DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATERS and METROPOLITAN COUNCIL
WATER EMERGENCY AND CONSERVATION PLANS

These guidelines are divided into four parts. The first three parts, Water Supply System Description and Evaluation, Emergency Response Procedures and Water Conservation Planning apply statewide. Part IV, relates to comprehensive plan requirements that apply only to communities in the Seven-County Twin Cities Metropolitan Area. If you have questions regarding water emergency and conservation plans, please call (651) 259-5703 or (651) 259-5647 or e-mail your question to wateruse@dnr.state.mn.us. Metro Communities can also direct questions to the Metropolitan Council at watersupply@metc.state.mn.us or (651) 602-1066.

DNR Water Appropriation Permit Number(s)	620691
Name of Water Supplier	City of Richfield
Address	6700 Portland Ave
Contact Person	Robert Hintgen
Title	Asst. Utility Superintendent
Phone Number	612-861-9165
E-Mail Address	Rhintgen@cityofrichfield.org

PART I. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and supplies. Information in Part I, can be used in the development of Emergency Response Procedures and Conservation Plans.

A. ANALYSIS OF WATER DEMAND.

Fill in Table 1 for the past 10 years water demand. If your customer categories are different than the ones listed in Table 1, please note the changes below.

TABLE 1 Historic Water Demand

Year	Total Population	Population Served	Total Connections	Water Sold (MG) Residential	C/I/I	Wholesale Deliveries	Other	Total Sold	Total Annual Pumped	Ave. Day Pumped (MGD)	Percent Unmetered/ Unaccounted	Max Day Demand (MGD)	Max Day divided by Ave Day	Residential per capita (gpcd)	Total per capita (gpcd)	Max Day per capita (gpcd)
1996	33,931	33,931	11,374	NA	NA	0		NA	1,363	3.73	NA	NA	NA	NA	110	NA
1997	34,058	34,058	11,095	NA	NA	0		NA	1,296	3.55	NA	NA	NA	NA	104	NA
1998	34,185	34,185	10,951	1,024	277	0		1,301	1,320	3.62	1.5%	NA	NA	82	106	NA
1999	34,312	34,312	11,081	1,010	200	0		1,210	1,345	3.68	10.0%	NA	NA	81	107	NA
2000	34,439	34,439	11,178	1,149	233	0		1,382	1,417	3.88	2.5%	NA	NA	91	113	NA
2001	34,867	34,867	10,916	1,115	68	0		1,182	1,266	3.47	6.6%	9.97	2.87	88	99	286
2002	34,575	34,575	10,906	994	168	0		1,162	1,151	3.15	-1.0%	5.66	1.80	79	91	164
2003	34,502	34,502	10,809	1,073	218	0		1,291	1,452	3.98	11.1%	9.23	2.32	85	115	268
2004	34,496	34,496	10,830	1,167	199	0		1,366	1,301	3.57	-5.0%	7.23	2.03	93	103	210
2005	33,667	33,667	10,896	825	360	0		1,186	1,248	3.42	5.0%	8.84	2.59	67	102	263
2006	33,099	33,099	10,821	825	410	0		1,235	1,356	3.71	8.9%	8.61	2.32	68	112	260
2007	33,099	33,099	10,819	783	434	0		1,217	1,363	3.73	10.7%	8.49	2.27	65	113	257

MG – Million Gallons **MGD** – Million Gallons per Day **C/I/I-** Commercial, Industrial, Institutional

Residential. Water used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.

Institutional. Hospitals, nursing homes, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. You may want to maintain separate institutional water use records for emergency planning and allocation purposes.

Commercial. Water used by motels, hotels, restaurants, office buildings, commercial facilities, both civilian and military.

Industrial. Water used for thermoelectric power (electric utility generation) and other industrial uses such as steel, chemical and allied products, food processing, paper and allied products, mining, and petroleum refining.

Wholesale Deliveries. Bulk water sales to other public water suppliers.

Unaccounted. Unaccounted for water is the volume of water withdrawn from all sources minus the volume sold.

Residential Gallons per Capita per Day = total residential sales in gallons/population served/365 days **Total Gallons per Capita per Day** = total water withdrawals/population served/365 days

NOTE: Non-essential water uses defined by Minnesota Statutes 103G.291, include lawn sprinkling, vehicle washing, golf course and park irrigation and other non-essential uses. Some of the above categories also include non-essential uses of water.

Water Use Trends. Discuss factors that influence trends in water demand (i.e. growth, weather, industry, conservation). If appropriate, include a discussion of other factors that affect daily water use, such as use by non-resident commuter employees or large water consuming industry.

Richfield's total annual water use has remained relatively constant over the last ten years as can be seen in Table 1 and Figure 1. As is common with most communities, Richfield sees an increase in water use during the summer months. Figure 2 shows the average daily water pumped by month. Consistent with a more developed community (and less lawn irrigation), Richfield's maximum day to average day ratio has remained below 3.

Analysis of water use data over the past years has indentified several areas where the City could improve the quality of data collected. These items are listed here, and addressed further in the water conservation plan section.

- All but one of the Well Meters have been replaced recently.
- Water Treatment Plant meters. Recently, the effluent meters were upgraded to insertion probe style meters. The new meters will provide better data in the future.
- Water Treatment Plant. The water treatment plant is a significant water user; however recent improvements at the plant (sludge presses and backwash reclaim system) allow a high percentage of the process water to be recycled. The City will continue to monitor water use within the plant and as-needed, adjust record-keeping procedures so that a water audit can be performed on the water plant each year.
- Commercial Accounts. Most commercial accounts have irrigation system meters. This data was used to prepare the demand reduction potential later in this report. The City will consider analyzing that data in more detail – especially as it relates to water conservation and emergency demand reduction procedures.
- An "Other" category has been added to Table 1 for future years, to allow the City to better estimate other uses of water (which may include the water treatment plant). The City plans to estimate some of the miscellaneous uses of water such as sewer jetting (measure by tanker load), flushing (estimate) and flooding of skating rinks (estimate).

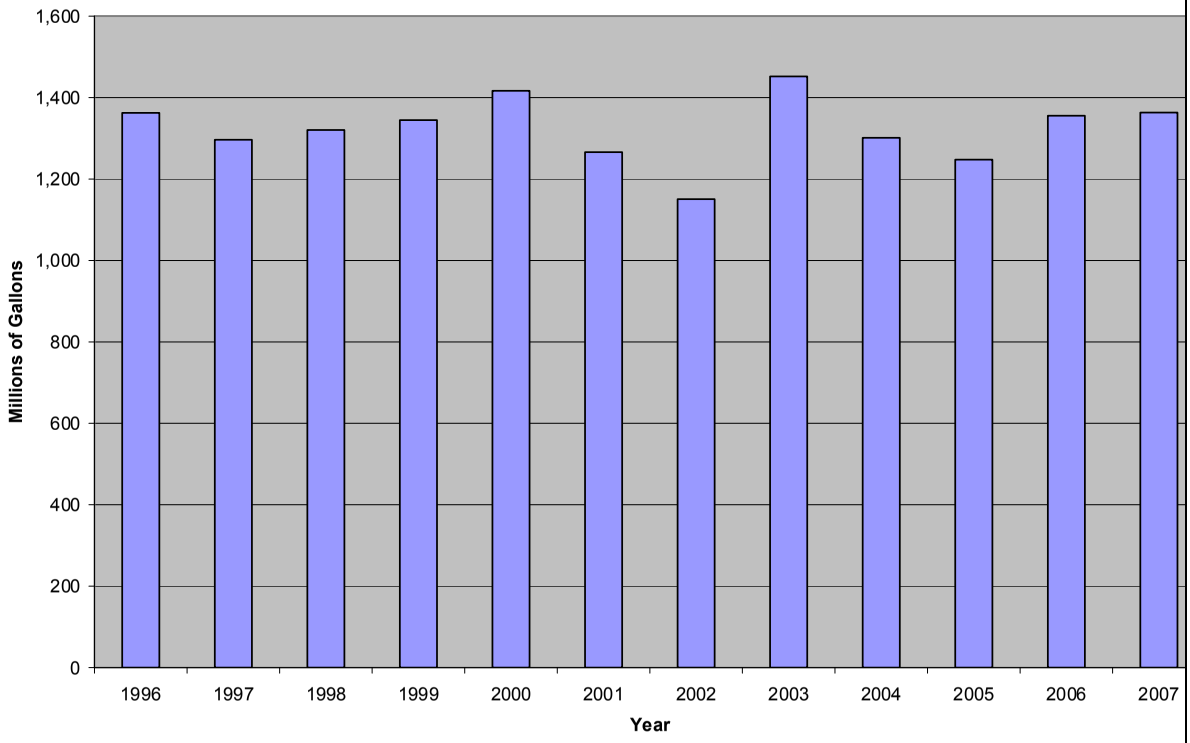


Figure 1. Total Anual Water Pumped
Millions of Gallons
1,600
1,400
1,200
1,000
800
600
400
200
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year

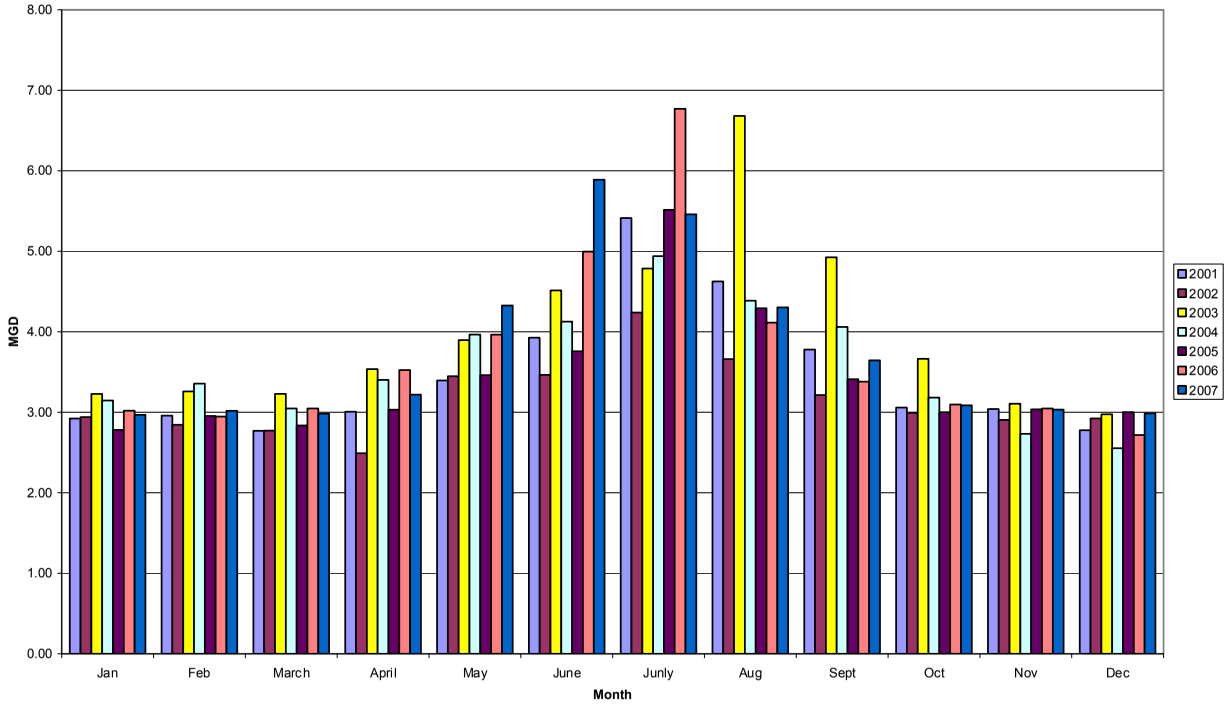


Figure 2. Average Day Water Use
MGD
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Jan
Feb
March
April
May
June
Junly
Aug
Sept
Oct
Nov
Dec
Month
2001
2002
2003
2004
2005
2006
2007

TABLE 2 Large Volume Users - List the top 10 largest users.

Customer	Gallons per year	% of total annual sold
Best Buy	29,275,000	2.4
Market Plaza	12,460,000	1.0
7710 Crossroads @ Penn	9,447,000	0.8
7700 Crossroads @ Penn	9,050,000	0.7
Richfield Intermediate School	8,910,000	0.7
7610 Crossroads @ Penn	8,820,000	0.7
7600 Crossroads @ Penn	7,900,000	0.6
Richfield Jr. High School	6,140,000	0.5
7720 Crossroads @ Penn	6,003,000	0.5
Woodlake Point Condominiums	5,648,000	0.5

B. TREATMENT AND STORAGE CAPACITY.

TABLE 3(A) Water Treatment

Water Treatment Plant Capacity	14,000,000 Gallons per day
Describe the treatment process used (i.e., softening, chlorination, fluoridation, Fe/Mn removal, reverse osmosis, coagulation, sedimentation, filtration, others). Also, describe the annual amount and method of disposal of treatment residuals, if any.	
Ground Water, Lime Softening, Polymer, CO2, Chlorination, Fluoridation, Filtration. We contract with a company that is certified in "Land Application of Bio-Solids" to dispose of Approx. 4500 Cubic Yards of pressed lime sludge per year.	

TABLE 3(B) Storage Capacity - List all storage structures and capacities.

Total Storage Capacity	**Average Day Demand** (average of last 5 years)
5,000,000 Gallons	3,540,000 Gallons per day

Type of Structure	Number of Structures	Gallons
Elevated Storage	2	2,500,000
Ground Storage	1 (Clearwell at WTP)	2,500,000
Other:		

C. WATER SOURCES. List all groundwater, surface water and interconnections that supply water to the system. Add or delete lines to the tables as needed.

TABLE 4(A) Total Water Source Capacity for System (excluding emergency connections)

Total Capacity of Sources	13,550 Gallons per minute
Firm Capacity (largest pump out of service)	11,350 Gallons per minute

TABLE 4(B) Groundwater Sources - Copies of water well records and well maintenance information should be included with the public water supplier's copy of the plan in Attachment 1. If there are more wells than space provided or multiple well fields, please use the List of Wells template (see Resources) and include as Attachment 1.

Well # or name	Unique Well Number	Year Installed	Well & Casing Depth (ft)	Well Diameter (in)	Capacity (GPM)	Geologic Unit	Status
1	206353	1961	437	16	2000	Jordan	Active
2	206354	1961	437	16	2000	Jordan	Active
3	206361	1962	412	16	2000	PDC/Jordan	Active
4	206276	1962	405	16	2000	PDC/Jordan	Active
5	206280	1963	408	16	2000	PDC/Jordan	Active
6	206279	1969	422	16	2000	PDC/Jordan	Active
7	133362	1977	1066	16	1500	MSH	Active

Status: Active use, Emergency, Standby, Seasonal, Peak use, etc. GPM – Gallons per Minute
Geologic Unit: Name of formation(s), which supplies water to the well

TABLE 4(C) Surface Water Sources

Intake ID	Resource name	Capacity (GPM/MGD)
None	0	0

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(D) Wholesale or Retail Interconnections - List interconnections with neighboring suppliers that are used to supply water on a **regular basis** either wholesale or retail.

