 20 years. The 2006 water study addresses water storage needs. It is noted wells and treatment facilities can also be considered as contributors to the available storage capacity if both have reliable standby emergency power systems to treat and discharge water to the system during a power outage. Portable emergency power generation equipment is presently available for City wells and water treatment facilities.

Clearwater's water distribution system consists of a series of six to 10-inch mains throughout the City. Residential areas are primarily serviced with six inch water mains and commercial areas by eight inch mains. A 16 inch main has been placed under Interstate 94 and a second main is included in the 2006 water study. A few sections of 12 and ten inch mains are located adjacent to major roadways. Most remaining lines are six or eight inches in diameter, consistent with design standards included in the Subdivision Ordinance.

II. WATER USER PRIORITIES (IN WATER SUPPLY EMERGENCY)

Type of Use	Maximum Daily Use (percent)	Minimum Daily Use (percent)
Residential	80	80
Institutional	3	3
Commercial	10	10
Industrial	7	7
Irrigation	0	0
Wholesale	0	0

III. ALTERNATIVE WATER SUPPLY

A. Surface Water Sources and Treatment Needs.

The Mississippi and the Clearwater Rivers traverse the City of Clearwater. Both public waters provide an optional source of drinking water in the event of an emergency. Water treatment, such as that by the National Guard mobile unit would be required to achieve potable status. National Guard General Help can be contacted at 651-268-8919 or requested through the Sheriff's Office.

B. Bottled Water Supplies, Delivery, and Distribution.

Coborns Grocery Store is located within the community and a source for bottled water. The contact number is 320-558-2251. In addition, the City of Clearwater is in close geographic vicinity to the City of St. Cloud wherein several bottling establishments (water) are located. Bottled water could be attained from various outlets within the St. Cloud Metro Area and delivered to the City by the bottlers, by the Clearwater Fire Department, or by the Clearwater Public Works Department.

C. System Interconnects and Other Water Supply Alternatives.

The Clearwater drinking water system is not interconnected with another system.

D. Other Alternative Water Resources.

The City of Clearwater could have bulk drinking water delivered to the City by milk truck transport operators.

IV. INVENTORY OF AVAILABLE EMERGENCY EQUIPMENT AND MATERIALS

The following list identifies the services, equipment and supplies that are available to the City of Clearwater for responding to a disruption of its water supply. The items listed should be helpful in initially responding to a water system emergencies most likely to affect the City.

1. Emergency Equipment.

- Two Portable Generators
- One permanent generator at City Hall
- One permanent generator at Lift Station 1
- Front end loader
- Dump Trucks
- Wood chipper
- Chain saws
- Fire Department tanker truck

2. Emergency Assistance.

Dahlen Heating Inc. Clear Lake Heating/Air Conditioning	Office: 320-743-2479 Cell: 320-980-4829
Ron Philippi Plumbing/Heating/Air Conditioning	Office: 320-333-0446
Zapp Electric	Office: 320-240-2000
Severson Electric	Office: 320-743-3534
Fieldlers pumping Specialists	Office: 320-743-3332
Tri-State pumping	Office: 320-558-2000
Clearwater Excavating	Office: 320-558-2948
Alley Excavating	Office: 320-274-2528
Clearwater Rental	Office: 320-558-2121
Interstate Automotive Towing (also have front-end loader)	Office: 320-558-4500

V. EMERGENCY RESPONSE & NOTIFICATION PROCEDURES

A. Emergency Response Procedures

The emergency response coordinator is:

Name: John Schmidt, Public Works Supervisor
 Address: 24377 County Rd 7, St. Cloud, MN 56301
 Work Phone: (320) 290-2233
 E-mail contact: johnnschmidt@frontiernet.net

The alternate response coordinator is

Name: Kevin Kress, City Administrator
 Address: 605 County Road 75, P.O. Box 9
 Work Phone: (320) 558-2428
 Alternate contact number:
 E-mail contact: kkress@clearwatercity.com

The duties of the response coordinator or the alternate are listed in the following table.

