# Transmittal Letter

**J-U-B ENGINEERS, Inc.**
**Engineers • Surveyors • Planners**
115 Northstar Avenue
Twin Falls, Idaho 83301
208-733-2414
Fax: 208-733-9455

**To:**

Idaho Department of Water Resources
1341 Filmore, Suite 200
Twin Falls, Idaho 83301
Attn: Jeanie Robertson

Date: April 30, 2009
Project: City of Richfield Water Right
Project No.: 60-08-108

RECEIVED
APR 30 2009
DEPT. OF WATER RESOURCES
SOUTHERN REGION

**We are shipping you:**
**Attached via Hand Delivered the following items:**

| COPIES | DATE OR NO. | DESCRIPTION |
|---|---|---|
| 1 | | Revised application for water right permit |
| 1 | | Property Deed |
| 1 | | Draft Water System Master Plan |

**These items are transmitted as checked below:**

☐ For Approval ☐ As Requested ☐ Returned for Corrections

☐ For Your Information ☒ For Review and Comment ☐ ____

**Remarks:**

Transmitted herewith are the above named items in regards to the Richfield Water Right Application. The application was revised to include the existing 3 wells as points of diversion. The property deed is the proposed new well site that has already been purchased by the City. The draft Water System Master plan should provide the additional information required by the State Office. Give me a call if you have any questions.

Copy for: _____

Signed _____
Rex L. Harding, P.E.

**If enclosures are not as noted, please notify us at once at 733-2414**

F:\PROJECTS\60-08-108 RICHFIELD, 2008 WELL\IDWRTRANS.DOT

# WARRANTY DEED

#GL-09534

For Value Received

**Lewis C. Rice and Samantha R. Rice, husband and wife, also shown of record as Lewis Rice and Samantha Rice, husband and wife**

Hereinafter called the Grantor, hereby grants, bargains, sells and conveys unto

**City of Richfield**
**Address: PO Box 97, Richfield, ID 83349**

CLB
12-11-2008

Hereinafter called the Grantee, the following described premises situated in **Lincoln** County, Idaho, to-wit:

**PARCEL 1:**

**Lots 1 and 2 in Block 12, Richfield Townsite, Lincoln County, Idaho, as the same is platted in the official plat thereof, now of record in the office of the Recorder of said County.**

**PARCEL 2:**

**Lots 3 and 4 in Block 12, Richfield Townsite, Lincoln County, Idaho, as the same is platted in the official plat thereof, now of record in the office of the County Recorder of said County.**

**SUBJECT TO:**

**All reservations in patents or deeds in the chain of title.**

**Taxes subsequent to the year 2008, which are not yet due or payable.**

**Assessments levied or to be levied by the City of Richfield.**

**Right of Way given by Dora J. Kirkpatrick and E.J. Kirkpatrick, wife and husband, to the State of Idaho, dated June 30, 1950, recorded August 25, 1950 in Book 42 Page 518 as Instrument Number 95431, Lincoln County records, granting a right of way for public highway over and across a portion of the above described property. There is also granted an easement adjacent to the highway right of way for relocation of all irrigation and drainage ditches and structures and such surface ditches as may be necessary to the proper construction of the highway. Grantors further agree that no advertising or other signs will be erected without the written consent of the Commissioner of Highways. Official Minutes given by State of Idaho removing 6.35 miles of highway from the State Highway system recorded August 5, 1996, as Instrument Number 161196, records of Lincoln County, Idaho.**

TO HAVE AND TO HOLD, the said premises, with their appurtenances unto the said Grantee and to the successors heirs and assigns of the Grantee forever. The Grantor does hereby covenant to and with the said Grantee, that the Grantor is the owner in fee simple of said premises; that they are free from all incumberances except as above described and that Grantor will warrant and defend the same from all lawful claims whatsoever.

**Dated: December 1, 2008**

Lewis C. Rice

Samantha R. Rice

STATE OF IDAHO )
) ss.
COUNTY OF Kootenai )

On this 5 day of **December, 2008**, before me, the undersigned, a Notary Public in and for said State, personally appeared **Lewis C. Rice and Samantha R. Rice**, known or identified to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

DEBARA S. BRAY NOTARY PUBLIC STATE OF IDAHO

Notary Public
Residing at: Kootenai
My Commission expires: Sept 24 2012

DRAFT

# CITY OF RICHFIELD

# WATER SYSTEM WATER MASTER PLAN

November 2008



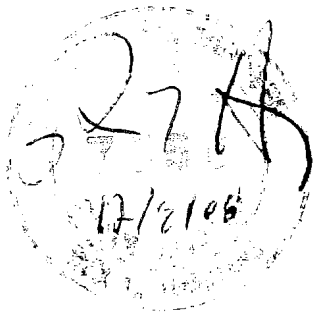

Prepared by

J-U-B ENGINEERS, Inc.
115 Northstar Ave.
Twin Falls, ID 83301

Project No. 60-05-041

# CITY OF RICHFIELD

# WATER SYSTEM MASTER PLAN



November 2008

J-U-B

Prepared by

J-U-B ENGINEERS, Inc.
115 Northstar Ave.
Twin Falls, ID 83301

# CITY OF RICHFIELD
# WATER SYSTEM MASTER PLAN

## TABLE OF CONTENTS


**1.0 INTRODUCTION ..... 1-1**
1.1 PURPOSE AND NEED OF STUDY ..... 1-1
1.2 REPORT ORGANIZATION ..... 1-1
1.3 COST ESTIMATES ..... 1-1

**2.0 EXISTING CONDITIONS AND FACILITIES ..... 2-1**
2.1 PLANNING AREA IDENTIFICATION ..... 2-1
2.2 EXISTING WATER SYSTEM FACILITIES ..... 2-1
2.2.1 Supply Wells ..... 2-1
*2.2.1.1 Well #1* ..... 2-1
*2.2.1.2 Well #2* ..... 2-6
*2.2.1.3 Well #3* ..... 2-6
2.2.2 Storage Tank ..... 2-7
2.2.3 Disinfection Facilities ..... 2-7
2.2.4 Distribution System ..... 2-7
2.2.5 Control System ..... 2-8
2.2.6 Auxiliary Power ..... 2-8
2.3 WATER DEMAND ..... 2-8
2.3.1 Domestic Demand ..... 2-12
2.3.2 Industrial Demand ..... 2-12
2.3.3 Per Capita Demand ..... 2-12
2.3.4 Irrigation Demand ..... 2-17
2.3.5 Fire Flow Demand ..... 2-17
2.4 WATER QUALITY ..... 2-18
2.4.1 Radium 226 & 228 ..... 2-18
2.5 WATER RIGHTS ..... 2-18
2.6 EXISTING USER CHARGE RATES AND SYSTEM BUDGET ..... 2-20

**3.0 EVALUATION OF EXISTING FACILITIES ..... 3-1**
3.1 SUPPLY WELLS ..... 3-1
3.2 WATER STORAGE ..... 3-1
3.3 DISINFECTION SYSTEM ..... 3-2
3.4 DISTRIBUTION SYSTEM ..... 3-2

**4.0 FUTURE CONDITIONS ..... 4-1**
4.1 FUTURE PLANNING AREA CONDITIONS ..... 4-1

4.2 FUTURE LAND USE ..... 4-1
4.3 20 YEAR PROJECTION ..... 4-1
4.3.1 Population Forecast ..... 4-1
4.3.2 Planning Area Forecast ..... 4-3
4.4 FUTURE WATER DEMAND ..... 4-4
4.4.1 Domestic Demand ..... 4-4
4.4.2 Industrial Demand ..... 4-4
4.4.3 Total Demand ..... 4-4

**5.0 EVALUATION OF EXISTING FACILITIES AT FUTURE CONDITIONS ..... 5-1**
5.1 WATER SUPPLY ..... 5-1
5.2 WATER STORAGE ..... 5-1
5.3 DISINFECTION SYSTEM ..... 5-2
5.4 DISTRIBUTION SYSTEM ..... 5-2
5.5 DRINKING WATER FACILITY NEEDS ..... 5-3
5.6 FUTURE WITHOUT THE PROJECT ..... 5-3

**6.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES ..... 6-1**
6.1 WATER SUPPLY ..... 6-1
6.1.1 Fully Develop Existing Wells ..... 6-1
6.1.2 New Well(s) ..... 6-1
6.1.3 Existing Wells in Area ..... 6-2
6.1.4 Water Conservation ..... 6-2
6.2 WATER STORAGE ..... 6-2
6.3 DISINFECTION SYSTEM ..... 6-3
6.4 DISTRIBUTION SYSTEM ..... 6-4
6.5 CONTROL SYSTEM ..... 6-5
6.6 AUXILIARY POWER ..... 6-6
6.7 SLECTED PLAN ..... 6-6

**7.0 SELECTED PLAN DESCRIPTION AND IMPLEMENTATION ..... 7-1**
7.1 DEVELOPMENT OF EXISTING WELLS ..... 7-1
7.2 NEW WELL AND WELL HOUSE ..... 7-1
7.3 WATER STORAGE TANK, BOOSTER PUMP STATION, AND DISINFECTION ..... 7-4
7.4 DISTRIBUTION SYSTEM ..... 7-4
7.4.1 North Tank Phases ..... 7-4
*7.4.1.1 Phase I Improvements* ..... 7-4
7.4.1.1.1 Distribution System ..... 7-6
7.4.1.1.2 Well Piping ..... 7-8
*7.4.1.2 Phase II Improvements* ..... 7-8
*7.4.1.3 Phase III Improvements* ..... 7-8

7.4.2 South Tank Phases ..... 7-8
*7.4.2.1 Phase I Improvements* ..... 7-8
7.4.2.1.1 Distribution System ..... 7-13
7.4.2.1.2 Well Piping ..... 7-14
*7.4.2.2 Phase II Improvements* ..... 7-14
*7.4.2.3 Phase II Improvements* ..... 7-16
7.8 PROJECT COST SUMMARY ..... 7-22
7.9 FINANCING OPTIONS ..... 7-23
7.10 USER CHARGE RATE ..... 7-25
7.11 ENVIRONMENTAL AND OTHER CONSIDERATIONS ..... 7-26
7.11.1 Environmental Impacts ..... 7-26
7.11.2 Implementability ..... 7-27
7.11.3 Reliability ..... 7-27
7.12 SUMMARY OF RECOMMENDATIONS ..... 7-28

## APPENDICIES

APPENDIX A WELL DRILLER LOGS AND REPORTS
APPENDIX B PUMP CURVES
APPENDIX C WATER QUALITY DATA
APPENDIX D USER CHARGE RESOLUTION
APPENDIX E 2004 - 2005 WATER SYSTEM REVENUE & EXPENSE REPORT
APPENDIX F IDEQ SANITARY SURVEY
APPENDIX G COMPREHENSIVE PLAN

## LIST OF FIGURES


Figure 2-1 Richfield Vicinity Map ..... 2-2
Figure 2-2 City of Richfield City Limits and Planning Area ..... 2-3
Figure 2-3 Existing Water Distribution System ..... 2-4
Figure 2-4 Water System Wells ..... 2-5
Figure 2-5 Total Annual Volume ..... 2-9
Figure 2-6 Average Monthly Demand in Volume ..... 2-10
Figure 2-7 Average Monthly Demand in Flow ..... 2-11
Figure 2-8 Domestic Average Monthly Demand in Volume ..... 2-13
Figure 2-9 Domestic Average Monthly Demand in Flow Rate ..... 2-14
Figure 2-10 Glanbia Average Monthly Demand in Volume ..... 2-15
Figure 2-11 Glanbia Average Monthly Demand in Flow Rate ..... 2-16
Figure 2-12 Historical Radium Concentrations ..... 2-19
Figure 4-1 Population Projections ..... 4-2
Figure 4-2 Glanbia Flow Trend Last 72 Months ..... 4-5
Figure 4-3 Glanbia Flow Trend Last 72 Months - 20 Year Projection ..... 4-6
Figure 6-1 North Tank - Water Distribution System Improvements ..... 6-7
Figure 6-2 South Tank - Water Distribution System Improvements ..... 6-8
Figure 7-1 Proposed Well and Surface Seal Schematic ..... 7-2
Figure 7-2 North Tank - Phase I - Water Distribution System Improvements ..... 7-5
Figure 7-3 North Tank - Phase II - Water Distribution System Improvements ..... 7-9
Figure 7-4 North Tank - Phase III - Water Distribution System Improvements ..... 7-10
Figure 7-5 South Tank - Phase I - Water Distribution System Improvements ..... 7-15
Figure 7-6 South Tank - Phase II - Water Distribution System Improvements ..... 7-119
Figure 7-7 South Tank - Phase III - Water Distribution System Improvements ..... 7-20