Water Supply System	Capacity (GPM/MGD)	Wholesale or retail
None	0	0

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(E) Emergency Interconnections - List interconnections with neighboring suppliers or private sources that can be used to supply water on an emergency or occasional basis. Suppliers that serve less than 3,300 people can leave this section blank, but must provide this information in Section II C.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
Public Water Supplies - None	0	0
Bottled Water and Tankers	Limited	

GPM – Gallons per Minute MGD – Million Gallons per Day

D. DEMAND PROJECTIONS.

TABLE 5 Ten Year Demand Projections

Year	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2006	33,099	4.0	9.2	1,460
2007	33,099	4.0	9.2	1,460
2008	34,000	4.0	9.2	1,460
2009	35,000	4.0	9.2	1,470
2010	**37,700**	4.3	9.4	1,582
2011	38,060	4.4	9.5	1,598
2012	38,420	4.4	9.6	1,613
2013	38,780	4.5	9.7	1,627
2014	39,140	4.5	9.8	1,642
2015	39,500	4.5	9.9	1,658
2016	39,860	4.6	10.0	1,673
2017	40,220	4.6	10.0	1,688
2018	40,580	4.7	10.1	1,703
2020	**41,300**	4.7	10.3	1,733

MGD – Million Gallons per Day MGY – Million Gallons per Year

Projection Method. Describe how projections were made, (assumptions for per capita, per household, per acre or other methods used).
Population projections are consistent with the City's 2008 – 2018 Comprehensive Plan. The existing average day and maximum day demand are based on actual historic data (from 2003). Average day projections are based on 115 gpcd total average day per capita usage (based on 2003 per capita). Max Day per capita was 268 gpcd in 2003, and has been above 250 gpcd in five of the last seven years. This report assumes that water conservation measures will reduce the maximum day demand to 250 gpcd.

E. RESOURCE SUSTAINABILITY

Sustainable water use: use of water to provide for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences.

Monitoring. Records of water levels should be maintained for all production wells and source water reservoirs/basins. Water level readings should be taken monthly for a production well or observation well that is representative of the wells completed in each water source formation. **If water levels are not currently measured each year, a monitoring plan that includes a schedule for water level readings must be submitted as Attachment NA.**

TABLE 6 Monitoring Wells - List all wells being measured.

Unique well number	**Type of well (production, observation)**	**Frequency of Measurement (daily, monthly etc.)**	**Method of Measurement (steel tape, SCADA etc.)**
206353	Production	Monthly	Tape
206354	Production	Monthly	Tape
206361 (Well 3)	Production	10 minutes	SCADA
206276	Production	Monthly	Tape
206280 (Well 5)	Production	10 minutes	SCADA
206279	Production	Monthly	Tape
133362	Production	Monthly	Tape

Water Level Data. Summarize water level data including seasonal and long-term trends for each ground and/or surface water source. If water levels are not measured and recorded on a routine basis then provide the static water level (SWL) when the well was constructed and a current water level measurement for each production well. Also include all water level data taken during well and pump maintenance.
To date, no problems have occurred due to aquifer water levels. The City plans to continue adding automatic well-level monitors with well pump repair projects. The City will work with their SCADA consultant to prepare well level trend charts. **Attachment 2: Provide monitoring data (graph or table) for as many years as possible.**

Ground Water Level Monitoring – DNR Waters in conjunction with federal and local units of government maintain and

measure approximately 750 observation wells around the state. Ground water level data are available online www.dnr.state.mn.us/waters. Information is also available by contacting the Ground Water Level Monitoring Manager, DNR Waters, 500 Lafayette Road, St. Paul, MN 55155-4032 or call (651) 259-5700.

Natural Resource Impacts. Indicate any natural resource features such as calcareous fens, wetlands, trout streams, rivers or surface water basins that are or could be influenced by water withdrawals from municipal production wells. Also indicate if resource protection thresholds have been established and if mitigation measures or management plans have been developed.

None

Sustainability. Evaluate the adequacy of the resource to sustain current and projected demands. Describe any modeling conducted to determine impacts of projected demands on the resource.

Sustainability of the groundwater resources is an important element to be considered when developing a water plan. The City of Richfield currently operates seven municipal water supply wells. Six of those wells pull their water from either the Jordan aquifer or a combination of the Prairie du Chien and Jordan aquifers. The seventh well pulls water from multiple aquifers and is open to both the Franconia-Ironton-Galesville (FIG) aquifer and the Mt. Simon aquifer.

The Prairie du Chien and Jordan aquifers are the most highly productive bedrock aquifers in the Twin Cities area. Wells completed in these aquifers are routinely capable of yields ranging from 500 gpm to 2000 gpm, depending on well construction and pump capacity. The FIG-Mt. Simon aquifer wells typically have a lower yield and are considered less sustainable, because they aren't as readily recharged as the Prairie du Chien and Jordan aquifers are. The Richfield Prairie du Chien and Jordan wells were drilled in the early 1960s. The FIG-Mt. Simon well was drilled in 1977. For over 30 years, these seven wells have met the City's water supply demands, demonstrating the ability of these aquifers to produce high capacities of water for sustained periods. Based on the observed performance of these wells, water levels appear to be stable and do not indicate that present well discharge is exceeding the capacity of the aquifer to recharge itself.

The greatest threat to the sustainability of the aquifers comes from the possibility that human-caused contamination might someday render portions of these aquifers unusable for potable water supply. While there is no indication at present that human-caused contamination has sufficiently degraded the water quality of the aquifer(s) the City uses, the City has developed a wellhead protection plan to help reduce the risks of contamination in the future. The second threat to sustainability would be the growth of communities surrounding Richfield, which would increase demands on the bedrock aquifers. When these communities apply for a water appropriations permit amendment, they must demonstrate that they can operate their water supply wells without negatively impacting the existing wells in the area.

Recent geologic modeling by the Metropolitan Council suggests that the aquifer may decline by greater than one meter in the central portion of the City of Richfield. Aquifer levels declining by one meter should not pose a problem to Richfield's well pump operation; however the City will continue to monitor the situation.

Source Water Protection Plans. The emergency procedures in this plan are intended to comply with the contingency plan provisions required in the Minnesota Department of Health's (MDH) Wellhead Protection (WHP) Plan and Surface Water Protection (SWP) Plan.	
Date WHP Plan Adopted:	December 2007
Date for Next WHP Update:	Start - September 17, 2015
SWP Plan:	☐ In Process ☐ Completed X Not Applicable

F. CAPITAL IMPROVEMENT PLAN (CIP)

Adequacy of Water Supply System. Are water supply installations, treatment facilities and distribution systems adequate to sustain current and projected demands? **X Yes** ☐ No If no, describe any potential capital improvements over the next ten years and state the reasons for the proposed changes (CIP Attachment 3).
Distribution System – The existing distribution system is adequate to sustain current and projected demands. Depending on the phasing and scope of potential redevelopment, fire flows in some areas could be improved by replacing or paralleling water mains. Since the scope of this potential redevelopment is unknown at this time, these pipes are not included in the CIP. **Supply** – The current capacity of the wells is sufficient to meet the 2018 requirements of the City. **Treatment** – The existing 14.0 MGD Plant was designed to treat 100% of the capacity of the Legion Lake and Nicollet Park Well Field. This capacity is sufficient to treat 100% of the planned Maximum Day Demand. Therefore, no additional modifications are required at the water treatment plant. **Storage** – The existing storage facilities, in conjunction with water drawn from the plant clearwell, provide adequate storage on the system.

Proposed Water Sources. Does your current CIP include the addition of new wells or intakes? ☐ Yes **X No** If yes, list the number of new installations and projected water demands from each for the next ten years. Plans for new production wells must include the geologic source formation, well location, and proposed pumping capacity.

Proposed Water Source Alternatives. If new water sources are being proposed, describe alternative sources that were considered and any possibilities of joint efforts with neighboring communities for development of supplies.
None at this time. City is Investigating the feasibility of emergency connections with neighboring communities.

Preventative Maintenance. Long-term preventative programs and measures will help reduce the risk of emergency situations. Identify sections of the system that are prone to failure due to age, materials or other problems. This information should be used to prioritize capital improvements, preventative maintenance, and to determine the types of materials (pipes, valves, couplings, etc.) to have in stock to reduce repair time.
The City has an extensive maintenance program. Data from the maintenance program is incorporated into decision making for pipe replacement programs in areas where street repairs are planned.

PART II. EMERGENCY RESPONSE PROCEDURES

Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failures, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan. If your community already has written procedures dealing with water emergencies we recommend that you use these guidelines to review and update existing procedures and water supply protection measures.

Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan. **Community water suppliers that have completed the Federal Emergency Response Plan and submitted the required certification to the U.S. Environmental Protection Agency have satisfied Part II, Sections A, B, and C of these guidelines and need only provide the information below regarding the emergency response plan and source water protection plan and complete Sections D (Allocation and Demand Reduction Procedures), and E (Enforcement).**

Provide the following information regarding your completed Federal Emergency Response Plan:

Emergency Response Plan	**Contact Person**	**Contact Number**
Emergency Response Lead	Robert Hintgen	612-861-9165
Alternate Emergency Response Lead	Mike Eastling	612-861-9792
Emergency Response Plan Certification Date	June 01, 2004	

Operational Contingency Plan. An operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance is recommended for all utilities. Check here ☒ if the utility has an operational contingency plan. At a minimum a contact list for contractors and supplies should be included in a water emergency telephone list.

Communities that have completed Federal Emergency Response Plans should skip to Section D.

EMERGENCY RESPONSE PROCEDURES

A. **Emergency Telephone List.** A telephone list of emergency contacts must be included as Attachment NA to the plan (complete template or use your own list). The list should include key utility and community personnel, contacts in adjacent communities, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list on a regular basis (once each year recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Responsibilities and services for each contact should be defined.

B. **Current Water Sources and Service Area.** Quick access to concise and detailed information on water sources, water treatment, and the distribution system may be needed in an emergency. System operation, water well and maintenance records should be maintained in a central secured location so that the records are accessible for emergency purposes and preventative maintenance. A detailed map of the system showing the treatment plants, water sources, storage facilities, supply lines, interconnections, and other information that would be useful in an emergency should also be readily available. Check here ☒ if these records and maps exist and staff can access the documents in the event of an emergency.

C. **Procedure for Augmenting Water Supplies.** List all available sources of water that can be used to augment or replace existing sources in an emergency. In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Copies of cooperative agreements should be maintained with your copy of the plan and include in Attachment . Be sure to include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MN Department of Health are required for interconnections and reuse of water.

TABLE 7 (A) Public Water Supply Systems – List interconnections with other public water supply systems that can supply water in an emergency.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
None Currently Available. City has begun preliminary analysis and discussions with neighboring communities.		

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 7 (B) Private Water Sources – List other sources of water available in an emergency.

Name	Capacity (GPM/MGD)	Note any limitations on use
Bottled water and tankers	Limited	City will review available supply over the course of the next year

GPM – Gallons per Minute MGD – Million Gallons per Day

D. Allocation and Demand Reduction Procedures. The plan must include procedures to address gradual decreases in water supply as well as emergencies and the sudden loss of water due to line breaks, power failures, sabotage, etc. During periods of limited water supplies public water suppliers are required to allocate water based on the priorities established in Minnesota Statutes 103G.261.

Water Use Priorities (Minnesota Statutes 103G.261)

First Priority. Domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets contingency requirements.

NOTE: Domestic use is defined (MN Rules 6115.0630, Subp. 9), as use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or one million gallons per year.

Second Priority. Water uses involving consumption of less than 10,000 gallons per day.

Third Priority. Agricultural irrigation and processing of agricultural products.

Fourth Priority. Power production in excess of the use provided for in the contingency plan under first priority.

Fifth Priority. Uses, other than agricultural irrigation, processing of agricultural products, and power production.

Sixth Priority. Non-essential uses. These uses are defined by Minnesota Statutes 103G.291 as lawn sprinkling, vehicle washing, golf course and park irrigation, and other non-essential uses.

List the statutory water use priorities along with any local priorities (hospitals, nursing homes, etc.) in Table 8. Water used for human needs at hospitals, nursing homes and similar types of facilities should be designated as a high priority to be maintained in an emergency. Local allocation priorities will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. In Table 8, list the priority ranking, average day demand and demand reduction potential for each customer category (modify customer categories if necessary).

Table 8 Water Use Priorities

Customer Category	Allocation Priority	Average Day Demand (GPD)	Demand Reduction Potential (GPD)	Notes
Residential	1	2,260,000	288,000	34,000 people at 58 gpcd interior-only usage
Commercial (<10,000 gal/day)	2	840,000	80,000	Assume 10% reduction available in summer
Best Buy	5	80,200	40,000	Irrigation Use on Peak Days
Market Plaza	5	34,000	1,600	Irrigation Use on Peak Days
7710 Crossroads @Penn	5	26,000	1,000	Assumed – no irrigation meter
7700 Crossroads @Penn	5	25,000	1,000	Assumed – no irrigation meter
Richfield Intermediate School	5	24,400	700	Irrigation Use on Peak Days
7610 Crossroads @Penn	5	21,600	1,000	Assumed – no irrigation meter
Richfield Jr. High School	5	16,800	700	Irrigation Use on Peak Days
7720 Crossroads @Penn	5	16,500	1,000	Assumed – no irrigation meter
Woodlake Point Condominiums	1	15,500	2,000	Irrigation Use on Peak Days
	TOTALS	3,700,000	417,000	3,280,000

GPD – Gallons per Day

Demand Reduction Potential. The demand reduction potential for residential use will typically be the base demand during the winter months when water use for non-essential uses such as lawn watering do not occur. The difference between summer and winter demands typically defines the demand reduction that can be achieved by eliminating non-essential uses. In extreme emergency situations lower priority water uses must be restricted or eliminated to protect first priority domestic water requirements. Short-term demand reduction potential should be based on average day demands for customer categories within each priority class.

Triggers for Allocation and Demand Reduction Actions. Triggering levels must be defined for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. Examples of triggers include: water demand >100% of storage, water level in well(s) below a certain elevation, treatment capacity reduced 10% etc. Each trigger should have a quantifiable indicator and actions can have multiple stages such as mild, moderate and severe responses. Check each trigger below that is used for implementing emergency responses and for each trigger indicate the actions to be taken at various levels or stages of severity in Table 9.

- ☒ Water Demand
- ☒ Treatment Capacity
- ☒ Storage Capacity
- ☒ Groundwater Levels
- ☐ Surface Water Flows or Levels
- ☒ Pump, Booster Station or Well Out of Service
- ☒ Governor's Executive Order – Critical Water Deficiency (required by statute)
- ☒ Water Main Break
- ☒ Loss of Production
- ☒ Security Breach
- ☒ Contamination
- ☐ Other (list in Table 9)

Table 9 Demand Reduction Procedures

Condition	Trigger(s)	Actions
Stage 1 (Mild)	Water Use > 80% of well or treatment capacity for more than 5 consecutive days. Static or pumping water levels outside of normal range for time of year	Issue voluntary conservation request. Ask customers to limit outdoor watering to every other day. All Municipal operations are placed on mandatory conservation with park irrigation limited as defined by the director of parks and public works. Prepare to notify customers. Begin to collect additional well/pump/aquifer data (water levels, pumping rates, pressures)
Stage 2 (Moderate)	Water Use > 90% of well/treatment capacity for more than 3 consecutive days Well pumping water level within 20 feet of pump bowls	Notify customers and encourage additional voluntary reductions in water useage. Investigate cause of well drawdowns Notify top ten water users
Stage 3 (Severe)	Water use >90% of well/treatment capacity for more than 10 consecutive days	Notify customers. Eliminate 6th priority Initiate reductions in 5th Priority customers.
Critical Water Deficiency (M.S. 103G.291)	Executive Order by Governor & as provided in above triggers	Stage 1: Restrict lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses Stage 2: Suspend lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses

Note: The potential for water availability problems during the onset of a drought are almost impossible to predict. Significant increases in demand should be balanced with preventative measures to conserve supplies in the event of prolonged drought conditions.