Incident	Response Procedure & Comments
Identify Disruption (Mechanical Failure or Contamination)	Identifies the nature of the water supply disruption and communicates this information to the city government, the alternate response coordinator, and members of the emergency oversight committee.
Notify Response Personnel	Notifies city staff and others who will be responding to the water supply emergency about the disruption and coordinates their efforts to correct it.
Incident Direction and Control	Identifies the actions that are needed to correct the water supply emergency and directs responders to implement corrective actions.
Internal Communication	Communicates the status of response efforts to the primary spokesperson and the emergency oversight committee as needed to keep these parties informed of progress.
Assess Incident Response on Continual Basis	Assesses the efforts to correct the water supply disruption on a continual basis so that the emergency oversight committee can take additional corrective actions and the city government and public are updated on issues and progress.
Define the Extent of a Contamination Disruption	Coordinates efforts to define the extent and level of the contamination with local, state, and federal agencies. This may continue after initial corrective actions have been implemented.
Define the Extent of a Mechanical Disruption	Coordinates efforts to define the cause(s) of the mechanical failure and the equipment, data, and expertise that are needed to correct it. Identifies measures for reducing the likelihood that a similar mechanical failure will not occur in the future.
Identify Need for an Alternate Water Supply	Evaluates the need to obtain an alternate water supply, the time period it is needed before the water supply emergency is corrected, and the actions that are needed to achieve it.

Contacts: The tables on the following pages contain names and telephone numbers of the local and state agency contacts as well as other individuals, businesses, or members of the public that will be notified depending on the nature of the public water supply emergency. The emergency response coordinator will use this list to select the members of an Emergency Oversight Committee. The committee will meet throughout the duration of the emergency to aid in decision-making and to update the city regarding their roles in correcting the problem.

IV. EMERGENCY RESPONSE & NOTIFICATION PROCEDURES, CONT.

B. Emergency Contact List

Contact	Phone	Email Address	Response Assignment
Water System Personnel: John Schmidt	320-290-2233	johnnyschmidt@frontiernet.net	
Mayor Pete Edmonson	320-223-1519	pete.cityofclearwater@gmail.com	
Council Member Mike Ranum	320-558-6658	mranum.cityofclearwater@gmail.com	
Council Member Kris Crandall	320-420-4288	kcrandall.cityofclearwater@gmail.com	
Council Member Chris Ritzer	320-224-3809	critzer.cityofclearwater@gmail.com	
Council Member Rollie Lange	320-267-0033	rlange.cityofclearwater@gmail.com	
State Incident Duty Officer	1-800-422-0798		
Wright County Emergency Director: Steve Berg Stearns County Emergency Director: Marvin Klug	763-684-2364 320-259-3940		
Fire Chief: Doug Nieters	320-224-7040		
Wright County Sheriff Stearns County Sheriff State Patrol	763-682-1162 320-251-4240 320-855-4224		

Emergency Contact List Continued on next page

IV. EMERGENCY RESPONSE & NOTIFICATION PROCEDURES, CONT.

B. Emergency Contact Listing

Contact	Home Phone	Work Phone	Address	Response Assignment	Alternate
St. Cloud School Superintendent: Willie Jett		320-253-9333	1000 44 th Avenue N. Suite 100 St. Cloud, MN 56303		
Ambulance: Gold Cross		320-251-2302	2800 Seventh Street N Box 1614 St. Cloud MN 55303		
Allina		651-222-0555	167 Grand Avenue St. Paul MN 55102		
New River		763-295-2945	1013 Hart Boulevard Monticello MN 55362		
Hospital: St. Cloud Hospital		320-251-2700	1406 Sixth Avenue N St. Cloud MN 55303		
Allina Hospital		763-682-1212	303 Catlin Street Buffalo MN 55313		
CentraCare Health Hospital		763-295-2945	1013 Hart Boulevard Monticello MN 55362		
Power Companies: Xcel Energy – Electric Xcel Energy – Gas Wright Hennepin Electric Stearns Electric		1-800-895-1999 1-800-895-2999 1-888-399-1845 1-800-962-0655			
Highway Department		1-800-657-3774			
Neighboring Water System: Dustin		320-248-4725	Clear Lake, MN		
MPCA Groundwater Div. Duty Officer		1-800-422-0798			
MRWA Technical Services		1-218-685-5197			
MDH Contact		651-201-5735			

C. Incident Assessment Team

Contact	Home Phone	Cell Phone
Mayor/Pete Edmonson		320-223-1519
Council/Mike Ranum		320-290-6490
Council/Kris Crandall		320-420-4288
Council/Chris Ritzer		320-224-3809
Council/Rollie Lange		320-267-0033
Public Works-John Schmidt		320-290-2233
Fire Chief/Doug Nieters		320-224-7040
Stearns County Sheriff Wright County Sheriff State Patrol	Dispatch 320-251-4240 Dispatch 763-682-1162 Dispatch 320-255-4224	
Wright Cty Emergency Director Steve Berg Stearns Cty Emergency Director Marvin Klug	763-684-2364 320-259-3940	
Hazardous Materials Response	612-282-3750	