## LIST OF TABLES


Table 2-1 Existing Supply Well Summary ..... 2-6
Table 2-2 Distribution System Summary ..... 2-7
Table 2-3 Water Demand ..... 2-17
Table 2-4 Irrigation Flows ..... 2-17
Table 2-5 Fire Flow Recommendations ..... 2-17
Table 2-6 Water Right Summary ..... 2-18
Table 2-7 Existing User Charge Rates ..... 2-20
Table 3-1 Recommended Storage Volume with the Existing Wells ..... 3-2
Table 4-1 Population Projections ..... 4-3
Table 4-2 Domestic Year-by-Year Water Demand Projections ..... 4-4
Table 4-3 Glanbia Year-by-Year Water Demand Projections ..... 4-7

| | | |
|---|---|---|
| Table 4-4 | Total Year-by-Year Water Demand Projections | 4-7 |
| Table 5-1 | Future Water Storage Requirements | 5-1 |
| Table 7-1 | Opinion of Probable Costs to Construct a New Well and Wellhouse | 7-3 |
| Table 7-2 | Opinion of Probable Costs to Construct a Storage Tank and Booster Pump Station | 7-6 |
| Table 7-3 | Opinion of Probable Costs for Phase I Distribution Improvements, North Tank | 7-7 |
| Table 7-4 | Opinion of Probable Costs to Pipe all Wells to the Proposed Storage Tank for Disinfection, North Tank | 7-11 |
| Table 7-5 | Opinion of Probable Costs for Phase II Distribution Improvements, North Tank | 7-12 |
| Table 7-6 | Opinion of Probable Costs for Phase III Distribution Improvements, North Tank | 7-12 |
| Table 7-7 | Opinion of Probable Costs for Phase I Distribution Improvements, South Tank | 7-16 |
| Table 7-8 | Opinion of Probable Costs to Pipe all Wells to the Proposed Storage Tank for Disinfection, South Tank | 7-17 |
| Table 7-9 | Opinion of Probable Costs for Phase II Distribution Improvements, South Tank | 7-18 |
| Table 7-10 | Opinion of Probable Costs for Phase III Distribution Improvements, South Tank | 7-21 |
| Table 7-11 | Opinion of Probable Construction Costs for the Total Water System Project, North Tank | 7-22 |
| Table 7-12 | Opinion of Probable Construction Costs for the Total Water System Project, South Tank | 7-23 |
| Table 7-13 | Opinion of Probable Annual Operation and Maintenance Cost Increases for the Total Water System Project | 7-23 |
| Table 7-14 | Comparison of User Charge Rate Increases, North Tank | 7-25 |
| Table 7-15 | Comparison of User Charge Rate Increases, South Tank | 7-26 |

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

## CHAPTER 1: INTRODUCTION

# 1.0 INTRODUCTION

## 1.1 PURPOSE AND NEED OF STUDY

The City of Richfield owns and operates a water supply, storage, and distribution system that serves the area in and around the City boundaries. The City is concerned about the ability of the system to meet the current and projected future demands. The City authorized J-U-B ENGINEERS, Inc. to develop this Water System Master Plan to evaluate the condition and capacity of the existing water supply, storage, and distribution system.

The Master Plan will include an investigation of the improvements necessary to provide a safe and reliable water supply that meets the residential, irrigation, industrial, and fire protection needs of the community and remains in compliance with the current and future regulations. The Master Plan will provide the City with the information necessary to make sound decisions regarding improvements to the existing water system, and the ability to assess the impacts of the planned future improvements. The Master Plan is based on a 20 year planning period from 2008 to 2028.

## 1.2 REPORT ORGANIZATION

The report is organized into seven chapters, including:

- Chapter 1 - Introduction
- Chapter 2 - Existing Conditions and Facilities
- Chapter 3 - Evaluation of Existing Facilities
- Chapter 4 - Future Conditions
- Chapter 5 - Evaluation of Existing Facilities at Future Conditions
- Chapter 6 - Development and Screening of Alternatives
- Chapter 7 - Selected Plan Description and Implementation

A further breakdown on the organization of the Master Plan is provided in the Table of Contents, Appendices, List of Tables and List of Figures.

## 1.3 COST ESTIMATES

The opinions of probable capital and operation and maintenance costs presented in this report do not include:

- Legal costs
- Funding application and administration
- Inflation
- Audits and publications
- Interim construction financing

If the City elects to proceed with the recommended improvements, each of these cost elements should be considered in further detail and possibly added to the costs presented in this report. The cost estimates contained in this report are in 2008 dollars and may need to be inflated if implementation of the recommended improvements is delayed. The costs of most construction materials have increased dramatically in the past few months. Our understanding is that these costs will continue to increase in the near future. This volatility in the market and pricing of construction materials makes estimating future construction costs difficult.

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

# CHAPTER 2: EXISTING CONDITIONS AND FACILITIES

# 2.0 EXISTING CONDITIONS AND FACILITIES

## 2.1 PLANNING AREA IDENTIFICATION

The City of Richfield is located in south central Idaho in the north central section of Lincoln County (see Figure 2-1). The City falls within Sections 23, 24, 25, and 26 of Township 4 South, Range 19 East, B.M. The City is situated approximately 19 miles northeast of Shoshone and approximately 12 miles north-northeast of the City of Dietrich. The City is located along U.S. Highway 93/26 in a predominantly agricultural region.

This Water System Master Plan is based on a specific Planning Area which represents a geographical area and population which the City can reasonably be expected to serve within a 20 year design period from 2008 to 2028. Sufficient land should be included in the Planning Area to accommodate all forecasted residential, commercial and industrial growth, and allow some flexibility in future development of the community.

Figure 2-2 shows the Planning Area and existing corporate limits for the City of Richfield. A number of factors were considered in delineating the geographical boundary of the Planning Area, including recent developmental patterns, location of existing water system facilities, expandability of the existing water system, land use designations, topography of the area and discussions with City personnel regarding areas of anticipated growth. At this time, it appears that a majority of future growth will take place within the present City limits and in areas adjacent to the City.

## 2.2 EXISTING WATER SYSTEM FACILITIES

The current water system in Richfield consists of three supply wells, a disinfection system for one of the wells, a 60,000 gallon storage tank, and a distribution network of varied sizes and materials of water mains. A schematic of the water system components is shown in Figure 2-3. There are 220 residential connections, 6 commercial connections, and 1 industrial connection in the planning area.

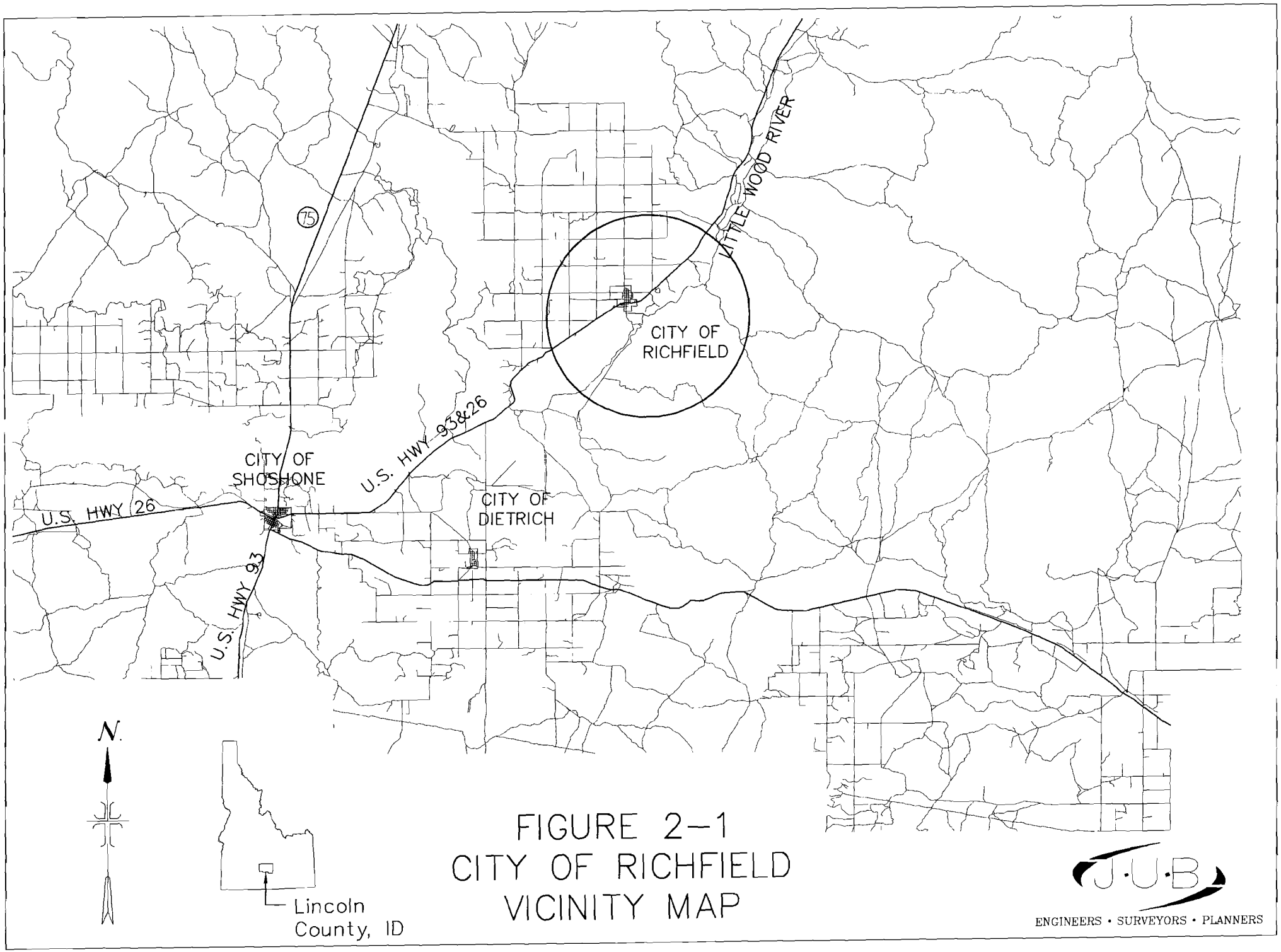
### 2.2.1 Supply Wells

Water is supplied to the City of Richfield via three groundwater wells (see Figure 2-4). Of the three wells currently used by the City, only two, Wells #1 and #3, are used under normal conditions for supplying domestic water. The third well, Well #2, is used on an intermittent basis during high demands and emergency situations. The pumping capacity of the three wells combined is approximately 1160 gpm. Each well is controlled from the individual pump houses. Table 2-1 summarizes general information about each of the wells.

#### *2.2.1.1 Well #1*

Well #1 is located in a pump house near the center of town along Latah Avenue. There is not a well log for this well because it was installed in the early 1900's. Layne Pumps installed a new 50 horsepower (hp) well pump in January 2006. The pump was designed to produce approximately 300 gallons per minute (gpm) at 506 feet of head (see "50 HP Turbine" pump curve in Appendix B).

According to Layne Pumps, the well consists of a 10 inch diameter hole that extends to a depth of approximately 490 feet (refer to "Pump Estimate and Order" Appendix B). The static water level in the well is approximately 355 feet below ground surface (bgs).