Note: Water Main breaks, contamination events, and loss of critical infrastructure could also trigger City-wide or localized demand reduction and emergency response procedures. Since these types of emergencies vary greatly, specific triggers for actions are not developed. City staff will respond to these specialized emergencies on an individual basis.

Notification Procedures. List methods that will be used to inform customers regarding conservation requests, water use restrictions, and suspensions. Customers should be aware of emergency procedures and responses that they may need to implement.
Stage 1 and 2 notifications will be done via City Web Site (see example in Appendix 4), local cable access channel, and local newspapers. Stage 3 and Critical Water Deficiency notifications are done via mail (refer to City Code 710.29).

E. Enforcement. Minnesota Statutes require public water supply authorities to adopt and enforce water conservation restrictions during periods of critical water shortages.

Public Water Supply Appropriation During Deficiency.
Minnesota Statutes 103G.291, Subdivision 1.

Declaration and conservation.
(a) If the governor determines and declares by executive order that there is a critical water deficiency, public water supply authorities appropriating water must adopt and enforce water conservation restrictions within their jurisdiction that are consistent with rules adopted by the commissioner.
(b) The restrictions must limit lawn sprinkling, vehicle washing, golf course and park irrigation, and other nonessential uses, and have appropriate penalties for failure to comply with the restrictions.

An ordinance that has been adopted or a draft ordinance that can be quickly adopted to comply with the critical water deficiency declaration must be included in the plan (include with other ordinances in Attachment 5 for Part III, Item 4). Enforcement responsibilities and penalties for non-compliance should be addressed in the critical water deficiency ordinance.
Sample regulations are available at www.dnr.state.mn.us/waters

Authority to Implement Water Emergency Responses. Emergency responses could be delayed if city council or utility board actions are required. Standing authority for utility or city managers to implement water restrictions can improve response times for dealing with emergencies. Who has authority to implement water use restrictions in an emergency?

☐ Utility Manager ☐ City Manager ☒ City Council or Utility Board
☐ Other (describe):

If city or utility managers do not have standing authority to implement water emergency responses, please indicate any intentions to delegate that authority. Also indicate any other measures that are being considered to reduce delays for implementing emergency responses.
City will continue training to coordinate response between departments in wide-scale emergency. Over the course of the next year, the City will meet with each of the large water users to determine how to ration water in the event of an emergency. Over the course of the next year, the City will evaluate the feasibility of modifying City Code 710.29 (see Attachment 4) to give the Public Works Department and City Manager the authority to enact water restrictions. The City will also review the method of delivery of notification.

PART III. WATER CONSERVATION PLAN

Water conservation programs are intended to reduce demand for water, improve the efficiency in use and reduce losses and waste of water. Long-term conservation measures that improve overall water use efficiencies can help reduce the need for short-term conservation measures. Water conservation is an important part of water resource management and can also help utility managers satisfy the ever-increasing demands being placed on water resources.

> Minnesota Statutes 103G.291, requires public water suppliers to implement demand reduction measures before seeking approvals to construct new wells or increases in authorized volumes of water. Minnesota Rules 6115.0770, require water users to employ the best available means and practices to promote the efficient use of water. Conservation programs can be cost effective when compared to the generally higher costs of developing new sources of supply or expanding water and/or wastewater treatment plant capacities.

A. Conservation Goals. The following section establishes goals for various measures of water demand. The programs necessary to achieve the goals will be described in the following section.

Unaccounted Water (calculate five year averages with data from Table 1)		
Average annual volume unaccounted water for the last 5 years	122,500,00	gallons
Average percent unaccounted water for the last 5 years	8.9%	percent
AWWA recommends that unaccounted water not exceed 10%. Describe goals to reduce unaccounted water if the average of the last 5 years exceeds 10%.		
Note that the above calculations ignore the negative water loss in 2004 (and in 2002). The City has recently replaced all of the meters in the City, including the large source water meters at the wells and water treatment plant. Data from this point forward is expected to be much more useful. During 2009, the City will use the new meter data and work to improve estimation of various un-metered water uses. The City will evaluate the next steps (if any) after the 2009 water use data is collected. The City will continue to monitor water use at the water treatment plant through regular water audits.		

Residential Gallons Per Capita Demand (GPCD)	
Average residential GPCD use for the last 5 years (use data from Table 1)	75.6 GPCD
In 2002, average residential GPCD use in the Twin Cities Metropolitan Area was 75 GPCD. Describe goals to reduce residential demand if the average for the last 5 years exceeds 75 GPCD.	
Average water use is very close to the benchmark – however, on dry years, water use climbs above the benchmark.	

Total Per Capita Demand: From Table 1, is the trend in overall per capita demand over the past 10 years ☐ increasing or X decreasing? If total GPCD is increasing, describe the goals to lower overall per capita demand or explain the reasons for the increase.
Overall per capita water use is remaining relatively constant.

Peak Demands (calculate average ratio for last five years using data from Table 1)	
Average maximum day to average day ratio	2.31
If peak demands exceed a ratio of 2.6, describe the goals for lowering peak demands.	
N/A	

B. Water Conservation Programs. Describe all short-term conservation measures that are available for use in an emergency and long-term measures to improve water use efficiencies for each of the six conservation program elements listed below. Short-term demand reduction measures must be included in the emergency response procedures and must be in support of, and part of, a community all-hazard emergency operation plan.

1. **Metering.** The American Water Works Association (AWWA) recommends that every water utility meter all water taken into its system and all water distributed from its system at its customer's point of service. An effective metering program relies upon periodic performance testing, repair, repair and maintenance of all meters. AWWA also recommends that utilities conduct regular water audits to ensure accountability. Complete Table 10 (A) regarding the number and maintenance of customer meters.

TABLE 10 (A) Customer Meters

	Number of Connections	Number of Metered Connections	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Residential	10,344	10,344	5	1 /20
Institutional	0	0	0	1/ 20
Commercial	477	477	5	1 / 20
Industrial	0	0	5	1 / 20
Public Facilities	0	0	0	1 / 20
Other	0	0	0	1 / 20
TOTALS	10,820	10,820		

Unmetered Systems. Provide an estimate of the cost to install meters and the projected water savings from metering water use. Also indicate any plans to install meters.
None

TABLE 10 (B) Water Source Meters

	Number of Meters	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Water Source (wells/intakes)	7	1	1 / 20
Treatment Plant	16	5	1 / 20

2. **Unaccounted Water.** Water audits are intended to identify, quantify, and verify water and revenue losses. The volume of unaccounted-for water should be evaluated each billing cycle. The AWWA recommends a goal of ten percent or less for unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association.

Frequency of water audits: ☐ each billing cycle ☒ yearly ☐ other:

Leak detection and survey: ☒every year ☐ every years ☐ periodic as needed
Year last leak detection survey completed: One-half of City is tested every year

Reducing Unaccounted Water. List potential sources and efforts being taken to reduce unaccounted water. If unaccounted water exceeds 10% of total withdrawals, include the timeframe for completing work to reduce unaccounted water to 10% or less.
Meter Replacement Project (Replaced all meters in City in 2008) Meters have "leak detection" feature that notices continuous flow and alerts Utility Department. Refer to sample letter in Attachment 4 sent out to customers that experience these unexpected flows.

3. **Conservation Water Rates.** Plans must include the current rate structure for all customers and provide information on any proposed rate changes. Discuss the basis for current price levels and rates, including cost of service data, and the impact current rates have on conservation.

Billing Frequency: ☐ Monthly ☐ Bimonthly ☒ Quarterly
☐ Other (describe): **Volume included in base rate or service charge**:
1000gallons or cubic feet

Conservation Rate Structures
☐ Increasing block rate: rate per unit increases as water use increases
☐ Seasonal rate: higher rates in summer to reduce peak demands
☐ Service charge or base fee that does not include a water volume

Conservation Neutral Rate Structure
☒ Uniform rate: rate per unit is the same regardless of volume

Non-conserving Rate Structures
☐ Service charge or base fee that includes a large volume of water
☐ Declining block rate: rate per unit decreases as water use increases
☐ Flat rate: one fee regardless of how much water is used (unmetered)

Other (describe):

Water Rates Evaluated: ☒ every year ☐ every years ☐ no schedule
Date of last rate change: 2008

Declining block (the more water used, the cheaper the rate) and flat (one fee for an unlimited volume of water) rates should be phased out and replaced with conservation rates. Incorporating a seasonal rate structure and the benefits of a monthly billing cycle should also be considered along with the development of an emergency rate structure that could be quickly implemented to encourage conservation in an emergency.

Current Water Rates. Include a copy of the actual rate structure in Attachment 4 or list current water rates including base/service fees and volume charges below.
$2.23 per 1000 gallons

Non-conserving Rate Structures. Provide justification for the rate structure and its impact on reducing demands or indicate intentions including the timeframe for adopting a conservation rate structure.
Richfield's rate structure is considered "Conservation Neutral." Richfield's rate structure has worked well in the past – as can be seen by the low peak day to average day ratio. Richfield is aware of the recent legislation that requires a water conserving rate structure, and plans to comply with the intent of the legislation in accordance with the timelines established in the legislation.

4. **Regulation.** Plans should include regulations for short-term reductions in demand and long-term improvements in water efficiencies. Sample regulations are available from DNR Waters. Copies of adopted regulations or proposed restrictions should be included in Attachment 4 of the plan. Indicate any of the items below that are required by local regulations and also indicate if the requirement is applied each year or just in emergencies.

☐ Time of Day: no watering between am/pm and am/pm
(reduces evaporation) ☐ year around ☐ seasonal ☒ emergency only
☐ Odd/Even: (helps reduce peak demand) ☐ year around ☐ seasonal ☒ emergency only
☐ Water waste prohibited (no runoff from irrigation systems)
Describe ordinance:
☐ Limitations on turf areas for landscaping (reduces high water use turf areas)
Describe ordinance:
☐ Soil preparation (such as 4"-6" of organic soil on new turf areas with sandy soil)
Describe ordinance:
☐ Tree ratios (plant one tree for every square feet to reduce turf evapotranspiration)
Describe ordinance:
☐ Prohibit irrigation of medians or areas less than 8 feet wide
Describe ordinance:
☐ Permit required to fill swimming pool ☐ every year ☒ emergency only
☐ Other (describe):

City staff is drafting a new ordinance that would encourage wise use of water for irrigation (such as time of day restrictions). This ordinance is expected to be discussed at Council level in 2009.

State and Federal Regulations (mandated)

☒ Rainfall sensors on landscape irrigation systems. Minnesota Statute 103G.298 requires "All automatically operated landscape irrigation systems shall have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture. The technology must be adjustable either by the end user or the professional practitioner of landscape irrigation services."

☒ Water Efficient Plumbing Fixtures. The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators.

Enforcement. Are ordinances enforced? ☒ Yes ☐ No If yes, indicate how ordinances are enforced along with any penalties for non-compliance.
Plumbing fixtures are checked with building permit inspections only. Compliance with the rainfall sensor Statute is the responsibility of the irrigation system supplier/installer.

5. **Education and Information Programs.** Customers should be provided information on how to improve water use efficiencies a minimum of two times per year. Information should be provided at appropriate times to address peak demands. Emergency notices and educational materials on how to reduce water use should be available for quick distribution during an emergency. If any of the methods listed in the table below are used to provide water conservation tips, indicate the number of times that information is provided each year and attach a list of education efforts used for the last three years.

Current Education Programs	**Times/Year**
Billing inserts or tips printed on the actual bill	4
Consumer Confidence Reports	1
Local news papers	
Community news letters	
Direct mailings (water audit/retrofit kits, showerheads, brochures)	1x to all, as needed with leak detection meters
Information at utility and public buildings	All Year
Public Service Announcements	0
Cable TV Programs	0
Demonstration projects (landscaping or plumbing)	0
K-12 Education programs (Project Wet, Drinking Water Institute)	0
School presentations	0
Events (children's water festivals, environmental fairs)	0
Community education	0
Water Week promotions	0
Information provided to groups that tour the water treatment plant	0
Website (include address: www.ci.richfield.com)	Always
Targeted efforts (large volume users, users with large increases)	
Notices of ordinances (include tips with notices)	
Emergency conservation notices (recommended)	
Other: Meter Leak Detection. Meters automatically check for low flows at night and trigger a leak alert. City contacts meter owner directly and informs them of how to check/repair leaks.	Always
Other: Water Treatment Plant Tours	5

List education efforts for the last three years in Attachment 4 of the plan. Be sure to indicate whether educational efforts are on-going and which efforts were initiated as an emergency or drought management effort.

Proposed Education Programs. Describe any additional efforts planned to provide conservation information to customers a minimum of twice per year (required if there are no current efforts).
None

A packet of conservation tips and information can be obtained by contacting DNR Waters or the Minnesota Rural Water Association (MRWA). The American Water Works Association (AWWA) www.awwa.org or www.waterwiser.org also has excellent materials on water conservation that are available in a number of formats. You can contact the MRWA 800/367-6792, the AWWA bookstore 800/926-7337 or DNR Waters 651/259-5703 for information regarding educational materials and formats that are available.

6. **Retrofitting Programs.** Education and incentive programs aimed at replacing inefficient plumbing fixtures and appliances can help reduce per capita water use as well as energy costs. It is recommended that communities develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and that the benefits of retrofitting be included in public education programs. You may also want to contact local electric or gas suppliers to see if they are interested in developing a showerhead distribution program for customers in your service area.

A study by the AWWA Research Foundation (Residential End Uses of Water, 1999) found that the average indoor water use for a non-conserving home is 69.3 gallons per capita per day (gpcd). The average indoor water use in a conserving home is 45.2 gpcd and most of the decrease in water use is related to water efficient plumbing fixtures and appliances that can reduce water, sewer and energy costs. In Minnesota, certain electric and gas providers are required (Minnesota Statute 216B.241) to fund programs that will conserve energy resources and some utilities have distributed water efficient showerheads to customers to help reduce energy demands required to supply hot water.

Retrofitting Programs. Describe any education or incentive programs to encourage the retrofitting of inefficient plumbing fixtures (toilets, showerheads, faucets, and aerators) or appliances (washing machines).
None at this time. Since the majority of Richfield's housing stock is older, fixture retrofits should occur naturally, as homes are remodeled. As mentioned on page 23, new fixtures are checked in conjunction with the building permit inspection process. City staff will evaluate the means to communicate to their customers – and encourage them to replace old water fixtures when they remodel. The City will participate with Xcel Energy, if they again sponsor a showerhead distribution program.