D. Public Information Plan

Primary Spokesperson:

Name: Pete Edmonson, Mayor

Address: 255 Lime, PO Box 331, Clearwater MN 55320

Work Phone: (320) 558-2271

Cell Phone: 320-223-1519

E-mail contact: pete.cityofclearwater@gmail.com

The responsibilities of the primary spokesperson are to:

1. Give public statements **that have been prepared by the City** regarding the water supply emergency;
2. Coordinate and compile information submitted by responders to the water supply emergency;
3. Lead official press conferences between the City and members of the media; and
4. Coordinate efforts to keep the public informed about the water supply emergency.

Public Information Center Location during Emergency:

Clearwater City Hall: 605 County Road 75; Phone: 320-558-2428.

Times Available:

City Hall would remain open as needed in the event of an emergency.

Alternate Information Center Location:

Clearwater Fire Department: 605 County Road 75

Information to be conveyed to the public and media:

1. Name of the Water System (City of Clearwater Public Water Supply System)
2. Nature of the water supply emergency;
3. Steps being taken to replace the water supply;
4. *If applicable*- Contaminant(s) of concern & date first detected;
5. *If applicable* - Source(s) of contamination;
6. *If applicable* - Public health impacts of the contamination or water supply interruption;
7. Steps the public should be taking;
8. Other responders who are cooperating with the city; and
9. Steps being taken to eliminate the source of contamination mechanical failure.

Media Outlets:

Media	Name	Telephone
Newspaper	Clearwater Tribune	320-558-2037
Radio	WWJO	320.252.9897
	KCLD	320.251.1047
	WILD	320.656.9453
Television	KSTC-45	651.645.4500

VI. MITIGATION AND CONSERVATION PLAN

A. Mitigation.

1. Mitigation of a water supply interruption related to mechanical failure will involve direct participation by MDH to ensure that all state and federal regulations relating to the design and approval of mitigation efforts are met. Possible sources of funding or the continued use of the emergency alternative water supply will be identified with the assistance of the Incident Assessment Team.
2. Mitigation of a water supply interruption that is related to high levels of chemical contamination or pathogen contamination will involve the direct participation of the MDH and potentially the Minnesota Pollution Control Agency. Mitigation efforts will be developed through the Incident Assessment Team.
3. The City of Clearwater will take the following preventative steps to avoid the interruption of the water supply due to mechanical failure:
 - a. The City will continue a regular infrastructure maintenance program. The maintenance program will include regular flushing and planning for replacement of water lines exceeding their useful life expectancy. The City will continue to maintain system maps and records of system maintenance.
 - b. The Public Works Superintendent will continue to regularly inspect water towers, wells, and pump houses.
 - c. The City uses Well Number Three as an alternative water supply well. In addition, portable emergency generators are available for use in the event of a water supply emergency.

B. Conservation Measures.

The City of Clearwater has developed the following measures to conserve water as well as to identify the minimum capacity that it needs to provide for its residents.

1. Evaluating water use:

- a. Water meters have been installed on all service connections and monthly readings are taken to identify the water supply needs of the community; and
- b. Water usage is reported annually to the Minnesota Department of Natural Resources and is used to identify the minimum daily requirements for residential water use.

2. Public Education:

- a. The City posts (website) a consumer confidence report annually to water users in which State water recommendations are presented; and,
- b. Water use conservation alerts (sprinkling) are occasionally included in the utility bill; and,
- c. The City offers property owners using public water for irrigation purposes a second meter so as to track volume of water used for irrigation purposes; and,
- d. The City implements an odd/even sprinkling ban during the growing season.

3. Rate structure:

- a. All water is billed at \$1.30 per 1000 gallons, \$1.80 per 1000 gallons for residential usage gallons over 9,999 per month.
- b. Base water rates are \$5.00 per EDU, monthly.

4. Emergency Response: In the event of a water supply shortage the City will impose the following water use restrictions to reduce demand:

- a. Use of water for irrigation purposes will be disallowed;
- b. Non-essential municipal uses such as street cleaning and vehicle washing will be discontinued.
- c. Commercial and industrial users will be asked to reduce water usage rates.
- d. The public will be educated as to the need to reduce water demand.

APPENDIX A
REFERENCE DATA FOR PART II