# FIGURE 2-1
# CITY OF RICHFIELD
# VICINITY MAP

J·U·B
ENGINEERS • SURVEYORS • PLANNERS

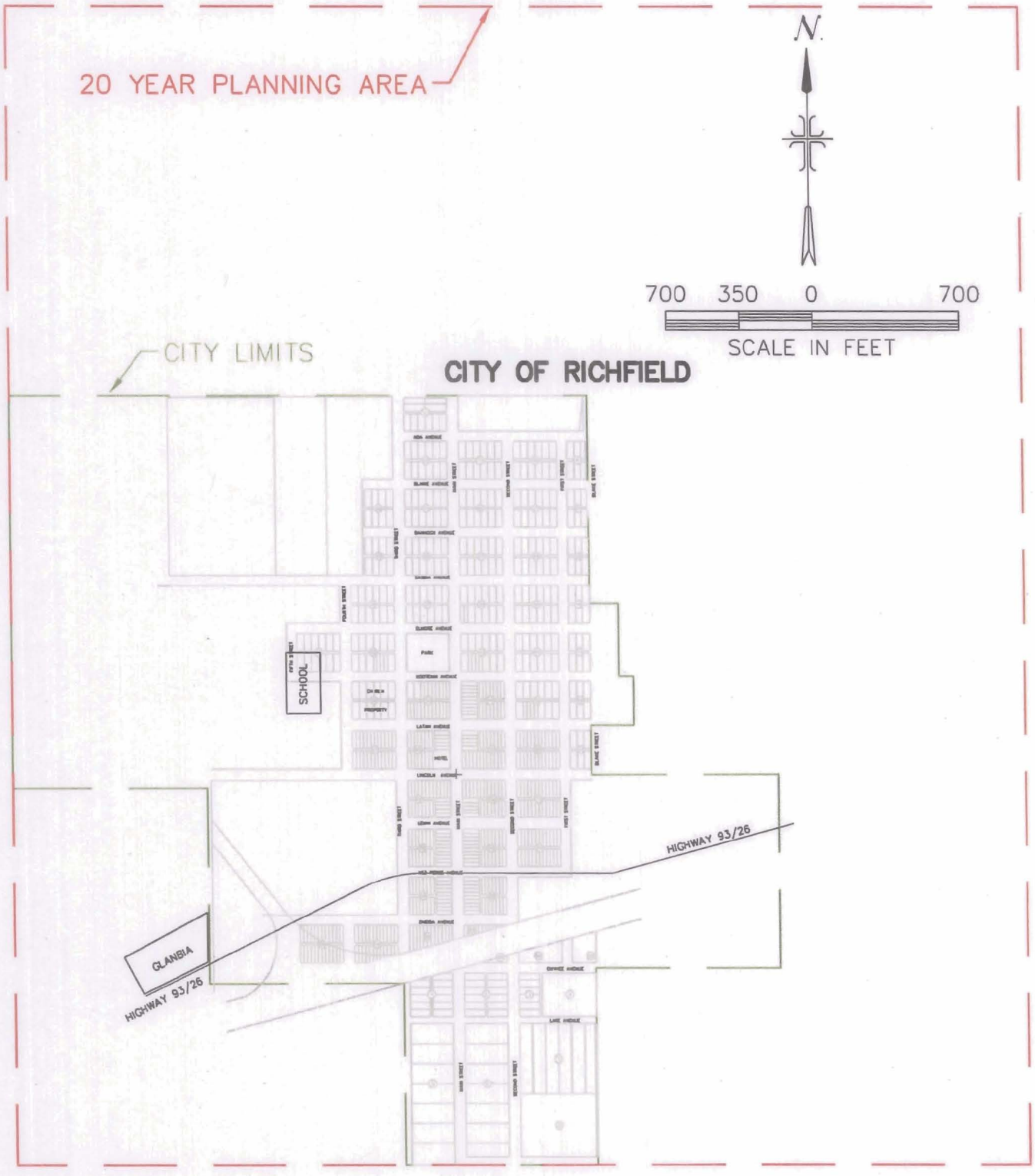
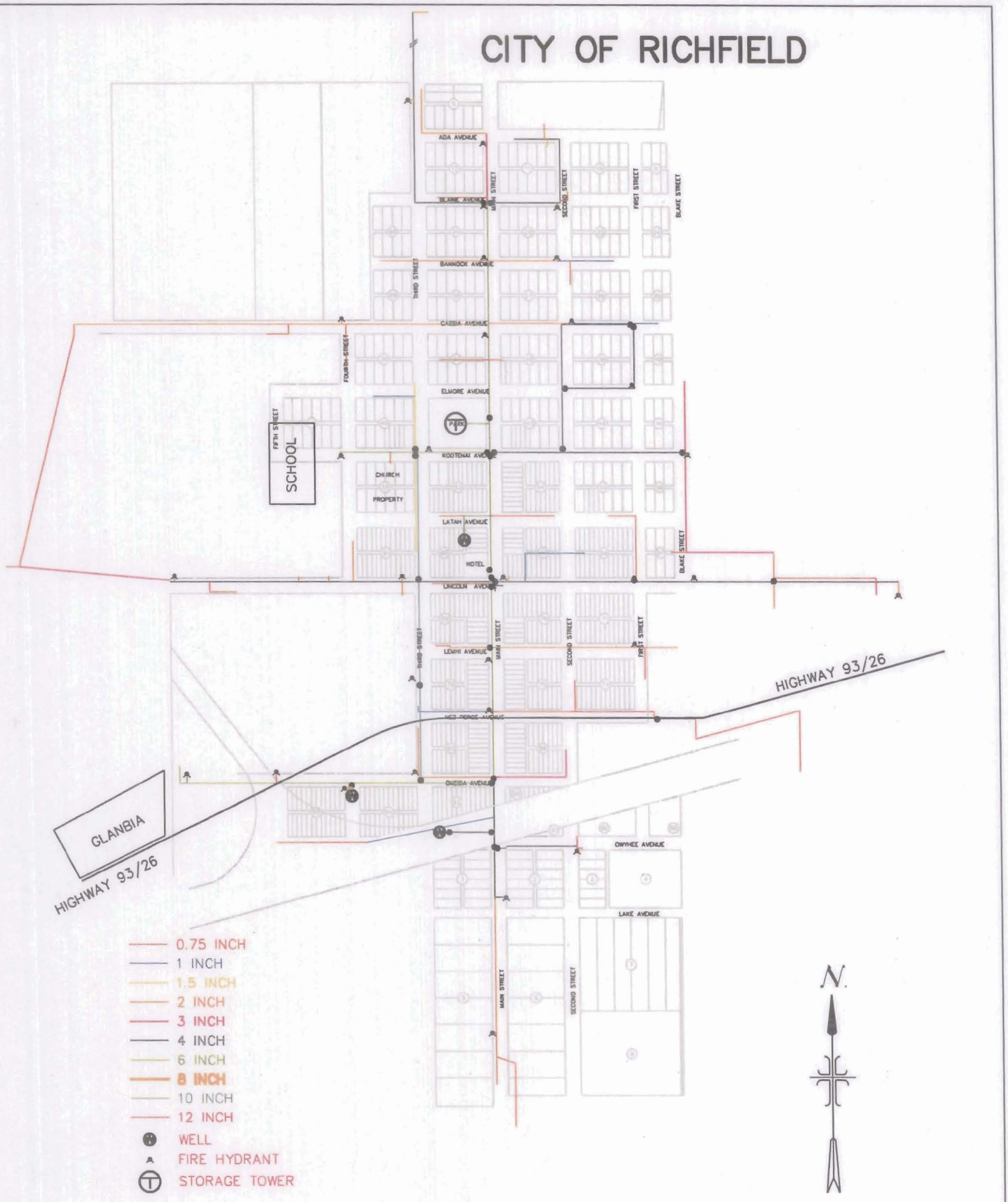



FIGURE 2–2
CITY OF RICHFIELD
CITY LIMITS
AND PLANNING AREA

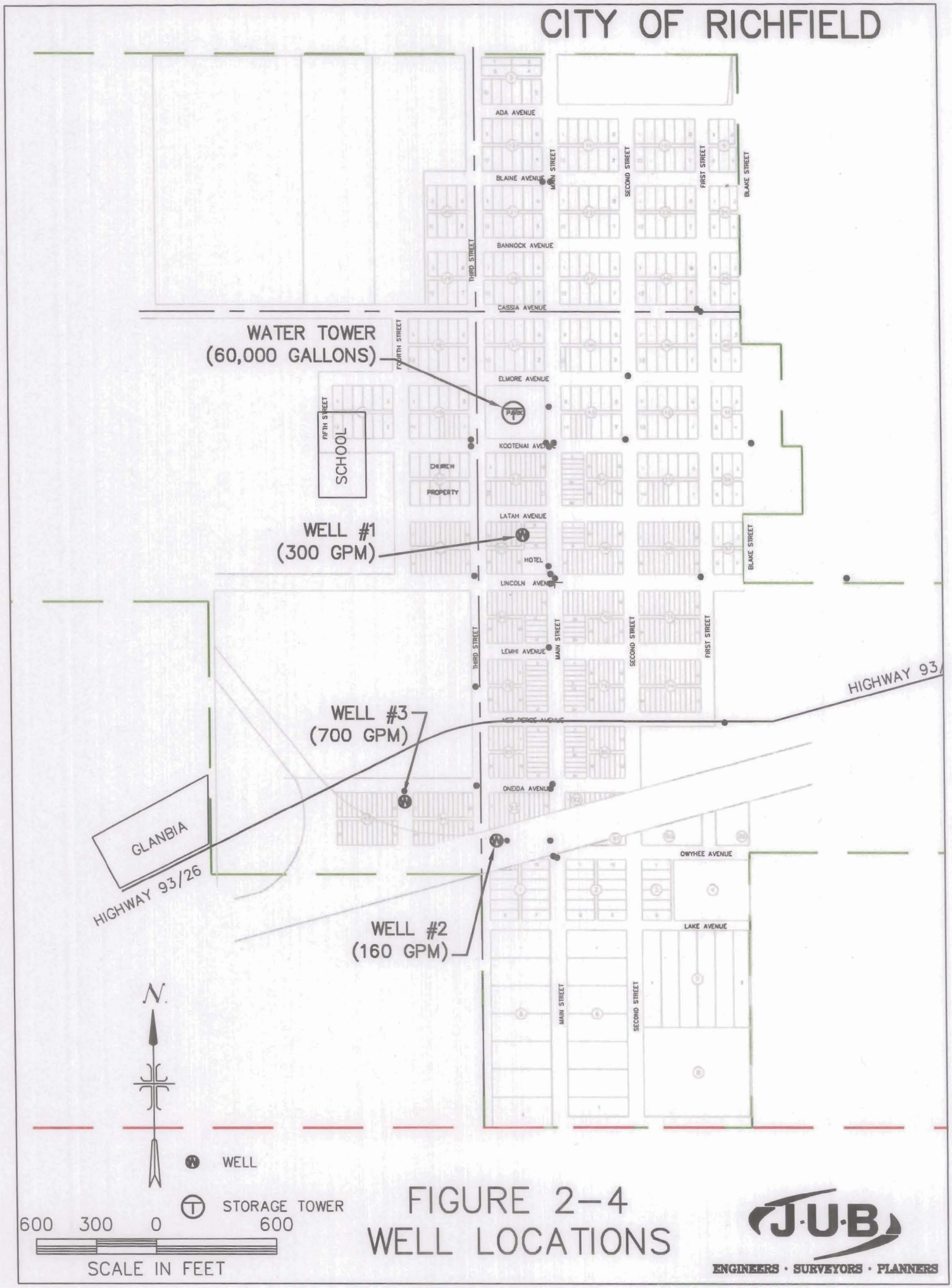
J·U·B
ENGINEERS · SURVEYORS · PLANNERS

# CITY OF RICHFIELD




# FIGURE 2-3
# WATER DISTRIBUTION SYSTEM

J-U-B
ENGINEERS · SURVEYORS · PLANNERS




# FIGURE 2-4
# WELL LOCATIONS

J-U-B
ENGINEERS · SURVEYORS · PLANNERS

Table 2-1. Existing Supply Well Summary

| Well | Well Depth (ft) | Well Size (in) | Pump and Motor | Depth of Pump (ft bgs) | Pumping Rate (gpm) | Pumping Water Level (ft bgs) | Static Water Level (ft bgs) | Discharge Location |
|---|---|---|---|---|---|---|---|---|
| #1 | 490[1] | 10[1] | 50 hp Water Lube[1] | 380[1] | 300[1] | 360[1] | 355[1] | Distribution System |
| #2 | 410[1] | 10[1] | 25 hp Submersible[1] | 360[1] | 160[1] | 340[1] | 335[1] | Distribution System |
| #3 | 422[2] | 12[2] | 100 hp Water Lube[2] | 350[1] | 700[3] | App.327 | 322[2] | Distribution System |
| TOTAL PUMPING CAPACITY | | | | | 1160 | | | |

1 As reported by Layne Pumps, Twin Falls ID.
2 From well driller's log, Appendix A.
3 As reported by PumpTech, Idaho Falls, ID.

There is currently no disinfection for the water pumped from Well #1. The water is pumped directly into the distribution system via a 6 inch diameter pipe. During normal operation, Well #1 is used in conjunction with Well #3 to maintain water levels in the storage tank and satisfy the regular demands. An in-line propeller type flow meter is used to monitor the flow from Well #1 prior to discharge to the distribution system.

### *2.2.1.2 Well #2*

Well #2 is located in a pump house along Third Street next to the railroad tracks. There is not a well log for this well; according to City personnel the well was an old railroad well built in the late 1800's or early 1900's. Layne Pumps installed a 25 hp submersible pump in Well #2 in January 1997. The pump was designed to produce approximately 160 gpm at 480 feet of head (see "Goulds Pumps - Model 8RAHC" pump curve in Appendix B).

According to Layne Pumps, the well consists of a 10 inch diameter hole that extends to a depth of approximately 410 feet (refer to "Layne Pumps - Pump Estimate and Order", Appendix A). The static water level in the well is approximately 335 feet (bgs).

There is currently no disinfection for the water pumped from Well #2. The water is pumped directly into the distribution system via a 4 inch diameter cast iron pipe. During normal operation, Well #2 is not used. Well #2 is used on an intermittent basis for fire suppression and for backup when either of the other wells is offline. An in-line propeller type flow meter is used to monitor the flow from Well #2 prior to discharge to the distribution system.