Plan Approval. Water Emergency and Conservation Plans must be approved by the Department of Natural Resources (DNR) every ten years. Please submit plans for approval to the following address:

DNR Waters
Water Permit Programs Supervisor
500 Lafayette Road
St. Paul, MN 55155-4032

or Submit electronically to wateruse@dnr.state.mn.us.

Adoption of Plan. All DNR plan approvals are contingent on the formal adoption of the plan by the city council or utility board. Please submit a certificate of adoption (example available) or other action adopting the plan.

Metropolitan Area communities are also required to submit these plans to the Metropolitan

Council. Please see PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS.

METROPOLITAN COUNCIL

PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS

Minnesota Statute 473.859 requires water supply plans to be completed for all local units of government in the seven-county Metropolitan Area as part of the local comprehensive planning process. Much of the required information is contained in Parts I-III of these guidelines. However, the following additional information is necessary to make the water supply plans consistent with the Metropolitan Land Use Planning Act upon which local comprehensive plans are based. Communities should use the information collected in the development of their plans to evaluate whether or not their water supplies are being developed consistent with the Council's Water Resources Management Policy Plan.

Policies. Provide a statement(s) on the principles that will dictate operation of the water supply utility: for example, "It is the policy of the city to provide good quality water at an affordable rate, while assuring this use does not have a long-term negative resource impact."

Water System Goals:
1. Provide residents and businesses with affordable potable water that is safe and of high quality.
2. Provide a low-maintenance, efficient water system that supplies the long-term needs of residents and businesses.
3. Provide adequate water supply and pressure for residents and businesses.
4. Work with surrounding communities to provide an assured source of water in case of emergencies.
5. Provide adequate water services for areas designated for redevelopment.
6. Promote water conservation and sustainability by reducing water demand, reducing the waste of water, improving the efficiency of the existing system, and educating the public on water conservation.

Water System Policies:
1. Design and construct improvements to the water system that meet the demands of redevelopment and for sufficient fire protection for the entire community.
2. Provide a minimal hydrostatic pressure of 50 psi.
3. When economically feasible, replace cast iron pipes with ductile iron or plastic pipe at the same time areas are redeveloped or streets are reconstructed.
4. Selectively increase the size of pipes in the distribution system for areas within the city where low water pressures exist.
5. Increase High Service Pump capacity to increase water pressure to the east side of Richfield.

Impact on the Local Comprehensive Plan. Identify the impact that the adoption of this water supply plan has on the rest of the local comprehensive plan, including implications for future growth of the community, economic impact on the community and changes to the comprehensive plan that might result.

This Water Supply Plan was prepared based on the City's 2008 – 2018 Comprehensive Plan.

Demand Projections

Year	Total Community Population	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2010	37,700	37,700	4.3	9.4	1,582
2020	41,300	41,300	4.7	10.3	1,733
2030	45,000	45,000	5.2	11.4	1,900
Ultimate					

Population projections should be consistent with those in the Metropolitan Council's *2030 Regional Development Framework* or the Communities 2008 Comprehensive Plan update**.** If population served differs from total population, explain in detail why the difference (i.e., service to other communities, not complete service within community etc.).

Population projections through 2020 are consistent with Richfield's 2008 – 2018 Comprehensive Plan.

PLAN SUBMITTAL AND REVIEW OF THE PLAN

The plan will be reviewed by the Council according to the sequence outlined in Minnesota Statutes 473.175. **Prior to submittal to the Council, the plan must be submitted to adjacent governmental units for a 60-day review period.** Following submittal, the Council determines if the plan is complete for review within 15 days. If incomplete, the Council will notify the community and request the necessary information. When complete the Council will complete its review within 60 days or a mutually agreed upon extension. The community officially adopts the plan after the Council provides its comments.

Plans can be submitted electronically to the Council; however, the review process will not begin until the Council receives a paper copy of the materials. Electronic submissions can be via a CD, 3 ½" floppy disk or to the email address below. Metropolitan communities should submit their plans to:

Reviews Coordinator
Metropolitan Council
390 Robert St,
St. Paul, MN 55101

electronically to:
watersupply@metc.state.mn.us

Attachment 1 – Well Data

RICHFIELD WELLHOUSE # 1
Well Unique Number – 206353

HISTORY: Located in Nicollet Park at 6301 Nicollet Ave S, Well #1 was developed in 1961. Keys Well Drilling Company completed Work. This well is at a depth of 437.0 feet, casing depth 345 feet, diameter of casing 16 in. an average pumping capacity is at 2,000 gallons per minute. Ground water source is the Jordan Aquifer.

WELL WATER CHARACTERISTICS:

pH	- 8.0
Total Hardness	-317
TDS	-375

WELLHOUSE DIMENSIONS: 14' X 24'

EQUIPMENT: 125 hp. 480 V. 3 phase invert duty US Motor
SCADA communication / intrusion alarmed
Drexelbrook level monitoring

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
2002	Keys Well Drilling	Emergency repair to motor- Repair, rewind motor
2003	Keys Well Drilling	7-Year preventive maintenance/ Replaced all column pipe, bowl bearings, impeller wear rings, packing bearing & packing, ss head shaft, ss bowl shaft, spider bearings Added Drexelbrook monitor
2004	SyCom & Wild River Elec.	Upgrade to controls, electrical components
3/2005	Keys Well Drilling Well hours on main 23999 hours on starter 2149	Well collapsed to 348' bailed to 403' repair to pump replaced SS impeller shaft, bronze bowl bearing, bronze impeller wear rings, 1 column pipe10" x5', rubber line shaft bearings, packing box & bearing, SS head shaft, SS head shaft, 13 SS column shaft,170'of 1"pvc probe tube. Motor repair replaced both bearings machined housing & balanced
2005	Mid America Meters	Replaced with new 8" water specialties meter. Gallons on old 724607
July 2006	Mooney & Associates	Milliken CCNE check valve air cushioned
Aug. 2006	Traut Wells	Rewound motor to high E. inverter duty replaced upper and lower bearings. By Lewis Motor

May 07	Traut Wells	Pulled and reinstalled well. Installed new pump 12WCA-3SSTGE J-Line,1 11/16 head shaft, 17 rubber spider inserts, 1 ¼ sound tube. Rebuild packing box rolled all line shafts. 170' of column pipe, 5' of pump, 10'of tail pipe
8/22/08	Daslin	Roof and sheet metal, PRV rooftop unit vent
August 08	William Young	Rosemount Magnetic meter Model #875PSA080C1WONO Serial #870153767 old meter reading 010974

RICHFIELD WELLHOUSE # 2
Well Unique Number – 206354

HISTORY: Located in Nicollet Park at 6251 Nicollet Ave. S. was developed in 1961. Work was completed by Keys Well Drilling Co. The well depth of 437.0, casing depth 345 feet, casing diameter 16 in. feet an average pumping capacity is 2,000 gpm. However of its proximity to well #1 pumping capacity should not exceed 1,5400gpm. Ground water source is the Jordan Aquifer.

WELL WATER CHARACTERISTICS: pH -8.1
Total Hardness -314
TDS -341

WELLHOUSE DIMENSIONS: 22' x 36' Equipped with a 435 hp, 414 Amp, 275 KW generator which is capable of running wells 1 &2. 500 gallon of diesel fuel storage.

EQUIPMENT:125 hp. 460v 3 phase US motor High efficiency, Allen Bradley VFD, SCADA communication / intrusion alarmed, Air Conditioned

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
1989	E. H. Renner	Redeveloped well to pump 2000 gpm at 180 tph new pump bowls column pipe & shaft. State plan # 90946
1999	Keys Well Drilling	Pull motor replace head shaft, packing box & packing
2002	Keys Well Drilling	Adjust pump & Run
2003	SyCom & Wild River	Extensive upgrades to electrical controls & switch gear in gen. shed
2004	Mid America meter	Cleaned, calibrated flow, replaced meter head old reading 229078 new 0
2005	Keys Well Drilling 128025 gallons 4229.0 hours	7 year maintenance replaced SS impeller shaft, Bz bowl bearings, tail pipe, column pipe T&C Sch 40,SS head shaft, 416 SS line shaft line shaft bearings, packing box & bearing,125 hp high E motor, 1" pvc tubing, Drexelbrook
2006	Total Controls	Allen Bradley powerfelx 700 VFD
2006	Midland heating & AC	Samsong AC unit model as24a2rc
2006	Keys &Electrical mechanical Services	Pull motor replace thrust bearing & bottom bearing shaft current

RICHFIELD WELLHOUSE # 3
Well Unique Number – 206361

HISTORY:
Located behind the Water Plant at 6221 Portland Ave. S. Well #3 was developed in 1963. Keys Well Drilling Company completed the work. The well depth is 425', casing depth 226' casing diameter 16 in., an average pumping capacity is 2000 gpm. Ground water source is the Prairie du Chien and Jordan Aquifers

WELL WATER CHARACTERISTICS: pH -8.0
Total Hardness -340
TDS -406

WELLHOUSE DIMENSIONS: : 14' X 24'
There is a 1850 H.P. 1250 KW, 1880 Amperage Generator capable of running wells 3&7, the main water plant plus the sludge dewatering building.

EQUIPMENT: 125 h.p. 460v 3 phase US motor high efficiency. Allen Bradley Power Flex VFD.SCADA communication, KPSI Level and pressure Transducer

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
2000	Keys Well Drilling 29638 gallons 6786 hours	7-year maintenance. Replaced 170' of column pipe, 170' of SS column shaft, rubber line shaft bearings, packing bowl bearing & packing. Rebuild bowl assembly. S.S. impeller taper locks, 17 bronze spiders, 1" PVC. Probe tube
2005	Mid America	Replace flow meter Water Specialties 10" old reading 85313
2005	Keys Well Drilling	Replace electric motor125 hp. 460 Volt High E Invert duty motor
2005	Keys Well Drilling	Install Drexelbrook level monitor
2006	Plant & Flange	3" Air & vacuum valve
2006	Northern water works	Test water meter at 1892 GPM at 100.7% +/_
2008	William Young	Rosemount Magnetic meter Model # 8750PSA100C1WONO Serial # 870153769 Old meter reading 749780
July 2008	Total Control	Installed Allen Bradley Power Flex 700, KPSI 320 Level and Pressure Transducer for water level, and a new control cabinet.

RICHFIELD WELLHOUSE # 4
Well Unique Number – 206276

HISTORY: Located in Veterans Park, 6401 Oakland Ave. Well 4 was developed in 1962. Layne Well Drilling completed the work. The well depth is 405 feet, casing depth 208 feet, casing diameter 16 in. an average pumping capacity is 2,000 GPM. The Ground water source is the Prairie du Chien and Jordan Aquifers.

WELL WATER CHARACTERISTICS: pH - 8.2
Total Hardness -409
TDS -472

WELLHOUSE DIMENSIONS: 14' X 24'

EQUIPMENT: 125 hp. GE. Motor not VFD compatible. Drexelbrook monitor, SCADA communication/ intrusion alarmed.

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
May 24 1985	E. H. Renner & Son	10" column pipe, shaft, spider rubber bearings,12FKH 4-Stage PEABODY FLOWAY
July 10 1991	Keys Well Drilling	170' of 10"column pipe, 170' of C-1045 shaft and spiders, head shaft sleeve and bearings
December 2002	Keys Well Drilling 195944gallons 15899 hrs	Replace packing bearing, head shaft & sleeve, column pipe, line shaft 416ss, line shaft bearings, 10" suction pipe, bowl assembly(Gould 14RHMC/3) Install 1" PVC tubing
January 28 2003	Keys Well Drilling	Install Drexelbrook check well D8 Level Monitor
April 2005	Wild River Electric	Extensive upgrades to electrical & controls
May 2008	William Young Co.	Install new 10 IN. Rose mount Mag. Meter Model # 8705PAS100C1WONO Serial #8705153770 old meter reading 610018

RICHFIELD WELLHOUSE # 5
Well Unique Number – 206280

HISTORY: Located at 6500 Columbus Ave. S., Well #5 was developed in 1963. Tri-State Drilling Co. completed the work. Well depth is 408 feet, casing depth 225 feet, casing diameter 16 in an average pumping is 2,000gpm.
Ground water source is the Prairie du Chien and Jordan Aquifers.

WELL WATER CHARACTERISTICS: pH - 8.1
Total Hardness- 350
TDS - 412

WELLHOUSE DIMENSIONS: 29' X 24'

EQUIPMENT: 125 h. p. Emerso motor, Allen Bradley, Power Flex 700.
SCADA communications, KPSI Level and Transducer, intrusion alarmed.
Equipped with a 685 H.P. 450 kW 677 Amp. Generator which is capable of running Wells #4, 5, and 6. 500 gallons diesel fuel tank.

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
3/1999	Keys Well Drilling 736807 gallons 3469.1 Hours	Pull pump, check depth, and reinstall pump. Replace 170LF of 10" column pipe, 170 LF stainless steel shaft and couplings, stainless steel head shaft, 10' of tailpipe, stuffing box bearing and packing. 160' of 1" PVC pipe
3/1999	RCV Video Inspection	Video of the well
5/2001	E. H. Renner & Son	Remove motor and repaired
11/2002	Keys Well Drilling	Remove repair reinstall 125 hp. motor
5/2006	Wild River Electric/ SyCom	Extensive up grades to electrical controls
May 2008	William Young Co.	Installed Rosemount 10 in. Mag. Meter Model #8405PSA100C1WONO Serial # 870153768 Old meter reading 361164
Feb 2008	Traut Wells	Pull pump, brushed casing, televised well, replaced discharge head bearing, SS head shaft, 10"X10' suction pipe, 5-SS shaft couplings, replaced rubber bearings, SS bowl shaft, set of bowl bearings, paint discharge, suction pipe, replace electric motor, motor grounding kit brushed casing, video the well

July 2008	Total Control	Installed Allen Bradley Power Flex 700 VFD, Allen Bradley PLC, KPSI 320 Level and Pressure Transducer for water level

RICHFIELD WELLHOUSE # 6
Well Unique Number – 206279

HISTORY: Located at 1000 East 66 St. in Vets Park, Well #6 was developed in 1969. Keys Well Drilling completed the work. Well depth is 415 feet, casing depth 335 feet, casing diameter 16 in. an average pumping capacity is 2000 GPM. Prairie du Chien and Jordan aquifers are the ground water source.

WELL WATER CHARACTERISTICS: pH - 7.6
Total Hardness - 370
TDS -418

WELLHOUSE DIMENSIONS: 14' X 24'

EQUIPMENT: 125 h.p. US Motor-Not VFD compatible
Drexelbrook level monitor
SCADA communications/ intrusion alarmed

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
May 1987	E. H. Renner & Son	Replace 170'of 10" column and column shaft Spon sleeves, bearings and retainers, tailpipe, bronze bearing in stuffing box, new National pump M14xhc-2 stage
April 2004	Keys Well Drilling Company 427793 gallons 15518 hours Cannon Electric Motor	Pulled and replaced 4 bowl bearings, 2 impeller wear rings, 11 10"X10' column pipe, 2 10"X10' column pipe, 15 line shaft bearings, 1 head shaft, packing box bearing & packing, bowl shaft, Installed Drexelbrook WL Indicator, 150' 1" PVC Motor repair replaced top & lower bearings Cleaned & tested
Nov. 2004	Mid America Meters	Clean, calibrated flow meter
Feb. 2005	Mid America Meter	Replace meter register old reading 627019
April 2005	Wild River/SyCom	Extensive electrical & controls update
Aug. 2006	Northern Water Works	Tested meter at 1201GPM was 165.87% accurate
Oct. 2006	Northern Water Works	Installed Marsh McBirney Multi-Mag Model 285

RICHFIELD WELLHOUSE #7
Well Unique Number – 133362

HISTORY: Located at the Richfield Water Plant, Well #7 was developed in 1977. Renner Well Drilling completed the work. Well depth is 1066.0', casing depth is631' casing diameter is 16". Average pumping is 1500gpm, however with multiple collapse of the well pumping is 1200 gpm. Ground water source is Ironton Galesville and Mount Simon Aquifers.