### *2.2.1.3 Well #3*

Well #3 serves as the City's primary water supply well. It is located in the southwest portion of town in a pump house along Oneida Avenue, north of the railroad tracks. This well was drilled in 1989 by Eaton Drilling (see well driller's log in Appendix A). The well consists of a 16 inch diameter hole from 0 to 180 feet below ground surface (bgs) and a 12 inch diameter hole from 180 to 422 feet bgs. A 12 inch diameter steel casing was installed from 0 to 180 feet bgs. The static water level in the well is approximately 322 feet bgs.

The well is equipped with a 100 hp well pump that was installed in 1990. The pump was designed to produce approximately 700 gpm at 500 feet of head (see "10RH Series 1110 Vertiline Pump" pump curve in Appendix B).

Water from Well #3 is disinfected within the pump house and then discharged through an 8 inch diameter line directly into the distribution system. An in-line propeller type flow meter is located on the 8 inch discharge line to monitor flows from Well #3 prior to discharging to the distribution system.

### 2.2.2 Storage Tank

The City currently has a 60,000 gallon elevated storage tank located in the City Park. The steel, epoxy paint-lined tank was originally installed in 1909 and is approximately 80 feet tall. The dimensions of the tank are unknown. The tank is equipped with a lockable hatch, screened vents, and a drain. Currently, the storage tank does not have any significant leaks or other structural concerns; it is maintained with new paint and new welds as needed, approximately every 5 to 7 years. The tank was supplied by Chicago Bridge and Iron, and is used for fire protection, flow equalization during peak demand periods, and emergency storage. It is the City's desire to cease use of this tank due to the high cost and frequency of maintenance.

### 2.2.3 Disinfection Facilities

Well #3 is the only well that has a disinfection system. The system is located in the pump house of Well #3 and was installed at the time the pump house was built. It consists of a diaphragm metering pump, tubing, and valves. The disinfectant is Clorox bleach liquid. The system is used periodically when there is a large decrease in water quality. The dose supplied by the metering pump is manually adjusted by operating personnel. Since there is no metering provided for the system; the desired dose is achieved by manually measuring the chlorine concentration using a chlorimeter. Contact time is provided within the distribution system.

### 2.2.4 Distribution System

The distribution system is operated under one pressure zone and is comprised of over 7 miles of water mains. The water mains range in size from 0.75 to 10 inches, and are primarily constructed of galvanized steel or cast iron. Figure 2-3 shows the current distribution system. Table 2-2 summarizes the estimated length and percentage of each size water main in the distribution system.

**Table 2-2. Distribution System Summary**

| Pipe Diameter (inches) | Estimated Length | | Percent of Distribution System (%) |
|---|---|---|---|
| | Feet | Miles | |
| ≤2 | 16524 | 3.1 | 44.3% |
| 3 | 3017 | 0.6 | 8.1% |
| 4 | 10211 | 1.9 | 27.4% |
| 6 | 5762 | 1.1 | 15.4% |
| 8 | 81 | 0.0 | 0.2% |
| 10 | 1720 | 0.3 | 4.6% |
| Total | 37315 | 7.1 | 100% |

As shown in the table, nearly 80% of the current distribution system is comprised of 4 inch mains or smaller. Pipes of this size typically do not have the capacity to provide adequate fire flows. In addition, many of these mains were installed 40 to 50 years ago, most likely resulting in the build-up of solids over time, which further restricts flow capacity.

The distribution system is currently metered at the individual service locations in addition to being metered at the sources. A metered system allows for a comparison of total water amount pumped into the system to total water amount used by the consumers.

### 2.2.5 Control System

The current control system consists of the operational controls at each individual well in the water system. These controls are located in the well house of each respective well. Well #1 and Well #2 both use mercury switches located at the wells to determine system pressures, which will activate the wells according to the designated settings. Well #3 is governed by a pressure switch on the bottom of the storage tank.

### 2.2.6 Auxiliary Power

Currently Well #1 is the only well that has auxiliary power. A 150 hp manually operated generator is set up for use in case of an emergency or power outage. The other two wells are without auxiliary power. If the power transmission were to be disrupted, the majority of the water supply would be cut off and would necessitate that Glanbia be shutdown. Backup power options are discussed in Section 6.6.

## 2.3 WATER DEMAND

As previously discussed, the water supply from the three existing wells is currently measured using meters at each well. Monthly flow monitoring data was provided by the City over a seven-year monitoring period from January 2002 through August 2008. Figure 2-5 shows the total volume of water pumped on an annual basis. The figure indicates that there is an apparent trend of increased water demand.

Figures 2-6 and 2-7 illustrate the monthly fluctuations in water demand in terms of total volume (million gallons) and flow rate (gallons per minute), respectively. As shown in the figures, there is a seasonal fluctuation in the water demand during the year. This fluctuation is primarily in response to irrigation practices within the community since the wells supply residential (i.e., bathing, cooking, sanitary wastes, washing, etc.), industrial (Glanbia), and irrigation water through its potable water system. Typically, demand peaks during the summer months (i.e., April through October) when irrigation occurs more frequently. Demand is normally lowest during the winter months when irrigation is minimal.

In addition to the seasonal fluctuations, water demand may vary over the course of a typical day in response to the community's daily routine. As such, more detailed water demand data is generally required to analyze a water system. For example, it is prudent to use the maximum day demand when evaluating the amount of sustainable water supply required from the wells. Also, the peak hour demand is typically used in estimating storage requirements and distribution line capacities. At the frequency that the City measures and records flow data, the factors required for analysis (i.e., maximum day demand and peak hour demand) are not readily apparent and must be estimated using sound engineering judgment.

**Figure 2-5. Total Annual Volume**

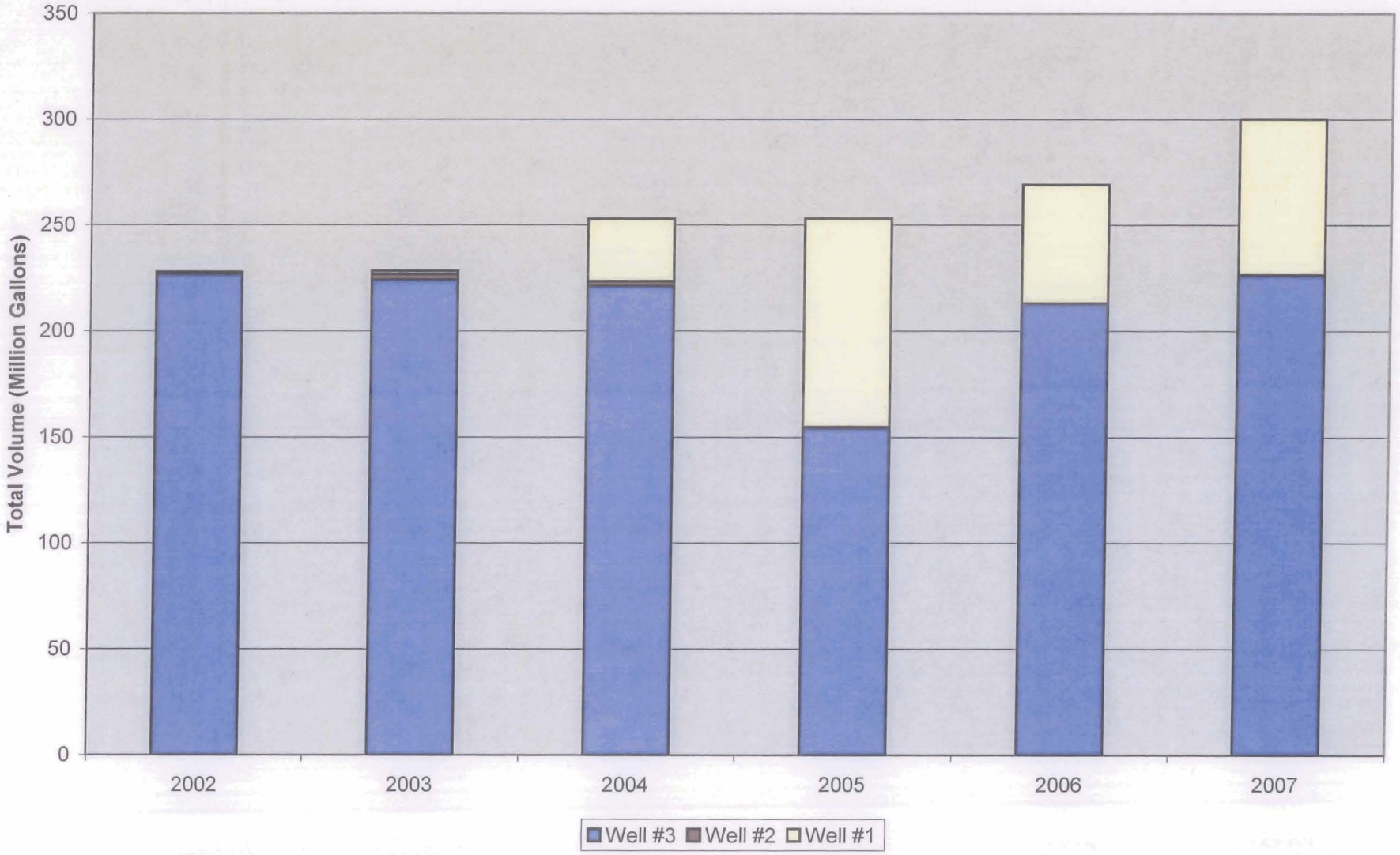


Figure 2-6. Average Monthly Demand - Volume

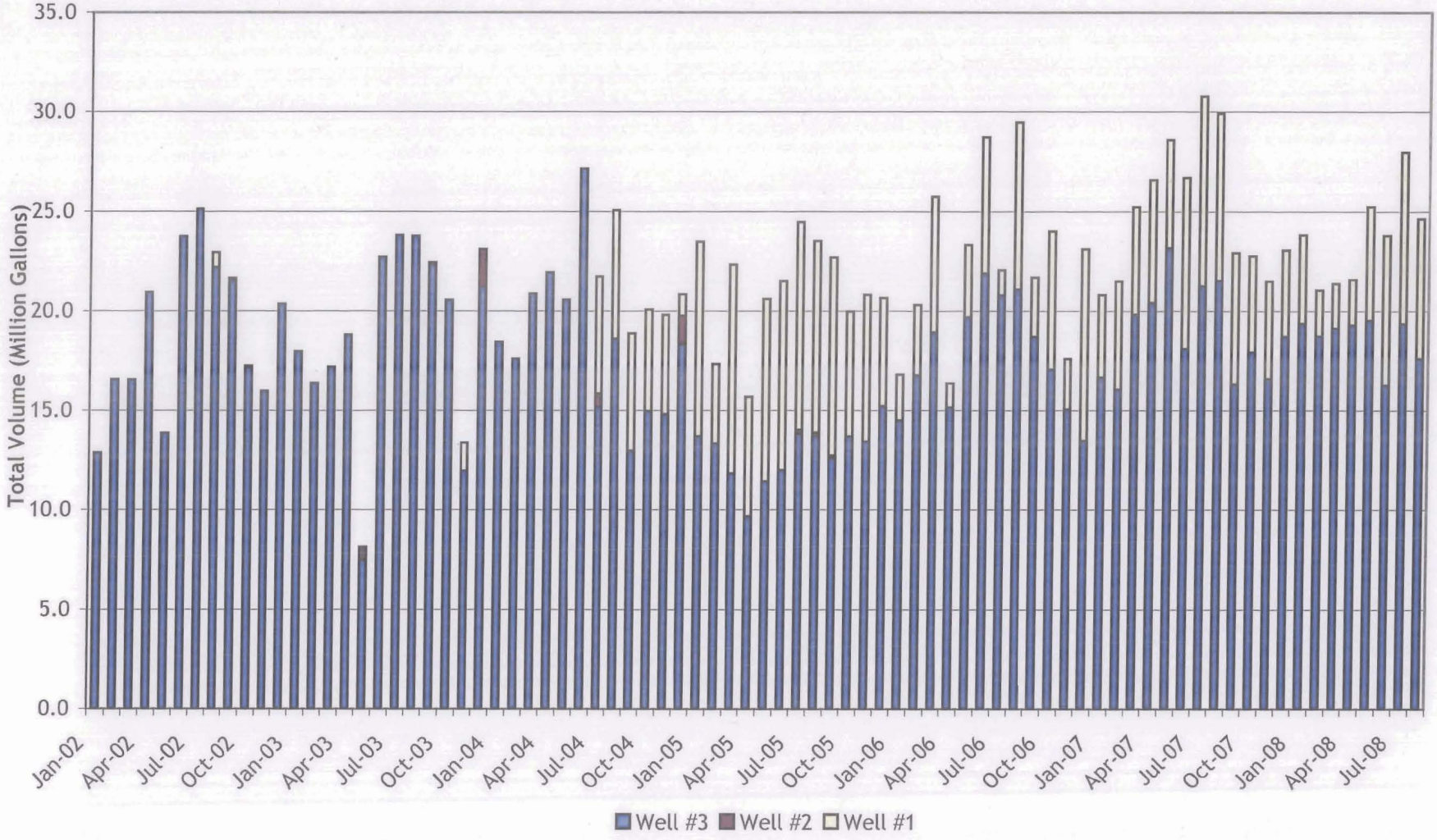
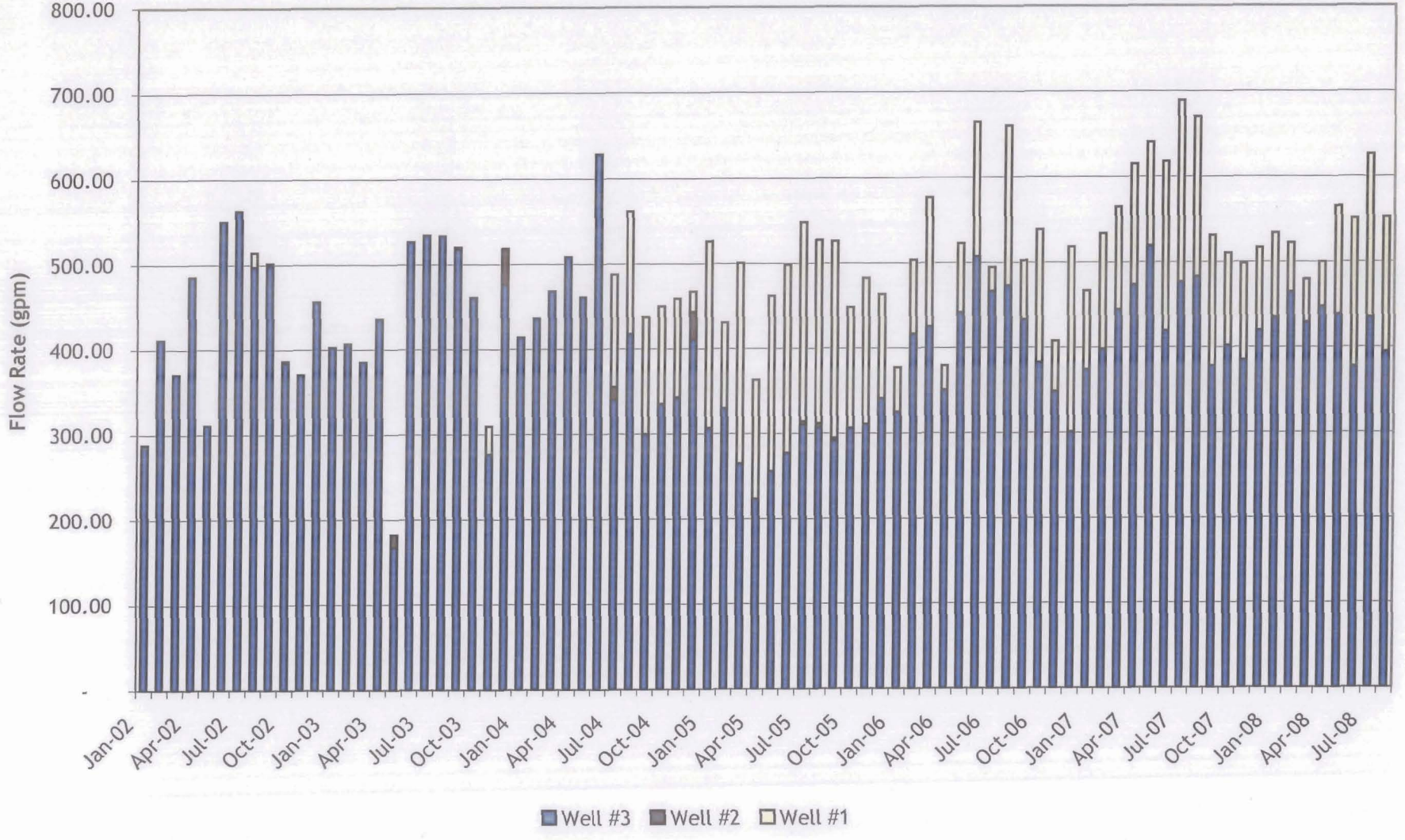


Figure 2-7. Average Monthly Demand - Flow Rate



**Average Day Demand** - This value represents the annual average daily demand over the course of an entire year. It was estimated by calculating the average of the monthly flow data over the 7-year monitoring period from 2002 through 2008.

**Maximum Day Demand** - This value represents the demand that exists if the maximum volume of water used during any one day in the year is applied uniformly at a 24-hour rate. The maximum day demand will most likely occur during the summer months when irrigation demand is the highest.

**Peak Hour Demand** - This value represents the highest hourly demand exerted at any given time during the year.

### 2.3.1 Domestic Demand

The domestic demand consists of all potable water that is not used by Glanbia. Figures 2-8 and 2-9 illustrate the average domestic demand on an monthly basis in terms of total volume (million gallons) and flow rate (gallons per minute), respectively, for the seven year monitoring period. The months where no data is shown resulted from meter discrepancies that resulted in negative readings. As shown in the figures, the demand fluctuates with the seasons as previously discussed. However, there appears to be a spike in domestic water use every December or January; the cause of this irregularity during the winter is unknown. Also, due to some discrepancies in the data, several months' data were not included in the analysis.

Based on the literature and experience with other communities in southern Idaho, the maximum day demand was estimated by multiplying the average day demand by 2.5. A ratio of peak hour flow to maximum day demand of 1.5 is typical for southern Idaho, and was used to approximate the City's peak hour demand. Table 2-3 summarizes the domestic water demands from the City's water system under existing conditions.

### 2.3.2 Industrial Demand

The industrial demand consists of all potable water that is used by Glanbia. Figures 2-10 and 2-11 illustrate the average industrial demand on an monthly basis in terms of total volume (million gallons) and flow rate (gallons per minute), respectively, for the four year monitoring period. As shown in the figures the demand stays fairly consistent with a gradual upward trend. There does not seem to be any seasonal patterns or fluctuations. Also, due to some irregular plant operations, July 2004 to February 2005, the demand jumped abruptly. These months were disregarded when determining the demand trend for Glanbia.

For a conservative estimate, the maximum day demand was established by multiplying the average day demand by 1.9. A ratio of peak hour flow to maximum day demand of 1.5 was used to approximate Glanbia's peak hour demand. Table 2-3 summarizes the industrial water demands from the City's water system under existing conditions.

### 2.3.3 Per Capita Demand

At the current population of 430, the average day per-capita demand for domestic use only is approximately 362 gallons per-capita per day (gpcd) as shown in Table 2-3. Based on empirical flow monitoring data from several other communities in southern Idaho, the average day per-capita demand ranges from approximately 233 to 486 gpcd, with an average of 375 gpcd. As such, the demand data from the City of Richfield appears to be consistent with these values.