WELL WATER CHARACTERISTICS:

pH	- 8.1
Total Hardness	- 304
TDS	- 304

WELLHOUSE DIMENSIONS: 16' x 20'

EQUIPMENT: 150 hp. US motor, Allen Bradley Power Flex 700. SCADA communications, KPSI Level and Pressure Transducer. Intrusion alarmed.

Preventative maintenance completed by plant mechanic
Weekly well checks performed by water distribution

DATE	COMPANY	WORK COMPLETED
1991	Keys Well Drilling	Rehabilitation and Repair. Remove of sandstone Televise the well. Intent to develop the well for 1500 gpm sand free.
August 2001	E.H. Renner &Sons	Remove, inspect, repair, an install. Replaced packing, packing box bushing, 6-wear rings bronze bearing, turbine oil. $3670 electric motor repairs.
September 2001	Keys Well Drilling	Pull motor, base, &reinstall. Replace base with a used TF 1018 Layne base
February 2005	Keys Well Drilling	Replace bent head shaft and ratchet plate. Shaft bent during building construction.
January 2005	Keys Well Drilling	Replace piping for well, check valve, air release valve, pipe saddles and 10" piping.
July 2005	Keys Well Drilling	Replace motor with a 150 hp US Premium efficiency inverter duty.
February 2006	Mid America meter	Replace meter with a 10" water specialties meter.
July 2006	Trout Wells	Install 10" flex coupling
January 2007	Traut Wells	Pull motor, check head shaft, and align discharge pipe.

February 2007	Lewis Motor Repair Inc.	Balance well motor on site
February 2007	Traut Wells	Pull motor have rebuilt and balanced by Lewis motors
June 2008	Total Control Systems	Build and install new control cabinet, plus install Allen Bradley Power Flex 700 VFD
August 2008	William Young Co.	Rosemount magnetic flow meter model 870PSA100C1WONO

Attachment 2 – Resource Sustainability

	MONTH/YEAR_September 21, 2006_____				
WELL #	**STATIC LEVEL**	**PUMP LEVEL**	**DRAW DOWN LEVEL**	**VIBRATION**	**AMPERAGE**
1	56ft.				
	Down	For	repairs		
2	56 ft.	92 ft	36 ft.	1. 7.4 mm	B-123
				2. 2.0 mm	O-124
			At 55HZ		Y-125
3	69 ft.	110 ft.	41 ft.	1. 2.9mm	B-126.5
				2. 1.6mm	Y-133.9
					O-130.5
4	67 ft.	84 ft.	17 ft.	1. 1.5 mm	B-124.6
				2. 2.2mm	O-130.6
					Y-127.4
5	64 ft.	84 ft.	28 ft.	1. 5.0-5.8mm	B-131.2
				2. 3.5-4.0mm	O-126.9
					Y-134.2
6	75 ft.	115 ft.	40 ft.	1. 2.8mm	B-142
				2. 4.0-5.3mm	O-139
					Y-137
7	255 ft.	336 ft.	81 ft.	1. 2.5-4.1mm	B-157.4
				2. 2.8-4.2mm	O-141.5
					Y-159

MONTH_Oct.
2006_____

WELL #	STATIC LEVEL	PUMP LEVEL	DRAW DOWN LEVEL	VIBRATION	AMPERAGE	GPM
1	59 ft.	105 ft.	46 ft.	1. 2.8m 2. 12.1	Y. 118.8 O. 128.7 B. 127.1	2000
2	59	92 ft.	33 ft.	1. 3.2m 2. 2.8m	B. 123 O.122 Y. 125	1900
3	69 ft.	110 ft.	41 ft.	1. 2.5m 2. 1.4m	O 127.7 Y 133.7 B 123.7	1900
4	65 ft.	87 ft.	22 ft.	1. 1.8m 2. 2.3m	Y. 125.7 O.129.8 B. 125.6	1200
5	61 ft.					
6	68 ft.	114 ft.	46 ft	1. 2.7m 2. 4.4	Y. 138.9 O. 142.2 B. 140.1	
7	245 ft.					

	MONTH___	Nov. 2006				
WELL #	STATIC LEVEL	PUMP LEVEL	DRAWDOWN LEVEL	VIBRATION	AMPERAGE	GPM
1	54 ft.	101 ft.	47 ft.	1. 4.7 mm	Y. 128.7	2100
				2. 5.3 mm	O. 129.8	
					B. 129.8	
2	72 ft,	down for repairs				
3	64 ft.	107 ft.	43 ft.	1. 1.5 mm	O. 126.7	1900
				2. 2.8 mm	Y. 133.4	
					B. 125.4	
4	60 ft.	83 ft.	23 ft.	1. 1.8 mm	Y. 126.8	1200
				2. 2.1 mm	O 130.7	
					B. 125.6	
5	56 ft.	90 ft.	34 ft.	1. 5.9 mm	O. 126.1	1950
				2. 3.5 mm	B. 128.6	
					Y131	
6	65 ft.	111 ft.	46 ft.	1. 3.3 mm	O. 140.5	1900
				2. 4.0	B. 137.7	
					Y. 137.4	
7	237 ft.	326 ft.	89 ft.	1. 2.9-4.1 mm	B. 160.7	1200
				2. 2.7-4.9 mm	O. 171.2	
					Y. 163.3	

	MONTH/YEAR_JANUARY 2007					
WELL #	**STATIC LEVEL**	**PUMP LEVEL**	**DRAW DOWN LEVEL**	**VIBRATION**	**AMPERAGE**	**GPM**
1	55 FT.	99 FT.	44 FT.	1. 4.9 mm	Y. 129.5	2100
				2. 15.7 mm	O. 131.0	
					B. 127.3	
2	50 FT.	90 FT.	40 FT.	1.1.3mm	B. 135.	2250
				2.1.7mm	O. 135.7	
					Y. 137.7	
3	64 FT.	105 FT.	41 FT.	1. 2.6mm	O. 126	1960
				2. 1.7mm	B. 130	
					Y. 132	
4	64 FT.	81 FT.	17 FT.	1. 2.1 mm	B. 126.2	1200
				2. 1.9mm	O. 130.3	
					Y. 127.4	
5	60 FT.	87 FT.	27 FT.	1. 6.0 mm	O. 125	1900
				2. 3.0 mm	B. 128.7	
					Y. 131.3	
6	66 FT.	108 FT.	42 FT.	1. 4.0mm	O. 139	1450-
				2. 5.0mm	B.143	2600
					Y. 138	
7	225 FT.	307 FT.	82 FT.	1. 4.6mm	Y. 163.1	1450
				2. 4.8 mm	O. 168.9	
					B. 161.0	

MONTH March			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	Well 2 on 74	103	53	1. 8.6m	2000	125.5 Y
	Well 2 off 50			2. 21.2m		129.5 O
				B1.3.4m		126.6 B
				B2. 9.1m		
2				1. 1.5m		
	Well 1 off 50	91 Feet	41 Feet	2. 1.7m	2250	135 B
				B1. .8m		136.9 O
				B2. .9m		137.4 Y
3	64 Feet	105 Feet	41 Feet	1. 3.1m	1950	129 O
				2. 2.3m		133 Y
				B1. .9m		127 B
				B2. .9m		
4	59 Feet	85 Feet	26 Feet	1. 1.4m	1200	125.0 B
				2. 2.3m		131.1 O
				B1. .6m		126.2Y
				B2. .8		
						125 O
5	54 Feet	91 Feet	37 Feet	1. 4.0m	1900	128.2 Y
				2. 2.9m		132.7 B
				B1. 1.5m		
				B2. 1.5		
6	65 Feet	109 Feet	44 Feet	1. 4.0m	2247	139.6 O
.				2. 4.2m		144.0 B
				B1. 2m		136.4 Y
				B2. 1.5m		
7	221 Feet	312 Feet	91 Feet	1. 4.4m	1450	165.8Y
				2. 3.7m		175.8O
				1B 1.3m		164.7B
				2B 1.2		

MONTH April			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	Pump	Pulled	For repairs			
2	50'	89'	39'	1. 1.4mm	2250	B. 135.6
	Tighten	packing		2. 1.7mm		O. 136.7
				1B. 07mm		Y. 134.2
				2B. .8mm		
3	65'	106'	41'	1. 2.7mm	1980	O. 129.7
				2. 1.6mm		B. 127.7
				1B. 1.8mm		Y. 134.4
				2B. 1.3mm		
4	60'	81;	21'	1. 1.6mm	1250	Y 127.8
				2. 1.1mm		O 128.7
				1B. .8mm		B 128.5
				2B. .8mm		
5	55'	89'	34'	1. 5.4mm	1900	O. 127.5
				2. 3.9mm		B. 131.2
				1B. 1.9mm		Y. 135.1
				2B. 1.9mm		
6	66'	110'	44'	1. 3.0mm	2155	O 144.0
				2. 3.8mm		Y 141.0
				1B. 1.1mm		B 130.4
				2B. 1.2mm		
7	205'	312'	107'	1. 3.8mm	1480	Y 164.7
	Tighten	packing		2. 4.0mm		O 173.1
				1B 1.2mm		B 165.6
				2B 1.2mm		

MONTH May			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	58'	106'	48'	1. 4.6m	2000	B. 125.6
				2. 5.4m		O. 126.5
				1B 2.5m		Y. 123.5
				2B 2.3m		
2	59'	93'	34'	1. 1.6m	2200	B. 136.5
	Tighten	Packing	1 turn	2. 1.7m		O. 136.8
				1B .7m		Y. 138.9
				2B .8m		
3	71'	108'	37'	1. 2.8m	1900	B 126.7
				2. 1.7m		O 129.8
				1B .8m		Y 132.3
				2B .7m		
4	68'	86'	18'	1. 1.9m	1200	B 126.5
				2. 2.1m		O130.1
				1B .8m		Y 125.5
				2B .7m		
5	63'	95'	32'	1. 5.1m	1900	B 131.9
				2. 2.9m		O 130.8
				1B 1.6m		Y 129.1
				2B 1.2m		
6	71'	112'	41'	1. 3.8m	2300	B 143.1
				2. 4.7m		O 140.3
				1B 1.2m		Y136.5
				2B 1.2m,		
7	226'	309'	83'	1. 3.6m	1450	B 161.2
				2. 4.2m		O 171.1
				1B 1.2m		Y 155.7
				2B 1.1m		

MONTH June			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	75'	102'	27'	1. 4.7mm	2000	B. 123.6
				2. 5.9mm		O. 123.1
				1B 2.8m		Y. 124.6
				2B 2.2m		
2	74'	95'	21'	1. 1.5mm	2200	B. 136.5
	Tighten	Packing 3./4	Turn	2. 1.6mm		O. 137.9
				B1 .6mm		Y 138.9
				B2 .8mm		
3	65'	116'	51'	1. 2.9mm	1800	B 125.5
				2. 1.5mm		O 126.9
				1B .8mm		Y 130.1
				2B .8mm		
4	69'	90'	21'	1. 1.8mm	1200	B 123.1
				2. 2.1mm		O 128.9
				1B .5mm		Y 125.3
				2B .7mm		
5	59'	97'	38'	1. 2.3mm	1900	B 133.2
				2. 4.6mm		O 131.4
				1B 1.3mm		Y 132.5
				2B 1.6mm		
6	66'	115'	49'	1 3.4mm	2000	B 142.6
				2 5.4mm		O 139.7
				1B 1.5mm		Y 135.6
				2b 1.7mm		
7	226'	310'	84'	1 3.6mm	1475	B 161.6
				2 4.1mm		O 148.5
				B1 1.6mm		Y 131.4
				B2 1.4mm		

MONTH July			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	87"	110"	23"	1. 6.1mm	2000	B. 120.8
				2. 7.0mm		O. 124.3
				1B. 2.7mm		Y. 121.7
				2B 2.9mm		
Total	**Pump**	**Depth**	**170' column**	**5'pump**	**10' Tail**	**Pipe**
2	81"	103"	22"	1. 1.5mm	2150	B. 137.5
Tighten	Packing	¾ turn		2. 1.4mm		O. 137.9
				1B. .7mm		Y. 140.4
				2B. .6mm		
Total	**Pump**	**Depth**	**170'column**	**5' pump**	**10' tail**	**pipe**
3	83"	114"	31"	1. 2.7mm	1900	B. 125.9
				2. 1.6mm		O. 126.3
				1B. .8mm		Y. 132.5
				2B. .6mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
4	80"	95"	15"	1. 1.6mm	1100	B.130.2
				2. 2.4mm		O. 129.2
				1B. .7mm		Y. 134.4
				2B. .9mm		
Total	**Pump**	**Depth**	**180' column**	**5' pump**	**10' tail**	**pipe**
5	84"	100"	16"	1. 4.6mm	1900	B. 130.2
				2. 2.7mm		O. 127.7
				1B. 1.5mm		Y. 134.4
				2B. 1.3mm		
Total	**Pump**	**Depth**	**190'column**	**5' pump**	**10' tail**	**pipe**
6	81"	124"	43"	1. 2.9mm	2450	B. 145.0
				2. 4.9mm		O. 141.6
				1B. 1.2mm		Y. 139.6
				2B. 1.5mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
7	249"	330"	81"	1. 4.9mm	1350	B. 164.5
				2. 4.8mm		O. 173.4
				1B. 1.2mm		Y. 165.3
				2B. 1.1mm		
Total	**Pump**	**Depth**	**350' column**	**5'pump**	**10' tail**	**pipe**

MONTH AUGUST			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	66"	105"	39"	1. 6.6mm	2000	B 123.6
				2 5.9mm		O 122.3
				1B 2.6		Y 126.2
				2B 2.5		
Total	**Pump**	**Depth**	**170' column**	**5'pump**	**10' Tail**	**Pipe**
2	65"	96"	31"	1. 1.6mm	2200	B 136.7
				2. 1.8mm		O 136.7
				1B 1.0mm		Y 138.9
				2B .9mm		
Total	**Pump**	**Depth**	**170'column**	**5' pump**	**10' tail**	**pipe**
3	72"	114"	42"	1 2.7mm	1850	B 129.9
				2 2.7mm		O 128.9
				1B .7mm		Y 131.1
				2B .8mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
4	75"	95"	20"	1 1.5mm	1200	B 124.6
				2 1.7mm		O 124.3
				1B 1.3mm		Y 126.1
				2B 1.1		
Total	**Pump**	**Depth**	**180' column**	**5' pump**	**10' tail**	**pipe**
5	78"	93"	23"	1 5.1mm	1900	B 128.5
				2 3.4mm		O 127.2
				1B 1.8mm		Y 131.7
				2B 1.7mm		
Total	**Pump**	**Depth**	**190'column**	**5' pump**	**10' tail**	**pipe**
6	77"	120"	43"	1 3.9mm	2600	B 142.1
				2 5.1mm		O 144.4
				1B 1.6mm		Y 142.1
				2B 1.6mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
7	245"	340"	95"	1 4.2mm	1300	B 166.9
				2 4.5mm		O 169.8
				1B 1.8mm		Y 167.5
				2B1.7mm		
Total	**Pump**	**Depth**	**350' column**	**5'pump**	**10' tail**	**pipe**