Fig. 2-8. Domestic Average Monthly Demand - Volume

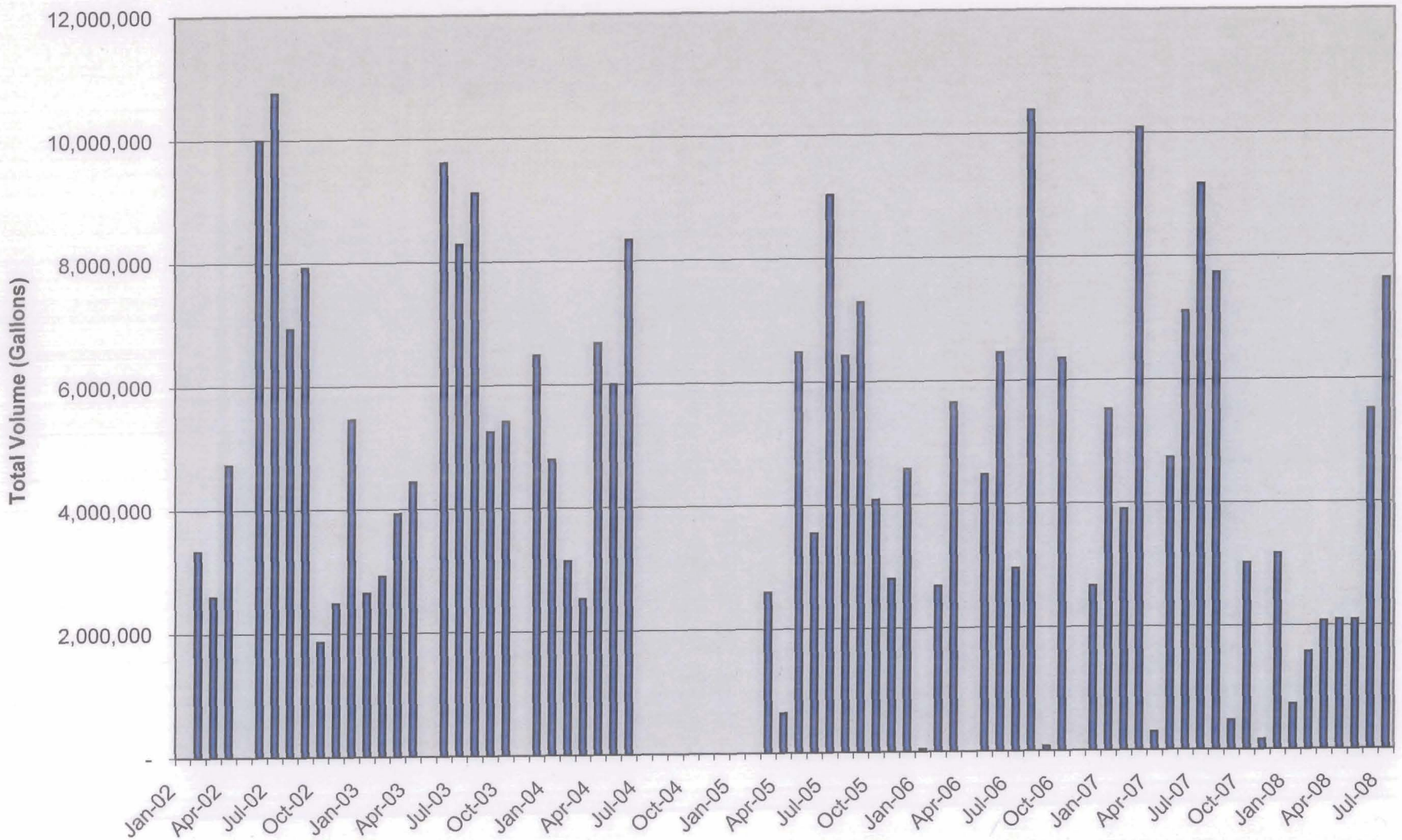


**Fig 2-9. Domestic Average Monthly Demand - Flow Rate**

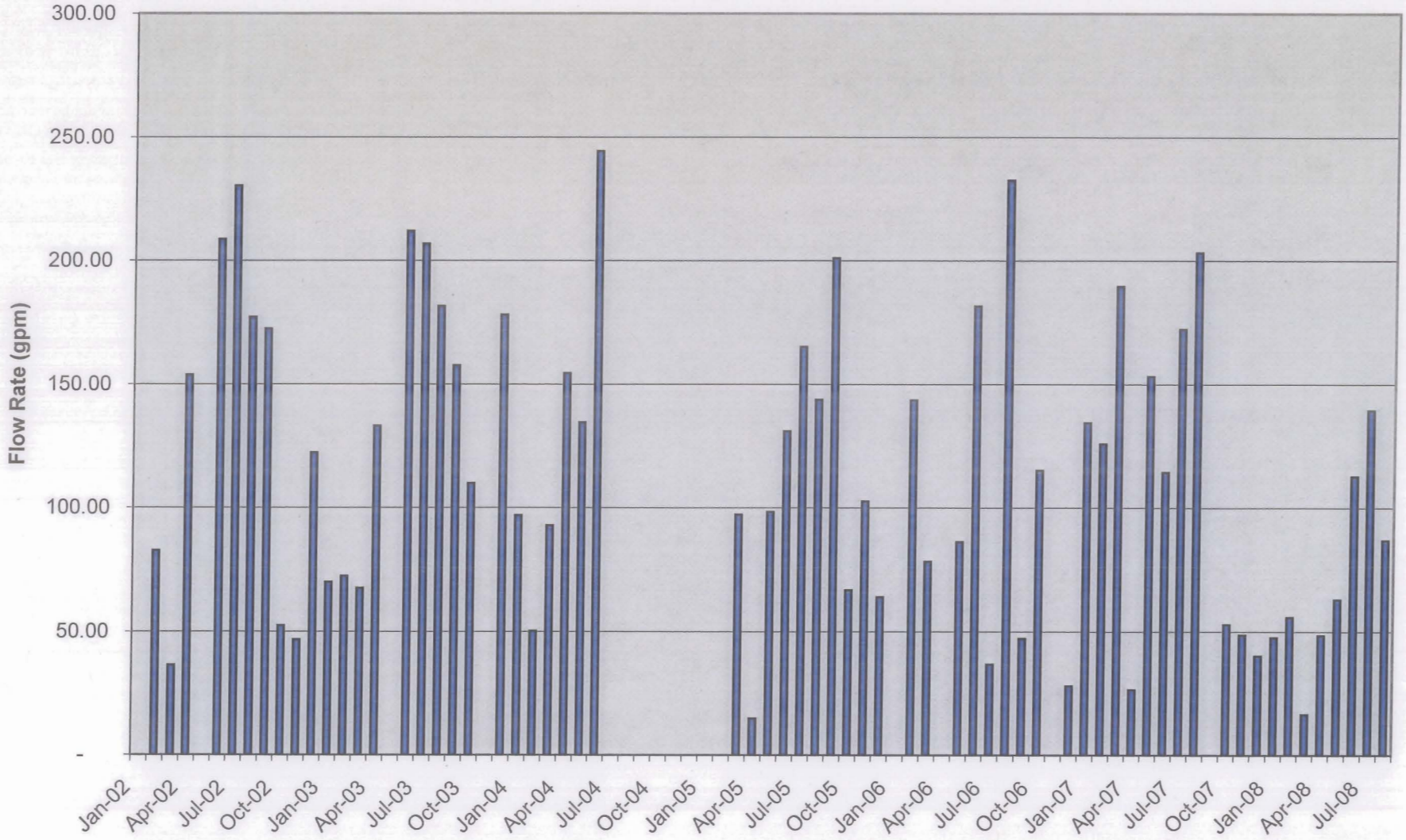


**Figure 2-10. Glanbia Average Monthly Demand - Volume**

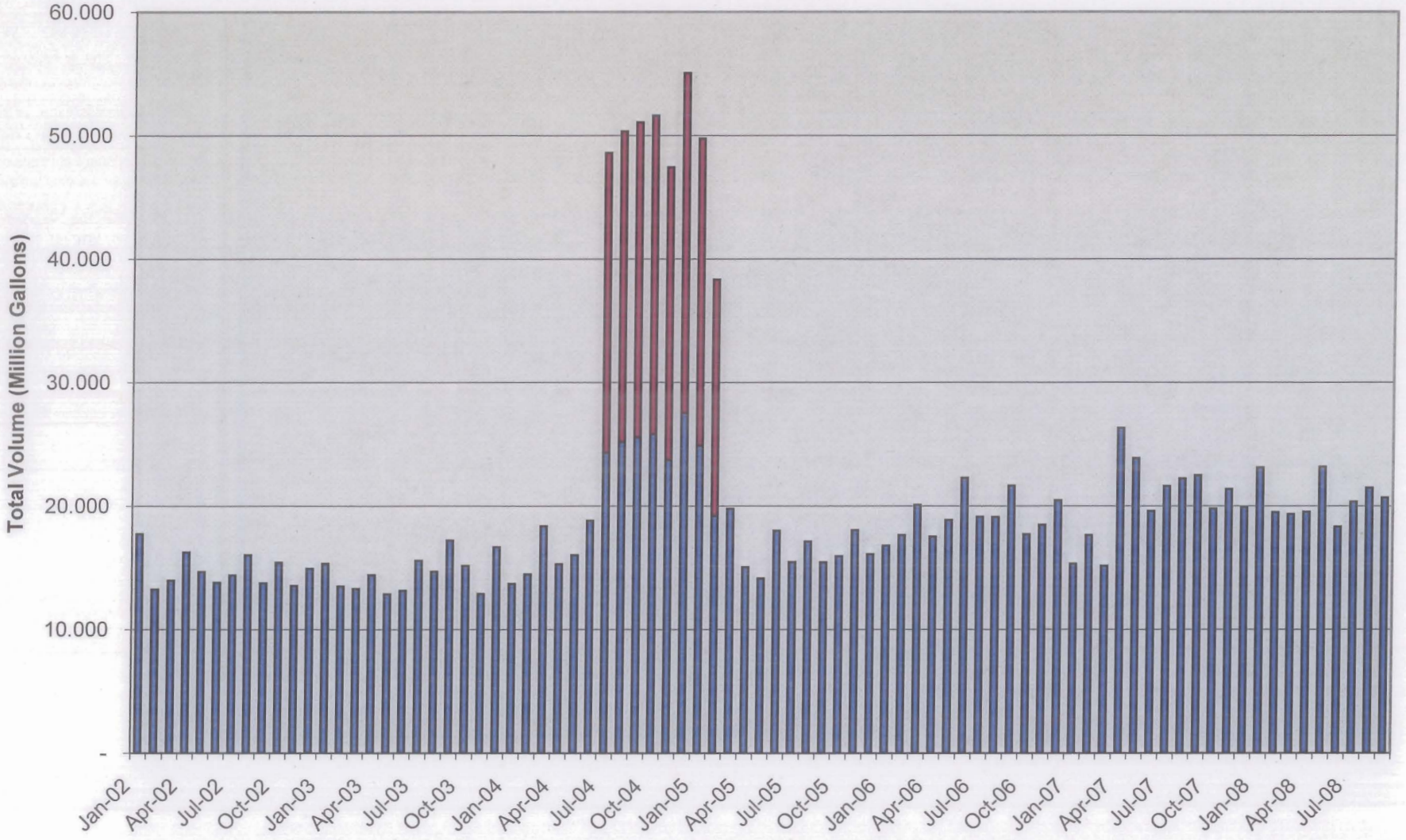


**Fig 2-11. Glanbia Average Monthly Demand - Flow Rate**

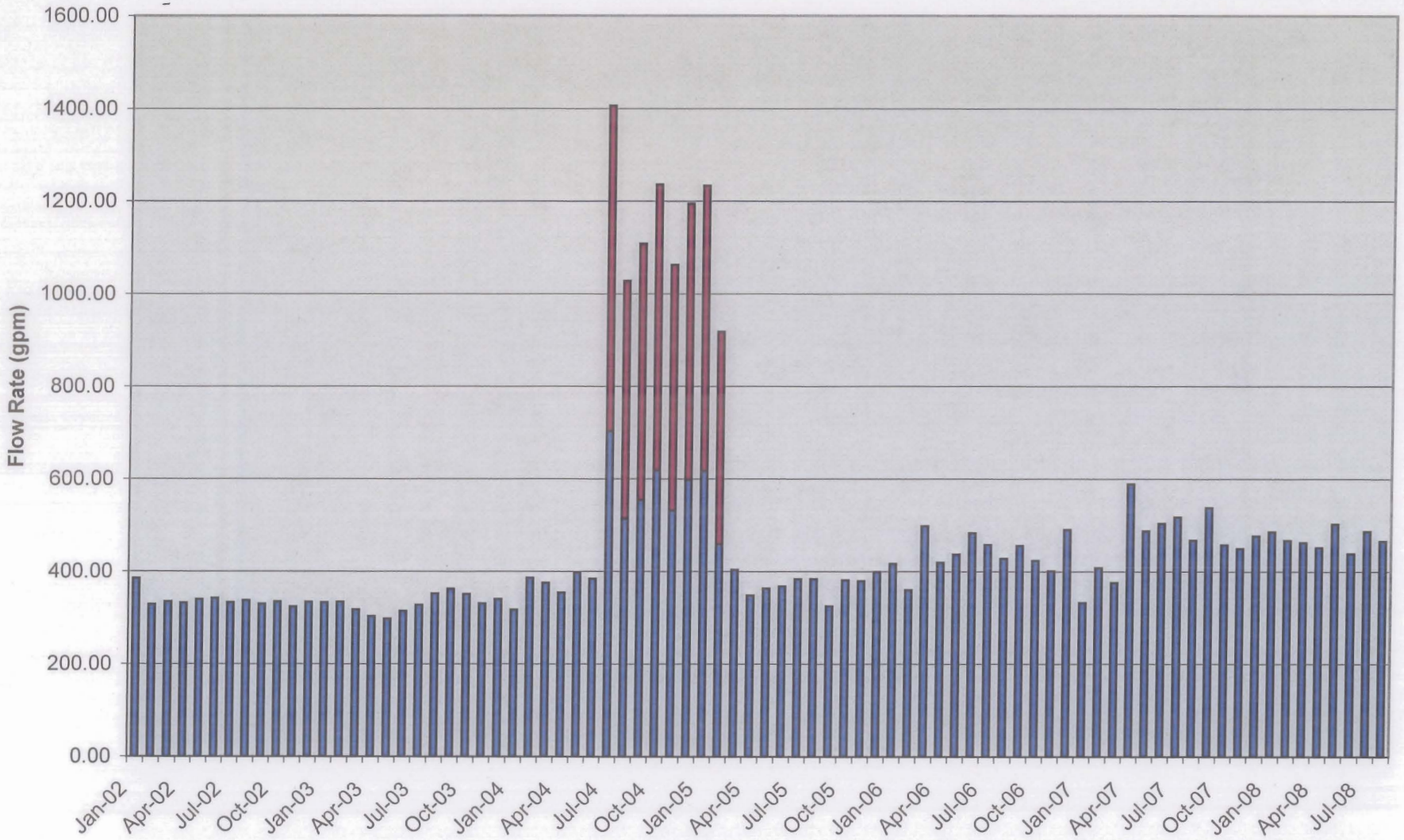


Table 2-3. Water Demand

| Parameter | Units | Domestic | Industrial | Total |
|---|---|---|---|---|
| Average Day Demand | gpm | 108 | 398.6 | 493 |
| Maximum Day Demand | gpm | 244 | 757.3 | 993.2 |
| Peak Hour Demand | gpm | 366 | 1136.0 | 1489.9 |
| Average Day Per Capita | gpcd | 362 | - | 316 |

### 2.3.4 Irrigation Demand

As previously discussed the domestic water demand has seasonal fluctuations due primarily to irrigation practices. Table 2-4 shows that the average day demand during the irrigation season is greater than the non-irrigation season by approximately 66 gallons per minute (gpm).

Table 2-4. Irrigation Flows

| Season | Average Day Demand (gpm) |
|---|---|
| Irrigation Season (April - October) | 122.2 |
| Non-Irrigation Season (November - March) | 67.2 |

According to city personnel, in the past, ninety percent of the irrigation water was provided from canals. However, in recent years, more residents have been using potable water for irrigation purposes. In addition to the existing residents using more potable water for irrigation, future developments will use the potable water for irrigation as well. The City also uses potable water to irrigate three parks. Other large irrigation users include the school and the LDS church. Currently the school uses solely canal water and the LDS church irrigation system is set up to use either canal water or potable water for irrigation.

### 2.3.5 Fire Flow Demand

The Idaho Survey and Ratings Bureau (ISRB) recommends "needed fire flows" based on guideline values established by the Insurance Services Office, Inc. (ISO). The ISO sets the "needed fire flows" for various structures within a community based on the type of construction, building size, occupancy factors and proximity of buildings. These values are used primarily for insurance purposes and are not enforceable requirements. Most communities strive to provide the guideline fire flows to reduce potential insurance costs to the individual rate payers.

Based on recent discussions with the ISRB, the Richfield water system currently has a fire protection classification rating of 7. Table 2-5 summarizes the fire flow quantities and durations established by the ISRB for the structures requiring the greatest fire flow protection.

Table 2-5. Fire Flow Recommendations

| Location | Fire Flow Requirement (gpm) | Duration (hours) |
|---|---|---|
| Elementary School | 3,000 | 3 |
| Glanbia | 2,000 | 2 |
| Reed Grain Company | 1,250 | 2 |

Based on the preceding recommendations, it appears that the City should consider a minimum fire flow demand of 3,000 gpm for a three hour duration.

## 2.4 WATER QUALITY

IDEQ requires that the City periodically samples the wells for various water quality parameters. A summary of the historical water quality data can be found in Appendix C. A review of the historical data indicates that most of the water quality parameters are at levels less than their respective State and Federal drinking water standards. The City has reported that there have been no persistent customer complaints regarding water quality.

### 2.4.1 Radium 226 & 228

A combined radium reading of 9.1 pCi/L was measured in a July 2003 sample from Well #2, which is higher than the drinking water standard. The current Maximum Contaminant Level (MCL) for the combination of radium is 5 pCi/L. Long-term exposure to radium may result in an increased risk of cancer. As such, IDEQ has required that the City conduct quarterly sampling. Under the Radionuclides Rule published by EPA on December 7, 2000, the initial monitoring period to determine compliance lasted until December 31, 2007.

Compliance with the combined radium standard is based on the running annual average of quarterly samples. A single sample result higher than the MCL is an exceedence of the standard, but not necessarily a violation.

It is recommended that the City continue to analyze samples, as required by IDEQ, for the radium combination. Additional tests are not required until 2010. Recent samples indicate that the City is currently in compliance with the radium combo MCL. Figure 2-12 shows the historical levels of radium measured from Well #2.

## 2.5 WATER RIGHTS

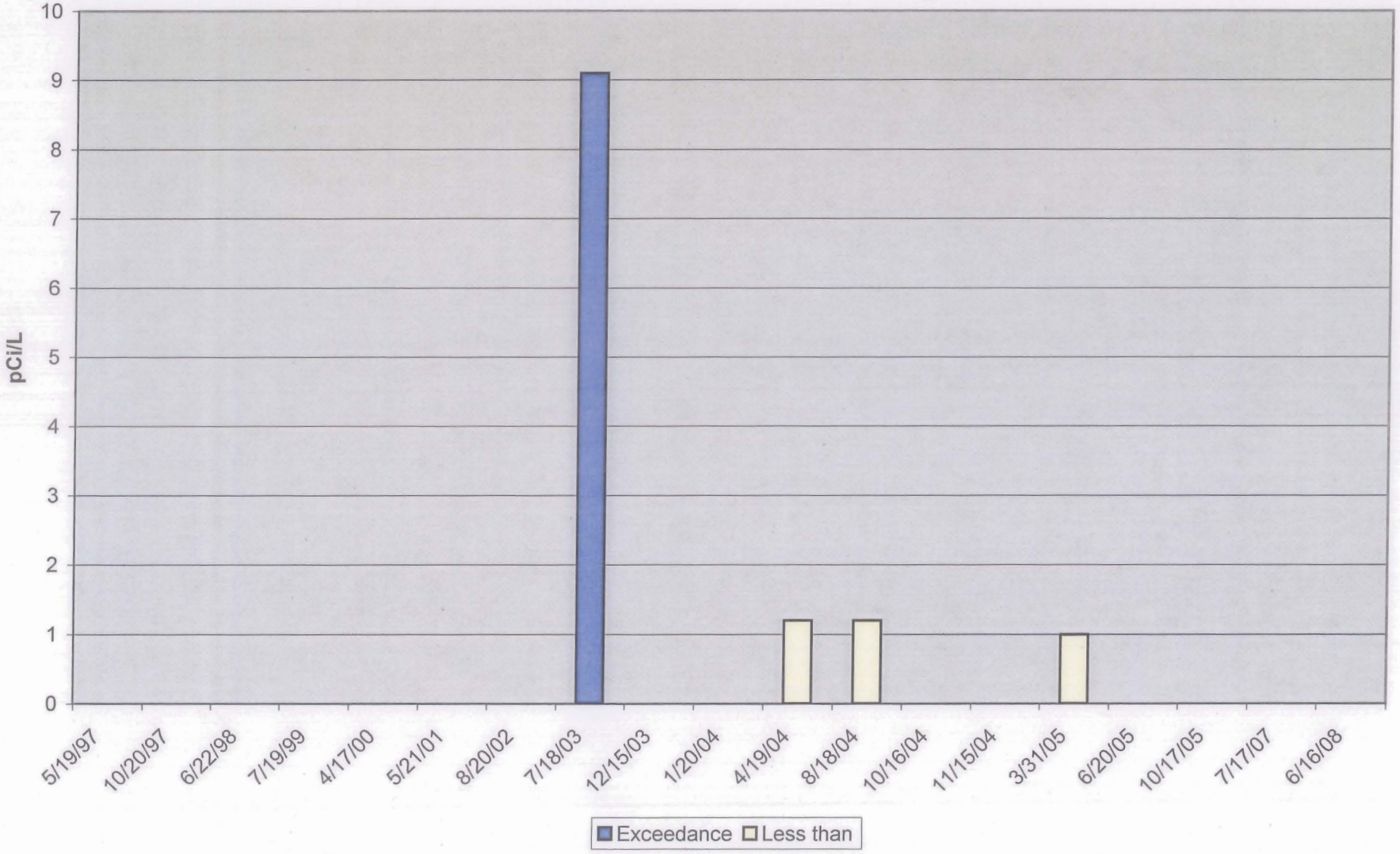
The City of Richfield currently holds three (3) water rights, as summarized in Table 2-6.

**Table 2-6. Water Right Summary**

| Water Right Number | Priority Date | Basis | Source | Beneficial Use | Point of Diversion | Diversion Rate (cfs) | Diversion Rate (gpm) |
|---|---|---|---|---|---|---|---|
| 37-4084 | 6-1-14 | Decreed | Groundwater | Municipal | Well #1 | .15 | 67.3 |
| 37-4085 | 6-1-56 | Decreed | Groundwater | Municipal | Well #2 | .14 | 62.8 |
| 37-8402 | 9-22-88 | License | Groundwater | Municipal | Well #3 | 1.63 | 731.6 |
| | | | | | Total | 1.92 | 861.7 |

As shown in the table, the water rights currently on file with the Idaho Department of Water Resources require that the total diversion rate be equal to or less than 1.92 cfs (861.7 gpm). However, currently the wells can not be analyzed collectively. As such, Well #1 and Well #2 exceed their respective water rights. With all the water rights combined the rights would still be insufficient to allow all three wells to be pumped simultaneously. Additional water rights need to be acquired for both current and future water supplies.

**Figure 2-12. Historical Radium Concentrations - Well #2**



## 2.6 EXISTING USER CHARGE RATES AND SYSTEM BUDGET

Table 2-7 summarizes the existing user rate schedule for the City of Richfield. These rates were established in July 1996 (see resolution in Appendix D). As shown, users are charged a monthly base rate for the first 1,000 gallons of water used. Any additional water used beyond the base 1,000 gallons is charged at an incremental rate for all meter sizes.

**Table 2-7. Existing User Charge Rates**

| Volume of Water Used (gallons) | Meter Size (inches) | Charge Rate |
|---|---|---|
| 0 - 1,000 | All Sizes | $10.00 |
| 1,000 - 11,000 | All Sizes | $1.20 |
| 11,000 - 21,000 | All Sizes | $0.95 |
| > 21,000 | All Sizes | $0.90 |
| **Glanbia** | | |
| >1,000 | All Sizes | $0.75 per 1,000 gal |

The water system budget for 2008-2009 is $301,000. This includes operation and maintenance, personnel, and overhead expenses. The City currently has no indebtedness related to the water system. The revenue and expense report for the fiscal year ending on September 30, 2008 and the 2008 -2009 budget are included in Appendix E.

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

# CHAPTER 3: EVALUATION OF EXISTING FACILITIES

# 3.0 EVALUATION OF EXISTING FACILITIES

## 3.1 SUPPLY WELLS

According to the water system operator, the three wells are currently operating satisfactorily. The pumps and motors in Wells #1, #2, and #3 are approximately 3 years, 12 years, and 19 years old, respectively. Under normal conditions, the pumps and motors should have a useful life of approximately 20 to 25 years with proper operation and maintenance. As such, the existing well equipment in Well #1 and Well #2 appear to have plenty of useful service life remaining, but the City should be budgeting to replace or rebuild the equipment in Well #3 in the near future.

At a minimum, the wells should be capable of pumping a sustainable supply that is equivalent to the maximum day demand of 993 gpm. As shown in Table 2-1, the estimated combined yield from the three wells is approximately 1,160 gpm. As such, it appears that with all three wells in use at their anticipated pumping rate, the maximum day demand can be satisfied.

Additionally, the City should consider a scenario in which the largest well is inoperable during the maximum day demand due to maintenance. In this situation, the 700 gpm provided by Well #3 would not be available and the total supply would be reduced to the 460 gpm produced by Wells #1 and #2. This flow is not adequate to meet the estimated maximum day demand of 993 gpm. As such, an additional source of approximately 540 gpm is recommended to meet current demands.

Providing fire flow protection to users of the water system is a safety issue. As previously discussed, the minimum recommended fire flow for the system is 3,000 gpm for a three hour duration. The existing supply wells and storage tank currently do not have adequate capacity to meet the recommended fire flow. As such, it appears that additional supply, pumping, and/or storage capacity may be needed to meet the fire flow demands.

All of the wells are located more than 200 feet from any septic tanks and drainfields. IDEQ typically requires that wells be located a minimum of 100 feet from septic tanks and drainfields (*IDAPA 58.01.03*). The existing wells meet this criteria.

There are canal water irrigation pipes located approximately 50 feet from Wells #1 and #3 and approximately 200 feet from Well #2. As such, the wells appear to meet IDEQ's requirement that they be located a minimum of 50 feet from non-potable water lines and surface waters (*IDAPA 58.01.08*).

## 3.2 WATER STORAGE

Three criteria are typically evaluated in assessing the storage volume requirements for a community, including:

- **Fire Protection Storage** - The storage volume for fire protection was estimated based on a recommended minimum fire flow of 3,000 gpm for a 3 hour duration.

- **Equalization Storage** - IDEQ has established a method for estimating the equalization storage volume based on the ratio of the source capacity to the maximum day demand (*IDEQ Design File Note, Reservoir Sizing - Public Water Systems, April 1998*). This method allows for calculating the equalization volume required to meet the peak hour

demand. To provide a factor of safety, it was assumed that the supply from the largest well (Well #3) would not be available if it is taken off-line for maintenance. Based on this methodology, the equalization storage volume was estimated by applying a peaking factor of 5.4 to the maximum day demand flow rate for a 1-hour time period.

- **Emergency Storage** - The emergency storage volume is a policy decision by the City. Based on recent discussions with city personnel, sufficient emergency storage volume should be provided to supply the domestic maximum day demand (236 gpm) for a 2 hour duration.

As shown in Table 3-1, the sum of these three volumes equates to the total recommended storage volume.

**Table 3-1. Recommended Storage Volume with the Existing Wells**

| Criteria | Storage Volume |
|---|---|
| Fire Protection Storage Volume | 540,000 |
| Flow Equalization Storage Volume | 321,740 |
| Emergency Storage Volume | 28,320 |
| **Total Storage Volume** | **890,060** |
| Existing Storage Volume | 0* |
| **Additional Storage Volume Needed** | **860,060** |

* Assumes existing elevated storage tank is abandoned upon completion of new tank

As shown in the table, a total storage volume of 860,060 gallons is recommended for the current water system. Due to abandoning the old storage tank the additional storage volume needed is equal to the total storage volume. Increasing the supply or reducing demand may reduce the amount of storage volume needed.

## 3.3 DISINFECTION SYSTEM

With the impending requirements of the Ground Water Rule under the Clean Water Act, the City may be required to disinfect all water sources. To adequately disinfect the water, a minimum contact time of 30 minutes is typically recommended following injection of the chlorine. With the water being pumped directly into the distribution system and the first service being located near Well #3, adequate disinfection contact time is not provided prior to reaching the first service connection under current conditions. As was previously stated water pumped from Wells #1 and #2 is not disinfected. Disinfection equipment may be necessary for these two wells in the future.

A minimum of 0.2 mg/L of free chlorine residual is recommended in the distribution system (*10 State Standards 4.3.3.a*). To provide this residual, a chlorine dose of approximately 0.2 to 1.0 mg/L is typically required for groundwater sources. According to city personnel the disinfection system has been sufficient to obtain the desired chlorine concentrations, however the exact range of injection is unknown. As such, it appears that the existing disinfection system is adequately sized to maintain a minimum free chlorine residual of 0.2 mg/L from Well #3.

## 3.4 DISTRIBUTION SYSTEM

Most of the existing distribution mains are 40 to 50 years old. As such, the existing lines appear to be approaching the end of their useful service life of approximately 50 years.

Well #3 has a gauge attached to the bottom of the storage tank to help keep system pressures between 45 and 48 pounds per square inch (psi). As of yet the storage tank, which helps with system equalization and fire flow, has never been depleted. If Well #3 were down for maintenance or if the storage tank were depleted, the pressures throughout the system would drop significantly. In addition, small main lines contribute to significant head and pressure losses, even over short distances. Typical pressures for a water system range from 60 to 80 psi. Despite the expected lower pressures, there are currently no complaints about water pressure in the City, according to City personnel.

The water velocity in the distribution mains should typically be maintained at less than 5 feet per second (fps) during peak flow conditions and less than 10 fps during fire flow conditions. Otherwise, excessive headloss and reduced pressures may occur.

Fire flow requirements provide the greatest demand on a water distribution system. The capability of the system to provide fire flows was investigated. In particular, areas of the City near the buildings listed in Table 2-5 that require a high fire flow were evaluated. In addition, the Uniform Fire Code requires a basic fire flow of 1,000 gpm for two hours for basic residential structures of less than 3,600 square feet. The system was evaluated at the existing max day demand and at max day demand plus fire flows.

- **Residential Max Day Demand** - Only portions of the max day demand flow through any given main. As such, two scenarios were considered based on review of the distribution layout: 1) a 4 inch line with 20 connections and 2) a 6 inch line carrying three-fourths of the total domestic demand. Based on a maximum of 20 homes, max day demand of 35 gpm, connected to a 4 inch line, the velocity in the line would be approximately 0.9 fps. A 6 inch line carrying three-fourths of the max day demand of 236 gpm would have a velocity of 2.04 fps. Therefore, the current system appears to be sufficiently sized for the max day demand.