MONTH September			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	63"	105"	42"	1. 6.4mm	2000	B. 122.2
				2. 6.0mm		O. 122.5
				1B 2.6mm		Y. 125.0
				2B 2.4mm		
Total	**Pump**	**Depth**	**170' column**	**5'pump**	**10' Tail**	**Pipe**
2	63"	95"	32"	1. 1.4mm	2200	B. 136.8
				2. 2.0mm		O. 137.1
				1B .7mm		Y. 138.1
				2B .9mm		
Total	**Pump**	**Depth**	**170'column**	**5' pump**	**10' tail**	**pipe**
3	73"	112"	39"	1. 2.6mm	1850	B 128.9
				2. 1.7mm		O 129.4
				1B .8mm		Y 130.5
				2B .6mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
4	68"	93"	26"	1. 5.5mm	1200	B 126.6
				2. 1.9mm		O125.1
				1B 3.0mm		Y128.7
				2B 1.5mm		
Total	**Pump**	**Depth**	**180' column**	**5' pump**	**10' tail**	**pipe**
5	67"	93"	26"	1. 5.5mm	1900	B 131.9
				2. 2.9mm		O 128.8
				1B 3.0mm		Y131.2
				2B 1.5mm		
Total	**Pump**	**Depth**	**190'column**	**5' pump**	**10' tail**	**pipe**
6	70"	111"	41"	1. 4.8mm	2550	B 140.5
				2. 5.5mm		O 143.2
				1B 1.6mm		Y 140.5
				2B 1.4mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
7	260"	334"	74"	1. 4.3mm	1350	B 168.1
				2. 4.4mm		O 169.6
				1B 1.7mm		Y 170.3
				2B 1.1mm		
Total	**Pump**	**Depth**	**350' column**	**5'pump**	**10' tail**	**pipe**

MONTH October			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	62"	104"	42"	1. 5.9mm	2000	B 124.3
				2. 5.7mm		O123.6
				1B 2.7mm		Y126.4
				2B 2.5mm		
Total	**Pump**	**Depth**	**170' column**	**5'pump**	**10' Tail**	**Pipe**
2	60"	93"	33"	1 1.5mm	2200	B 135.5
				2 1.9mm		O 137.7
				1B .6mm		Y 138.5
				2B .8mm		
Total	**Pump**	**Depth**	**170'column**	**5' pump**	**10' tail**	**pipe**
3	65"	109"	44"	1 1.5mm	1875	B 126.4
				2 .8mm		O 127.8
				1B 1.5mm		Y 131.8
				2B .8mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
4	70"	87"	17"	1 1.8mm	1200	B 125.7
				2 2.2mm		O 126.3
				1B .6mm		Y 128.3
				2B .8mm		
Total	**Pump**	**Depth**	**180' column**	**5' pump**	**10' tail**	**pipe**
5	64"	90"	26"	1 6.0mm	1950	B 127.9
				2 3.7mm		O 130.9
				1B 1.9mm		Y 133
				2B 1.6mm		
Total	**Pump**	**Depth**	**190'column**	**5' pump**	**10' tail**	**pipe**
6	71"	111"	40"	1 5.0mm	2600	B 142.2
				2 5.1mm		O 144.1
				1B 1.4mm		Y 141.3
				2B 1.7mm		
Total	**Pump**	**Depth**	**170' column**	**5' pump**	**10' tail**	**pipe**
7	245"	328"	83"	1 3.9mm	1350	B 164.9
				2 1.9mm		O 167.5
				1B 4.6mm		Y 151.9
				2B 1.8mm		
Total	**Pump**	**Depth**	**350' column**	**5'pump**	**10' tail**	**pipe**

MONTH November			YEAR 2007			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	55'	100'	45'	1. 6.9mm	2050	B. 123.7
				2. 4.9mm		O. 124.9
				1B. 2.6mm		Y. 125.7
				2B. 1.9mm		
Cavitates	**at**	**165'**				
2	65'	94'	29'	1. 1.4 mm	2250	B. 137.0
				2. 1.8mm		O. 139.2
				1B .7mm		Y.139.0
				2B1.2mm		
Cavitates	**at**	**165'**	**170'column**			
3	65'	105'	40'	1. 2.7mm	1950	B. 129.1
				2. 1.7mm		O. 131.5
				1B .9mm		Y. 130.9
				2B .9mm		
Cavitates	**at**	**165'**				
4	65'	81'	16'	1. 1.9mm	1250	B. 129.2
				2. 1.9mm		O. 128.0
				1B .8mm		Y. 128.9
				2B .8mm		
Cavitates	**at**	**175'**				
5	60'	89'	29'	1. 6.8mm	2000	B. 127.7
				2. 3.8mm		O. 130.0
				1B 1.9mm		Y. 131.8
				2B 1.4mm		
Cavitates	**at**	**185'**				
6	67'	109'	42'	1. 5.5mm	2200	B.142.4
				2. 4.8mm		O.143.7
				1B 1.8mm		Y.141.8
				2B 1.3mm		
Cavitates	**at**	**165'**				
7	234"	315'	81'	1. 3.8mm	1450	B. 168.7
				2. 4.5mm		O. 172.1
				1B 1.6mm		Y. 171.3
				2B 1.5mm		
Cavitates	**at**	**345'**				

MONTH JULY			YEAR 2008			
WELL #	**STATIC**	**PUMPING**	**DRAWDOWN**	**VIBRATION**	**GPM**	**AMPS**
1	60'	110'	50'	1.6.3mm	2050	B.123.3
				2.12.2mm		O.125.3
				1B.2.6mm		Y.127.5
				2B.5.2mm		
Cavitates	**at**	**165'**				
2	77'	104'	29'	1.1.2mm	2200	B.138.7
VFD	Set point			2.1.3mm		O.139.2
Well 1	running			1B.0.9mm		Y.139.3
				2B.0.8mm		
Cavitates	**at**	**165'**				
3	70'	120'	50'	1.2.1mm	1924	B.127.9
VFD	Set point			2.1.8mm		O.137.2
				1B.0.7mm		Y.133.9
				2B.0.7mm		
Cavitates	**at**	**165'**				
4	75'			1.		B.
				2.		O.
				1B.		Y.
				2B.		
Cavitates	**at**	**175'**				
5	70'	101'	31'	1.2.8mm	2010	B.120.9
VFD	Set point	56.06		2.5.2mm		O.121.0
New start	up	Pump,	motor	1B.1.1mm		Y.124.0
	controls			2B.1.2mm		
Cavitates	**at**	**185'**				
6	77'	116'	39'	1.5.2mm	1920	B.148
				2.4.1mm		O.146.1
				1B.2.0mm		Y.142.3
				2B.1.4mm		
Cavitates	**at**	**165'**				
7	242'	298'	56'	1.3.9mm	1150	B.127.3
VFD	Set point	93.0 Hz		2.5.0mm		O.132
				1B.1.6mm		Y.130
				2B.1.2mm		
Cavitates	**at**	**345'**				

Date	Well\Well03\Flowrate	Well\Well03\Level	Well\Well05\Flowrate	Well\Well05\Level
10/10/2008 10:42	1	67.7	1	63.5
10/10/2008 10:32	1	67.7	1	63.5
10/10/2008 10:22	1	67.7	1	63.5
10/10/2008 10:12	1	67.7	1	63.5
10/10/2008 10:02	1	67.8	1	63.5
10/10/2008 9:52	1	67.8	1	63.5
10/10/2008 9:42	1	67.8	1	63.5
10/10/2008 9:32	1	67.8	1	63.5
10/10/2008 9:22	1	67.8	1	63.5
10/10/2008 9:12	1	67.8	1	63.5
10/10/2008 9:02	1	67.8	1	63.5
10/10/2008 8:52	1	67.8	1	63.5
10/10/2008 8:42	1	67.8	1	63.5
10/10/2008 8:32	1	67.9	1	63.5
10/10/2008 8:22	1	67.9	1	63.6
10/10/2008 8:12	1	67.9	1	63.6
10/10/2008 8:02	1	67.9	1	63.6
10/10/2008 7:52	1	67.9	1	63.6
10/10/2008 7:42	0	67.9	1	63.6
10/10/2008 7:32	1	67.9	1	63.6
10/10/2008 7:22	1	68	1	63.6
10/10/2008 7:12	1	68	1	63.6
10/10/2008 7:02	0	68	1	63.6
10/10/2008 6:52	0	68	1	63.6
10/10/2008 6:42	1	68	1	63.6
10/10/2008 6:32	1	68	1	63.7
10/10/2008 6:22	1	68.1	1	63.7
10/10/2008 6:12	1	68.1	1	63.7
10/10/2008 6:02	0	68.1	1	63.7
10/10/2008 5:52	1	68.1	1	63.7
10/10/2008 5:42	0	68.2	1	63.7
10/10/2008 5:32	0	68.2	1	63.7
10/10/2008 5:22	1	68.2	1	63.7
10/10/2008 5:12	1	68.3	1	63.8
10/10/2008 5:02	0	68.3	1	63.8
10/10/2008 4:52	1	68.3	1	63.8
10/10/2008 4:42	0	68.4	1	63.8
10/10/2008 4:32	0	68.4	1	63.8
10/10/2008 4:22	0	68.5	1	63.8
10/10/2008 4:12	1	68.5	1	63.9
10/10/2008 4:02	1	68.5	1	63.9
10/10/2008 3:52	0	68.6	1	63.9
10/10/2008 3:42	0	68.6	1	63.9
10/10/2008 3:32	1	68.7	1	64
10/10/2008 3:22	0	68.8	1	64
10/10/2008 3:12	0	68.8	1	64

10/10/2008 3:02	0	68.9	1	64
10/10/2008 2:52	0	69	1	64.1
10/10/2008 2:42	0	69.1	1	64.1
10/10/2008 2:32	0	69.2	1	64.2
10/10/2008 2:22	1	69.3	1	64.2
10/10/2008 2:12	0	69.4	0	64.2
10/10/2008 2:02	1	69.6	1	64.3
10/10/2008 1:52	1	69.7	1	64.3
10/10/2008 1:42	1	69.9	1	64.3
10/10/2008 1:32	0	70	1	64.3
10/10/2008 1:22	0	70.2	1	64.2
10/10/2008 1:12	0	70.1	1	64
10/10/2008 1:02	0	70	1	63.9
10/10/2008 0:52	0	69.8	1	63.6
10/10/2008 0:42	0	69.6	1	63.4
10/10/2008 0:32	0	69.4	1	63.2
10/10/2008 0:22	0	69.2	1	62.9
10/10/2008 0:12	0	69	1	62.6
10/10/2008 0:02	0	68.7	1	62.3
10/9/2008 23:52	0	68.5	1	61.9
10/9/2008 23:42	0	68.2	1	61.5
10/9/2008 23:32	0	67.9	1	61.1
10/9/2008 23:22	0	67.5	1	60.5
10/9/2008 23:12	0	67.1	1	59.8
10/9/2008 23:02	0	66.6	1	58.9
10/9/2008 22:52	0	66	1	57.1
10/9/2008 22:42	0	66	1	57
10/9/2008 22:32	0	66	1	57
10/9/2008 22:22	0	66	1	57
10/9/2008 22:12	0	66	1	57
10/9/2008 22:02	0	66	1	57
10/9/2008 21:52	0	66	1	57
10/9/2008 21:42	0	66	1	57
10/9/2008 21:32	0	66	1	57
10/9/2008 21:22	0	66	1	57.1
10/9/2008 21:12	0	66	1	57.1
10/9/2008 21:02	0	66	1	57.1
10/9/2008 20:52	0	66	1	57.1
10/9/2008 20:42	0	66	1	57.1
10/9/2008 20:32	0	66	1	57.1
10/9/2008 20:22	0	66	1	57.1
10/9/2008 20:12	0	66	1	57.1
10/9/2008 20:02	0	66	1	57.1
10/9/2008 19:52	0	66	1	57.1
10/9/2008 19:42	0	66	1	57.1
10/9/2008 19:32	0	66	1	57.1
10/9/2008 19:22	0	66	1	57.1

10/9/2008 19:12	0	66	1	57.1
10/9/2008 19:02	0	66	1	57.1
10/9/2008 18:52	0	66	1	57.1
10/9/2008 18:42	0	66	1	57.1
10/9/2008 18:32	0	66	1	57.1
10/9/2008 18:22	0	66	1	57.1
10/9/2008 18:12	0	66	1	57.1
10/9/2008 18:02	0	66	1	57.1
10/9/2008 17:52	1	66	1	57.1
10/9/2008 17:42	0	66.1	1	57.1
10/9/2008 17:32	0	66.1	1	57.1
10/9/2008 17:22	0	66.1	1	57.1
10/9/2008 17:12	0	66.1	1	57.1
10/9/2008 17:02	0	66.1	1	57.1
10/9/2008 16:52	0	66.1	1	57.1
10/9/2008 16:42	1	66.1	1	57.1
10/9/2008 16:32	1	66.1	1	57.1
10/9/2008 16:22	1	66.1	1	57.1
10/9/2008 16:12	1	66.1	1	57.1
10/9/2008 16:02	0	66.1	1	57.1
10/9/2008 15:52	1	66.1	1	57.1
10/9/2008 15:42	1	66.1	1	57.1
10/9/2008 15:32	0	66.1	1	57.1
10/9/2008 15:22	0	66.1	1	57.1
10/9/2008 15:12	0	66.1	1	57.2
10/9/2008 15:02	0	66.1	1	57.2
10/9/2008 14:52	0	66.1	1	57.2
10/9/2008 14:42	1	66.1	1	57.2
10/9/2008 14:32	1	66.1	1	57.2
10/9/2008 14:22	1	66.1	1	57.2
10/9/2008 14:12	1	66.1	1	57.2
10/9/2008 14:02	1	66.1	1	57.2
10/9/2008 13:52	0	66.1	1	57.2
10/9/2008 13:42	0	66.1	1	57.2
10/9/2008 13:32	0	66.1	1	57.2
10/9/2008 13:22	1	66.1	1	57.2
10/9/2008 13:12	1	66.1	1	57.2
10/9/2008 13:02	1	66.1	1	57.2
10/9/2008 12:52	1	66.1	1	57.2
10/9/2008 12:42	1	66.2	1	57.2
10/9/2008 12:32	1	66.2	1	57.2
10/9/2008 12:22	1	66.2	1	57.2
10/9/2008 12:12	1	66.2	1	57.2
10/9/2008 12:02	1	66.2	1	57.2
10/9/2008 11:52	1	66.2	1	57.2
10/9/2008 11:42	0	66.2	1	57.2
10/9/2008 11:32	1	66.2	1	57.2

10/9/2008 11:22	1	66.2	1	57.2
10/9/2008 11:12	1	66.2	1	57.2
10/9/2008 11:02	1	66.2	1	57.2
10/9/2008 10:52	1	66.2	1	57.2

Attachment 3 – CIP

2009 - 2012 CAPITAL IMPROVEMENT PLAN - CITY OF RICHFIELD, MINNESOTA

		Recommended and Scheduled for Four Year Period												Cost to	
	PROJECTS	TOTAL*												Complete	
		CIP COSTS		2009		2010		2011		2012				Beyond 2012	
	PUBLIC FACILITIES														
25	Replacement Central Garage Equipment	$ 2,844,390		$ 535,760	TL	$ 551,830	TL	$ 568,380	TL	$ 585,430	TL			$ 602,990	TL
26	Storm Water Pond Maint./Habitat Enhan.	$ 700,000		700,000	U	-	U	-		-				-	
27	Technology Replacement	$ 583,820		98,280	TL	128,620	TL	131,920	TL	100,000	TL			125,000	TL
28	Paint Penn Water Tower	$ 400,000		-		400,000	U	-		-				-	
29	Paint Logan Water Tower	$ 750,000		750,000	U	-		-	U	-				-	
	TOTAL PUBLIC FACILITIES	$ 5,278,210		$ 2,084,040		$ 1,080,450		$ 700,300		$ 685,430				$ 727,990	
	(TL) Tax Levy	$ 3,428,210		$ 634,040		$ 680,450		$ 700,300		$ 685,430				$ 727,990	
	(U) User Fees	$ 1,850,000		1,450,000		400,000		-		-				-	
	TOTAL FUNDING BY SOURCE	$ 5,278,210		$ 2,084,040		$ 1,080,450		$ 700,300		$ 685,430				$ 727,990	

Attachment 4 – Water Conservation Programs and Ordinances

Date MDY

Mailing Address Line 1
Mailing Address Line 2
Mailing Address Line 3
Mailing Address Line 4
Mailing Address Line 5
Mailing Address Line 6

Subject: Water Meter
Account Number: Account Number
Service Address: Service Address

Dear Resident:

The City of Richfield would first like to thank you for taking the time to get your water meter replaced with the new radio read water meter.

Water conservation is extremely important to everyone and this new meter comes with a "leak detection" feature. This water meter monitors water flow every 15 minutes and stores the data until we read your meter. Once your meter has been read we have the ability to print detailed reports, thus showing if a property has a possible leak.

You are receiving this letter because your address showed up on the most recent "leak" report. The report indicates that water has been flowing continuously through the meter on a 24-hour basis. Because continuous use of water is not typical for most properties, this suggests that you may have a leaky faucet or other fixture.

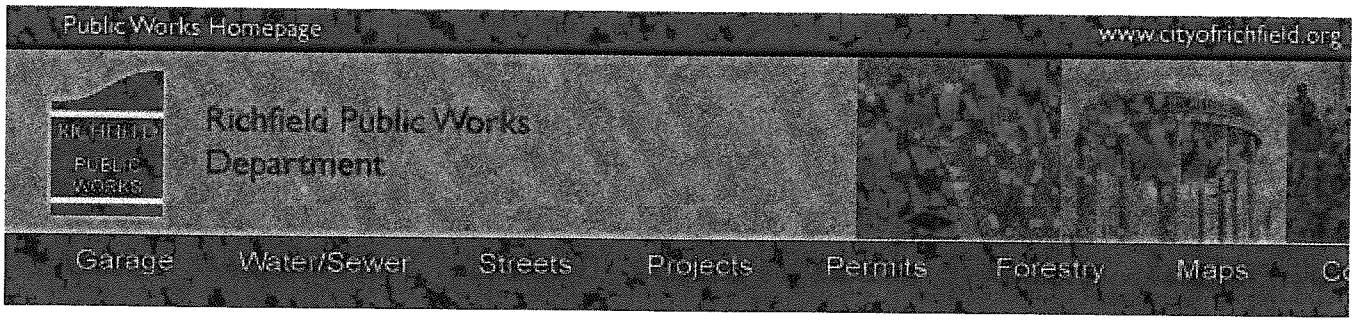
This letter is being sent as a courtesy. You are not required to take any action. However, if you are interested in conserving water and reducing your water bill, we suggest that you check your internal plumbing fixtures such as faucets, showerheads, and toilets for possible leaks.

If you cannot find any leaks and want assistance in determining whether there is a problem, you can call our utility department to schedule an appointment and our staff can come over to assist you.

If you have any questions, please call us at 612-861-9164 or 612-861-9165.

Sincerely,

City of Richfield – Public Works
Utility Billing Department



Utility Rates

WATER SERVICE RATES AND CHARGES FOR 2008

- Pursuant to the provisions of Section 7.15 of the Ordinance Code of the City of Richfield, the rates and charges for the City water and water services are hereby established to be those set forth in the following paragraphs of this resolution.
- Water charges shall be payable quarterly, and all bills issued after January 1, 2008 shall be at this rate-$2.23 per 1,000 gallons.
- These charges will cover, in some instances, water used during the months of October, November, and December 2007.

SPECIAL WATER SERVICE CHARGES FOR 2008

Pursuant to the provision of Section 7.15 of the Ordinance Code of the City of Richfield, the rates and charges for special customer services are hereby established to be those set forth in the following paragraphs of this resolution.

- The charge for establishing turning water on/off shall be $35.00 per task.
- The charge for establishing a new customer account shall be $13.50 per account.
- The charge for installation of meters or outside meter readers shall be $19.50 per installation.
- The charge to flush and maintain fire hydrants located on privately owned property within the City shall be $39.00 per hydrant per year plus any required parts.
- The charge to thaw and service water pipes on customer property shall be actual cost to the City plus thirty percent.
- The charges for any other services not covered by the above shall be based on actual hourly cost to the City plus thirty percent.

SANITARY SEWER SERVICE RATES AND CHARGES FOR 2008

- Pursuant to the provisions of Section 7.05 of the Ordinance Code of the City of Richfield, the rates and charges for use and service of the sanitary sewer system are hereby established to be those set forth in the following paragraphs of this resolution.
- Where the rate is not based upon the metered use of water, the following quarterly flat charges are established, effective January 1, 2008 for each billing district.

Residential per unit	$51.40
Commercial	
10 or less persons	$51.40
More than 10, less that 16	$93.70

710.29. Restricted hours for use of water supply. Whenever the council determines that a shortage of water supply threatens the city, it may, by resolution, limit the times and hours during which water may be used from the city water supply system for lawn and garden sprinkling, irrigation, car washing, air conditioning or other uses specified therein; a copy of said resolution shall thereupon be mailed to each water customer. Two days after the mailing of the resolution any water customer who causes or permits water to be used in violation of the provisions of said resolution shall be charged $5.00 for each day of a violation, which charge shall be added to his next water bill; continued violation is hereby prohibited and cause for discontinuance of water service.

710.31. Sources of contamination of public wells. Subdivision 1. 50 foot rule. The following possible sources of contamination may not be installed within 50 feet of any public well:

(a) building plumbing;

(b) building drains;

(c) septic tanks;

(d) storm sewers;

(e) sanitary sewers.

Subd. 2. 75 foot rule. The following possible sources of contamination may not be installed within 75 feet of a public well:

(a) cesspools;

(b) leaching pits;

(c) drain fields.

710.33. Private wells. Private wells may be maintained and continued in use after connection is made to the municipal water system, provided there is no means of cross-connection between the private well and municipal supply at any time. Hose bibbs, that will enable the cross-connection of the two systems will not be permitted on internal piping of the well supply system. The threads of the boiler drain of the well volume tank shall be removed or the boiler drain hose bibb replaced with a sink faucet. Outside hose bibbs may not be installed on the municipal system where dual water systems are in use.

710.35. Permitting use by others. No person may permit water from the municipal water system to be used for any purpose except upon his own premises except in emergency and then only if written permission is first obtained from the director of community services. Contractors or others desiring to obtain water from hydrants for construction purposes shall make applications to the director of community services for such service.

Keep This Portion For Your Records

ACCOUNT NUMBER	CUSTOMER NUMBER	BILLING PERIOD	TOTAL DUE	DUE DATE
[redacted]	[redacted]	10/01/2008 to 12/29/2008	$108.90	02/13/2009

SERVICE ADDRESS: [redacted]

METER READINGS

Meter #	Read Date	Prev. Read	Pres. Read	Usage
[redacted]	12/29/2008	89	108	19
		Total Water Consumption:		19
		Total Sewer Consumption:		19

Consumption Measured in THOUSANDS OF GALLONS

ACCOUNT SUMMARY

BILLING	96.74
PAYMENT - THANK YOU	96.74CR
BALANCE FORWARD:	**0.00**
SERVICE CHARGE	3.00
STATE TESTING FEE	1.59
WATER - RESIDENTIAL	44.46
SEWER	51.30
STORM DRAINAGE - RES	10.35
RECYCLING CREDIT	1.80CR
TOTAL CURRENT CHARGES:	**108.90**
TOTAL AMOUNT DUE:	**108.90**

A 6.5% PENALTY IS APPLIED IF PAYMENT IS NOT POSTMARKED ON OR BEFORE THE DUE DATE.

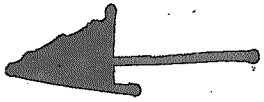
The City of Richfield snowplow ordinance is in effect whenever a snowfall exceeds 2". Streets will be plowed curb to curb and any vehicles parked on the street may be ticketed and towed until the streets are cleared.

MESSAGES

WATER TIPS! Winterize outdoor spigots when temperatures dip below freezing to prevent pipes from leaking or bursting.

Turn off the water while brushing your teeth to save 25 gallons a month!

Monitor your water bill for unusually high use. Your bill and water meter are tools that can help you discover leaks.



REMIT TO: **CITY OF RICHFIELD**
6700 PORTLAND AVE S
RICHFIELD, MN 55423-2599

For Further Information or Assistance, Contact: 612-861-9164

Wood Lake Nature Center

Wood lake Nature Center teaches a Water Cycle class to 3rd graders and a Soils Class to 5th graders. All of these students go to the Richfield Public Schools at RIS, Richfield Intermediate. The entire grade comes out, 2 classes at a time. In the Water Cycle Class the students learn all about the cycle and define ground water, storm water, surface water and how they relate. When the students break out into small groups they go to the stormwater model in the Wood Lake museum to learn about the watershed and the impact of stormwater on the marsh. They learn about 'bounce' and how it affects Wood Lake.

Then they go outdoors to visit two stormwater pipes as they come into Wood Lake. They trace the water cycle there as it applies to stormwater, learning the terms "run-off and impervious surface." Back in the building they learn how they can reduce the amount of stormwater which comes into Wood Lake by raking leaves and keeping drains free of litter.

The Soils Class teaches about water from the perspective of erosion. Students also visit stormwater pipes and learn how they carry water under the city from the watershed.

Every day throughout the year visitors learn about stormwater from the three exhibits installed with grants from Best Buy. These exhibits designed by Kidzibits are excellent interpretation of the human interface of stormwater.

Stormwater Protection

When we have pollution on the street, in our yards, or thrown from our cars, - just like water - it will move. Pollutants will eventually end up in the river or in our stormwater ponds. These actions pollute our neighborhoods, contaminate our rivers and area waterways and kill aquatic life. You can help protect your watershed and provide clean runoff back to the river, and it's easy. You will also keep maintenance costs for cleaning these systems down.

Top 9 Ways to Help Keep Our Water Clean

1. Recognize that storm drains are only designed for rain water and snow melt.
2. Dispose of your household hazardous waste, paints, appliances and tires at the South Hennepin Recycling and Problem Waste Drop-off Center in Bloomington at 1400 W. 96th St., 612-348-3777.
3. Use pesticides and fertilizers sparingly. Remember; using fertilizers with no phosphorus is now the law!
4. Wash your car on the lawn or in the carwash.
5. Keep your car in good repair. Oil and gas dripping from your car into the street goes down the storm drain.
6. Landscape to treat storm water runoff. Add a rain garden to catch and treat rainwater from your rooftop. Add a rain barrel to catch water from your downspouts for watering your garden.
7. Do not rake leaves or grass into the street. Sweep it up and use it to make compost or dispose of it at a yard waste site. Yard waste is full of harmful nutrients.
8. During spring clean up, don't sweep sand or grit into the street. The sand often washes away long before the street sweeper comes.
9. Report illegal dumping. If you have a concern; contact the city at 612-861-9165.

Water Meter Upgrade

The City of Richfield is currently in the process of updating their water meter systems. This uniform changeout to a radio read meter system is mandatory for all properties in the city and will help us to provide more efficient customer service. There is no charge for the work. The city has contracted with Northern Water Works to do the installations. If you have not already done so, please call them at 1-888-497-4171 to make an appointment, which will only take an estimated 15 minutes of your time. If you have questions or comments, please feel free to contact the Water Department at 612-861-9165 or 612-861-9164.

Utility News and Tips

*Water system security is a high priority. We ask that residents assist with security by calling 612-861-9800 if unusual activity is observed around any water system building, fire hydrant, or water tower. After hours, call the Police Department at 612-861-9800.
*Keep fire hydrants clear of shrubs, landscaping, weeds and trash.
*To have your water shut off for a repair, call 612-861-9165 48 hours in advance.
*Know where the main water shut off valve is inside your home in case of an emergency.
*Stormwater that is introduced into the sanitary sewer system can cause significant inflow and infiltration charges from the Metropolitan Council for Environmental Services.
*Call Gopher State One before you dig, plant trees, replace a driveway, landscape, etc. Call 651-454-0002.
*For after hour Water or Sewer Emergencies contact the Water Plant at 612-861-9166.

Richfield Water Quality Report

HOME | WORK | PLAY | CONSERVATION

STORMWATER MANAGEMENT

RESOURCE SUSTAINABILITY

WATER QUALITY | SECURITY | RECREATION

Water Conservation Tips: Indoors

- Check for leaks and make repairs quickly.
- Turn off faucet when brushing teeth or shaving.
- Fully load dishwasher and washing machine.
- Read your meter, check for leaks.
- Install low flow toilets, faucets, and showerheads.
- Have a pitcher of water in the refrigerator rather than running the faucet.
- When replacing appliances, choose water saving models.

Water Conservation Tips: Outdoors

- Water lawns only when needed.
- Water lawns early in the day.
- Position sprinkler so it lands on lawn or garden.
- Broom off driveway instead of washing it down.
- Turn water off to outside house bibs.
- Repair irrigation system leaks promptly.

City of Richfield
6700 Portland Avenue
Richfield, MN 55423-2599

PRESORT STD
US POSTAGE
PAID
PERMIT #2256
MPLS MN

*****ECRWSS*****
Postal Customer

Sump Pump Connections

Since the 1960s, State law has mandated that sump pumps must discharge to the exterior of a home (rather than a sanitary sewer line). However many illegal sump pump connections still remain. This causes a substantial problem that we all pay for. The water discharged from your sump pump is "clear water" that does not require treatment in order to re-enter our natural water cycle. The wastewater that enters your sanitary sewer line requires costly, but necessary, treatment before it can be safely returned to our environment. When a sump pump discharges into a sanitary line, we all pay to treat water that is clean to begin with.

How much trouble can one sump pump create?

According to Metropolitan Council for Environmental Services (the organization that treats our wastewater) one sump pump can contribute up to 7,200 gallons of clear water to the wastewater in a 24 hour period. This is roughly equivalent to the normal daily flow of 26 homes! If your home has a sump pump with a sanitary line connection, please change this to an exterior discharge as soon as possible.

Projects Update

Since last year's water quality report, our backwash reclaim tank has been completed. The backwash reclaim tank helps to stabilize the treatment process and extend the life of the sand filters, which were recently reconstructed. Additionally, lime sludge presses have been installed. These presses remove lime sludge that is created from the softening process. A mixture of sludge and water is sent to the presses which separate the water from the lime sludge, sending the water back through the treatment process, and creating a cake like sludge substance which is collected by trucks and spread on crop fields.

Water Source

Richfield's drinking water supply is considered safe and meets all drinking water standards. Drinking water is drawn from the Jordan, Prairie du Chein-Jordan and Ironton-Mt. Simon groundwater aquifers. The Jordan, Prairie du Chein-Jordan and Ironton-Mt. Simon are bedrock aquifers, well-defined hydrological units where the water exists in spaces between the rock grains or in the fractures within the more solid rock. The City operates 7 wells that range in depths from 405 to 1,066 feet.

Drinking Water Information from the EPA

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (1-800-426-4791).

The water provided to customers may meet drinking water standards, but the Minnesota Department of Health has also made a determination as to how vulnerable the source of water is to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call 651-201-4700 or 1-800-818-9318 during business hours, or view it online at *www.health.state.mn.us/divs/eh/water/swp/swa*

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Substances that may be present in source water include:

Microbial substances, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Radioactive substances, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Inorganic substances, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.

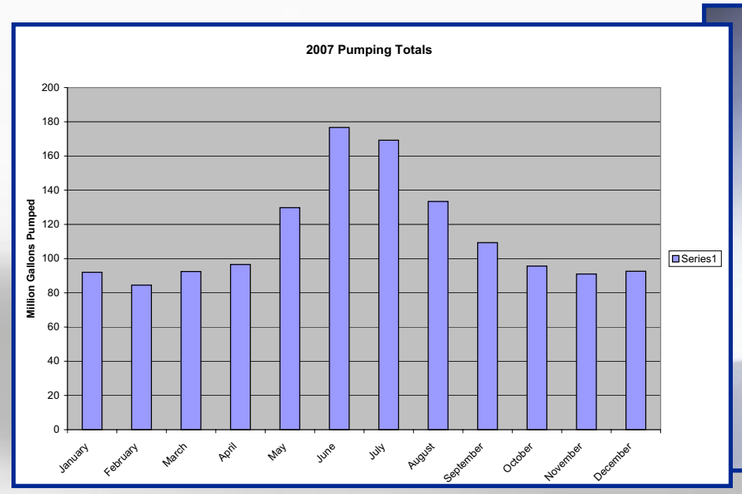
Organic chemical substances, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff and septic systems.

Lead in Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Richfield is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *http://www.epa.gov/safewater/lead.*

Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The Environmental Protection Agency (EPA)/Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (1-800-426-4791).



How to Read the Drinking Water Testing Results Table

The **Average Result** can be the highest amount found in the water or the average of all samples tested, depending on the regulation for the substance. If multiple samples were tested in 2007, the lowest and highest detected values are listed under **Range of Detections**.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDL (Maximum Residual Disinfectant Level)

MRDLG (Maximum Residual Disinfectant Level Goal)

AL (Action Level): the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

ppm (parts per million)

ppb (parts per billion)

ND (Not Detected)

Unregulated substances do not have MCLs. They are assessed by comparing the detected amount to state standards known as health risk limits. If an unacceptable amount of any substance is ever found in our water, the City of Richfield will notify residents immediately and take corrective action to eliminate the problem.

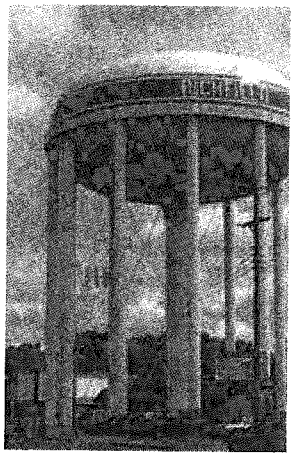
2007 DRINKING WATER TESTING RESULTS
RICHFIELD DRINKING WATER
Meets all Federal Drinking Water Standards

Detected Substance (units)	MCLG	MCL	Average Result	Range of Detections	Typical Source of Substance in Drinking Water	Meets Standards
Total Coliform Bacteria	0 present	>5% present	2%	N/A	Discharge of drilling wastes and metal refineries; erosion of natural deposits.	✔
Fluoride (ppm)	4.0	4.0	1.28	1.1-1.4	Additive for strong teeth; erosion of natural deposits; fertilizer and aluminum factory discharge.	✔
Lead (ppb)	AL: 15 (90% of samples tested must be <15 ppb)		90% of Samples < 2.0	1 out of 30 Samples Tested > 15 ppb	Corrosion of household plumbing systems; erosion of natural deposits.	✔
Copper (ppm)	AL: 1.3 (90% of samples tested must be <1.3 ppm)		90% of Samples < 0.07	0 out of 30 Samples Tested > 1.3 ppm	Corrosion of household plumbing systems; erosion of natural deposits.	✔
Sodium (ppm)	No Established EPA Limits		17	N/A	Erosion of natural deposits.	✔
Sulfate (ppm)	No Established EPA Limits		35	N/A	Erosion of natural deposits.	✔
Chlorine (ppm)	4 MRDLG	4 MRDL	1.17 Highest Quarterly Avg	1-1.3 Low-Highest Monthly Avg	Water additive used to control microbes.	✔
Total Trihalomethanes (ppb)	0	80	0.3	N/A	By-product of drinking water disinfection.	✔
Haloacetic Acids (ppb)	0	60	0.5	N/A	By-product of drinking water disinfection.	✔

Water Resources

Water Restrictions

Richfield does NOT have any water restrictions at this time.



Water Utility Division

The Utility Division consists of the operation and maintenance of storm water, wastewater, water production and water distribution.

Water Report (Published June 2008)

Water Facts

Conservation Tips

Storm Water Information

Storm Water Report
[power point file .ppt]

Storm Water and household hazardous waste: Please be sure to properly dispose of household hazardous waste. Hennepin County has several facilities for this purpose.

Hennepin County Hazardous Waste Collection

Pollution Control Agency

Contact

Robert Hintgen, 612-861-9165

WATER CONSERVATION TIPS

- Install a low-flow shower head with a maximum flow rate of 2.5 gallon per minute or less.
- Turn off water when you're not using it. Don't let it run while you brush your teeth or shave.
- Wait until you have a full load before running your dishwasher or washing machine.
- Add low-flow aerators to threaded faucets in sinks. These inexpensive devices reduce flow rates ' maintaining enough force for washing and other uses.
- Test your toilet valve to be sure it seals properly every time it's flushed. To test: place food colorir tablets in toilet tank, and then check the bowl for traces of color after 15 minutes. Buy an inexpen: kit to repair any leaks or call a professional plumber.
- Insulate hot water pipes.
- Water yards and plants in the evening rather than the day, reducing evaporation.

WATER TRIVIA

- Approximately one million miles of pipelines and aqueducts carry water in the United States and (That's enough to circle the earth 40 times.

- We drink very little of our drinking water. Generally speaking, less than 1% of the treated water pr water utilities is actually consumed. The rest goes on lawns, in washing machines, and down toile drains.

- You can refill an 8 oz. glass of water approximately 15,000 times for the same cost as a six-pack

FUN ACTIVITIES TO TRY AT HOME

Activity #1: Create a small terrarium to demonstrate the water cycle.

Goal: *To show how water evaporates and falls back onto the soil.*

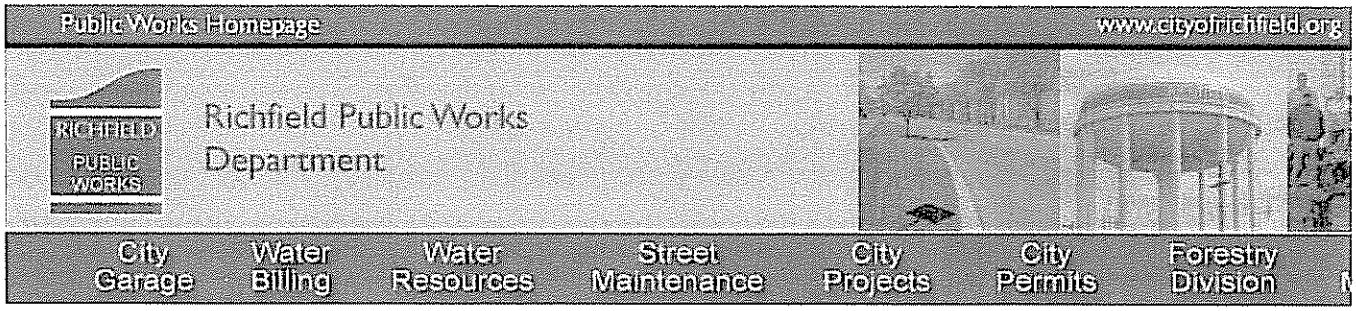
Use a clear plastic cup. Place 1 ½ inches of soil in the bottom of the cup. Then plant some bean c other legume seeds in the soil. Water the soil to a light dampness. Then put another cup over the of the first cup. Seal the two cups together with masking tape to create a seamless terrarium. Set cup in a sunny area and observe it daily. Keep a scientific record of what occurs each day.

Activity #2: Create a water distillation unit.

Goal: *To create condensation from the salt water.*

Place a metal roasting pan inside a heavy box with a lid. Mix two teaspoons of salt into a cup of w and stir until the salt dissolves. Then pour the salty water into the roasting pan. Put a glass that is

slightly shorter than the top of the pan's wall in the middle of the plastic wrap over the glass. This allows the glass to be the lowest point in the distillation unit so it can capture the evaporation from salt water. Close the box so it is airtight. Place the box in direct sunlight. After three hours, check see if there is any water inside the glass. (Inside the glass, there should be condensation from the salty solution. Since salt is heavier than the water vapor, the water resulting from the condensatio should be fresh and drinkable and not salty.)



Richfield Utilities

By the Numbers . . .

The Water Treatment Plant and distribution system includes:

- 120 miles of water main
- 2,338 valves
- 1,003 hydrants
- The Penn Tower (pictured above) holds 1.5 million gallons
- The Logan Tower holds 1 million gallons

Household Water use Stats:

- About 75 percent of all water used in homes is used in the bathroom.
- Forty percent of the pure water used at home is flushed down the toilet.
- A shower use's five to seven gallons of water per minute; a five-minute shower can use 35 gallons.
- The smallest drip from a leaky faucet can waste more than 50 gallons per day.
- Each summer, water use in America increases up to 30 percent because of outdoor watering.
- Americans over water their lawns by 20 to 40 percent of the amount needed.
- Homeowners use up to 10 times more toxic chemicals per acre than farmers.

Housing Programs continued

- Planning a small to medium remodeling project? **The Fix-Up Fund** may be for you. Call Wells Fargo ☎ 612/316-3201 or Community Rehabilitation Resources ☎ 612/335-5884.

- Do you have a large remodeling project? **Transformation Loans** are interest-free, no monthly payment incentive loans of 10 to 15 percent of your remodeling project costs. If your project is $50,000 or more, check it out. Funds are limited. ☎ 612/861-9760

- Does your home need repairs and updates, but you have a modest income? You may qualify for a **Deferred loan**, zero-interest loan with no monthly payments. To apply, ☎ 612/861-9760. This loan has a waiting list.

- Home Improvement Loans for first-time homebuyers are available at the City of Richfield for a limited time. Borrow $1,000-$10,000 for contracted home improvements; the money borrowed is 0% interest with no monthly payments for 30 years or until you sell the house. The funds are restricted by income.

Home Improvements

The City of Richfield encourages homeowners to invest in their properties with home improvement incentives. Remodeling Advisor is a free service for all Richfield homeowners. ☎ 612/861-9772 to have the Remodeling Advisor visit your home and help you plan out your remodeling ideas!

Tenants and Landlords

As a landlord, you can take advantage of the following services:

- Join the **Richfield Apartment Owners and Managers Association** (RAMA). Share your expertise and work on issues together. ☎ 612/861-9773.

- Take advantage of the **Richfield Rediscovered Apartment Remodeling Program**. This program offers technical, design and financial assistance, a zero interest deferred loan, for apartment rental units. Leave a message for the Richfield

- Operate storm water lift (pump) stations.
- Sweep streets to dispose of silted pollutants before they get into the ponds.
- Enhance the piping and ponding systems to upgrade flood protection and water quality.

For more information ☎ 612/861-9164 or ☎ 612/861-9165.

Wastewater is collected through 120 miles of sanitary sewer lines. Wastewater services the City provides include:

- Jet cleaning the entire system of wastewater mains every year.
- Monitoring the operation of the six wastewater lift stations and performing regular maintenance and repair to reduce the chances of backups.
- Televising portions of the system every year to help find and diagnose trouble spots.
- Televising sanitary sewer lines to diagnose problems ($50).

For more information, ☎ 612/861-9165.

Water Conservation Tips

1. Install a low-flow showerhead with a maximum flow rate of 2.5-gallons per minute or less.
2. Turn off water when you're not using it. Don't let it run while you brush your teeth or shave.
3. Wait until you have a full load before running your dishwasher or washing machine.
4. Test your toilet valve to be sure it seals properly every time it's flushed.

   To test: place food coloring or dye tablets in toilet tank, and then check the bowl for traces of color after 15 minutes. Buy an inexpensive repair kit to repair any leaks or call a professional plumber.

Demand Projections

Year	Total Community Population	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2010	37,700	37,700	4.3	9.4	1,582
2020	41,300	41,300	4.7	10.3	1,733
2030	45,000	45,000	5.2	11.4	1,900
Ultimate					

Population projections should be consistent with those in the Metropolitan Council's *2030 Regional Development Framework* or the Communities 2008 Comprehensive Plan update**.** If population served differs from total population, explain in detail why the difference (i.e., service to other communities, not complete service within community etc.).

Population projections through 2020 are consistent with Richfield's 2008 – 2018 Comprehensive Plan.

PLAN SUBMITTAL AND REVIEW OF THE PLAN

The plan will be reviewed by the Council according to the sequence outlined in Minnesota Statutes 473.175. **Prior to submittal to the Council, the plan must be submitted to adjacent governmental units for a 60-day review period.** Following submittal, the Council determines if the plan is complete for review within 15 days. If incomplete, the Council will notify the community and request the necessary information. When complete the Council will complete its review within 60 days or a mutually agreed upon extension. The community officially adopts the plan after the Council provides its comments.

Plans can be submitted electronically to the Council; however, the review process will not begin until the Council receives a paper copy of the materials. Electronic submissions can be via a CD, 3 ½" floppy disk or to the email address below. Metropolitan communities should submit their plans to:

Reviews Coordinator
Metropolitan Council
390 Robert St,
St. Paul, MN 55101

electronically to:
watersupply@metc.state.mn.us