- **Residential Fire plus Max Day Demand** - At the recommended minimum fire flow of 1,000 gpm and a maximum day demand of 35 gpm, due to the maximum number of houses on any given 4 inch main, the fire plus maximum day demand is 1,035 gpm. The estimated velocity in a single 4 inch line is approximately 26.4 fps, and in a looped line approximately 13.2 fps. As such, it appears that all 4 inch mains are inadequately sized for fire flows. All residential mains should be a minimum of 6 inches if looped (5.87 fps at 1,035 gpm) or 8 inches if carrying the flow alone (6.6 fps at 1,035 gpm) in order to meet residential fire demands. For a single line carrying the entire residential max day demand plus fire flow, 1,306 gpm, a main of 8 inches would be sufficient (8.3 fps at 1,306 gpm).

- **Reed Grain Company Fire plus Max Day Demand** - The Reed Grain Company is located on Third Street just south of Oneida Street. With the recommended minimum fire flow of 1,250 gpm and a max day demand of approximately 153 gpm, due to the portion of the city that is serviced by the same line, the fire plus maximum day demand is 1,403 gpm. The estimated velocity in the looped 6 inch line is approximately 8.0 fps. Sufficient fire flow is currently provided for the building.

- **Elementary School Fire plus Max Day Demand** - The elementary school has the largest fire demand in the city at 3,000 gpm. With the recommended minimum fire flow of 3,000 gpm and a max day demand of 19 gpm, due to the approximately 11 homes that are serviced by the same line, the fire plus maximum day demand is 3,019 gpm. The estimated velocity in the 6 inch line servicing the school is 34.0 fps. In order to provide sufficient fire flow at a velocity less than 10 fps, the 6 inch line needs to be replaced with a 12 inch line (8.6 fps at 3,019 gpm) or with a looping 8 inch line (9.6 fps at 3,019 gpm).

- **Glanbia Fire plus Max Day Demand** - With a recommended minimum fire flow of 2,000 gpm and a maximum day demand of 706 gpm, for total of 2,706 gpm, the estimated velocity in the 6 inch line servicing Glanbia is approximately 30.7 fps. In order to provide sufficient fire flow at a velocity less than 10 fps, the 6 inch line needs to be replaced with a 12 inch line (7.7 fps at 2,706 gpm) or looped with a 10 inch line.

For improvements of specific areas of town further analysis may be required. Any improvements on the mains will require a minimum six inch line.

There are a number of dead end water lines in the distribution system that provide a much greater possibility for contamination as a result of stagnant water than from a fully looped system. Dead end lines should be tied into the system so that the line is connected to two main lines. The looping of lines will also provide the additional benefit of greatly increasing the available fire flow to existing fire hydrants currently connected to the dead end lines. Further, in order to perform routine or emergency maintenance on the dead end lines, it requires that users in these areas be without water for possible lengthy periods of time. Looping the dead end lines will enable domestic flow through the new looped line connection, eliminating the need to temporarily shut off the supply to existing users.

It is indicated on the layout of the city water system that the fire hydrants in the northern and southern parts of town are spaced 400-500 feet apart. However, in many parts of town the fire hydrants are spaced anywhere from 600 to 1,200 feet apart. Also according to the layout about half of the fire hydrants are connected to 6 inch lines and the other half are connected to 4 inch lines or smaller. Fire hydrants are typically spaced about every 400 to 600 feet and current regulations require that they be connected to a minimum 6 inch diameter main. As such, many of the existing mains are inadequately sized for fire hydrants.

The existing system is metered at the pumps and at the individual user connections. As such, the amount of water pumped from the wells and the amount of water used by the residents can be directly compared. Any discrepancies between the volume pumped and the volume used will be noticed. These discrepancies are often due to leaks within the system and/or other water losses. If any significant discrepancies are noticed, the system may need to be checked for leaks. Metered systems generally provide for more efficiently operated water systems. In addition, metered systems typically have a lower per-capita water demand than systems that are not metered because the residents are billed on the total amount of water used.

As part of their sanitary survey (see Appendix F), IDEQ recommended that 1) a leak detection program be put in place and utilized and 2) the operator of the system be trained in cross-connection control.

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

# CHAPTER 4: FUTURE CONDITIONS

# 4.0 FUTURE CONDITIONS

## 4.1 FUTURE PLANNING AREA CONDITIONS

The Richfield Planning Area represents a geographical area and population which the City can reasonably be expected to serve within a 20 year design period from 2008 to 2028. Sufficient land was included in the Planning Area to accommodate all forecasted residential, commercial and industrial growth, and allow some flexibility in the future development of the community.

## 4.2 FUTURE LAND USE

A review of the City's Comprehensive Plan (see Appendix G) and zoning map indicates that residential land use is predominant, with smaller areas of commercial and industrial land use. It is anticipated that growth within the Planning Area for the 20 year design period will consist primarily of residential development. According to City personnel, several subdivisions have been proposed on the north and south edges of town for up to 640, 30, and 180 households (0.5 acre lots). It is estimated that additional residential growth will also occur within vacant areas of the existing City limits.

## 4.3 20 YEAR PROJECTION

Annual population forecasts for the Richfield Planning Area were developed for a 20 year design period from 2008 to 2028. These incremental estimates provide the basis for projecting average and peak water demands and determining future water system needs.

### 4.3.1 Population Forecast

Population projections for the City of Richfield were based on historical growth patterns and discussions with City personnel. Data from the U.S. Census Bureau indicate that Richfield experienced an average annual growth rate of approximately 1.4% from 1970 to 2000. Based on the number of homes built since 2000 and the average persons per house of 2.59, it was estimated that over the last six years the city has had an annual growth rate of 0.53%. The current population is estimated to be 430 people.

Based on discussions with City personnel, it is anticipated that Richfield's annual growth rate will increase somewhat from its current value to approximately 2.0%, and then remain unchanged for the 20 year planning period. This growth rate should provide a conservative estimate of the actual population increase.

Results of the forecast indicate a total population within the City of approximately 639 residents in the year 2028. This represents an increase of approximately 209 residents, or 49%, over the existing population of 430 residents. Table 4-1 and Figure 4-1 summarize the projected growth trends for the City of Richfield.

Although Richfield is located within an agricultural area, the Planning Area experiences little, if any, seasonal population fluctuations due to an influx of migrant or other workers. The Planning Area does not contain a migrant labor center, as do some other communities in southern Idaho. As a result, almost all migrant and/or seasonal workers are housed on the farms on which they are employed, most of which are located outside the Planning Area. Therefore, it is reasoned that Richfield does not experience any significant seasonal population changes due to agricultural practices in the area.

**Figure 4-1. City of Richfield**
**Population Projections**

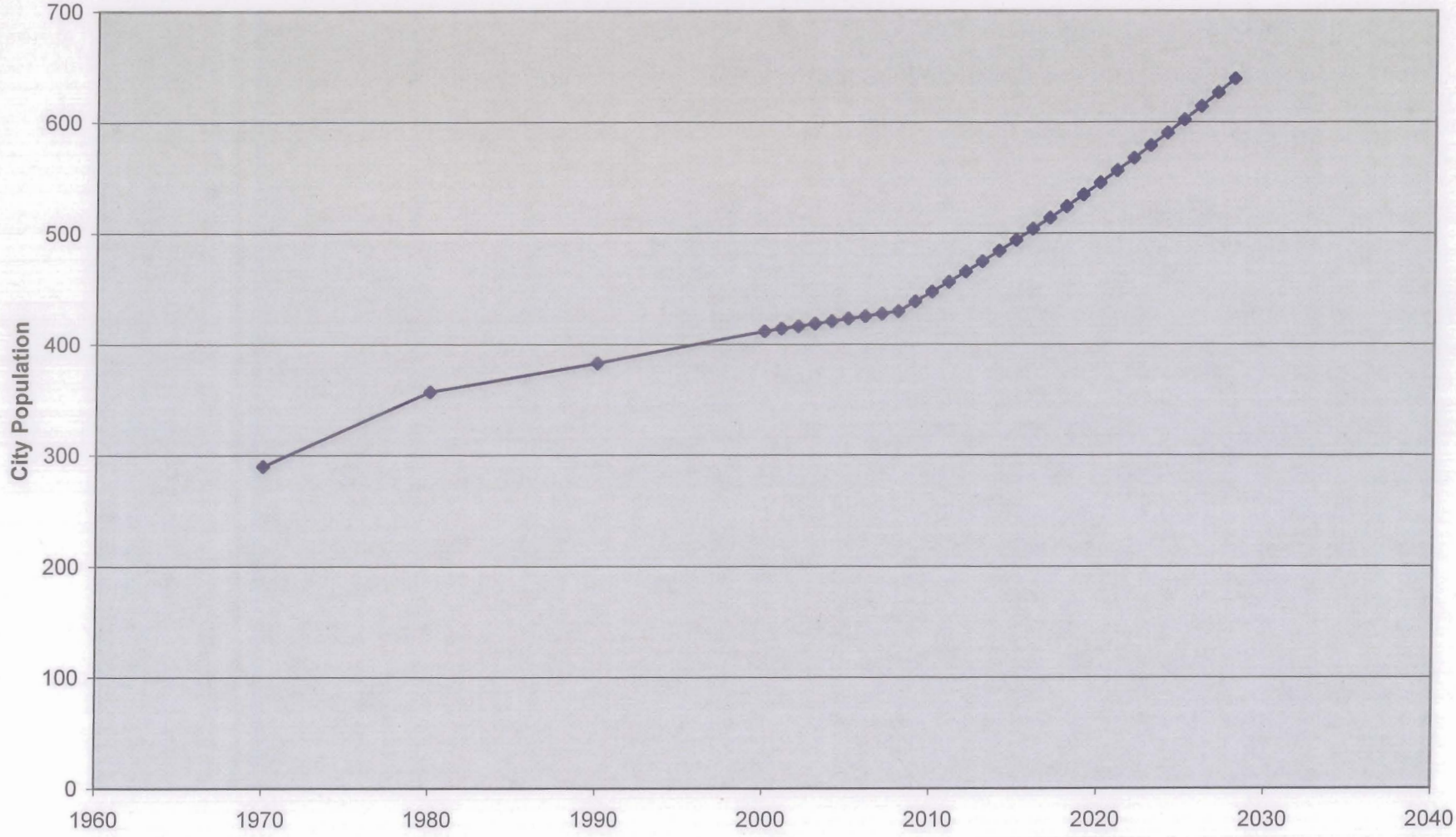


**Table 4-1. Population Projections**

| Year | City of Richfield | |
|---|---|---|
| | Population | Annual Growth Rate |
| 1970 | 290[1] | - |
| 1980 | 357[1] | 2.31% |
| 1990 | 383[1] | 0.73% |
| 2000 | 412[1] | 0.76% |
| 2001 | 414 | 0.55% |
| 2002 | 417 | 0.54% |
| 2003 | 419 | 0.54% |
| 2004 | 421 | 0.54% |
| 2005 | 423 | 0.53% |
| 2006 | 426 | 0.53% |
| 2007 | 428 | 0.53% |
| 2008 | 430[2] | 0.53% |
| 2009 | 439 | 2.00% |
| 2010 | 447 | 2.00% |
| 2011 | 456 | 2.00% |
| 2012 | 465 | 2.00% |
| 2013 | 475 | 2.00% |
| 2014 | 484 | 2.00% |
| 2015 | 494 | 2.00% |
| 2016 | 504 | 2.00% |
| 2017 | 514 | 2.00% |
| 2018 | 524 | 2.00% |
| 2019 | 535 | 2.00% |
| 2020 | 545 | 2.00% |
| 2021 | 556 | 2.00% |
| 2022 | 567 | 2.00% |
| 2023 | 579 | 2.00% |
| 2024 | 590 | 2.00% |
| 2025 | 602 | 2.00% |
| 2026 | 614 | 2.00% |
| 2027 | 626 | 2.00% |
| 2028 | 639 | 2.00% |

1 Data from 1970 to 2000 from U.S. Census Bureau.
2 Data from Region IV Development Association from U.S. Census Bureau estimates

Based on the 2000 U.S. Census data which reported a total number of houses within the City of 180, only 159 of which were occupied plus an average of 2 new homes per year; there should currently be approximately 175 occupied homes. Given the City's current population of approximately 430 people, the number of people per household is approximately 2.5. Given a total acreage within the existing City limits of 415 acres, the average number of households per acre is approximately 0.422. The average number of people per acre is approximately 1.04.

### 4.3.2 Planning Area Forecast

The proposed Planning Area must contain sufficient acreage to accommodate future growth. Using the population forecasts summarized in Table 4-1, the additional land area requirement in the year 2028 is approximately 199 acres. Since the proposed Planning Area depicted in Figure 2-2 encompasses approximately 1,290 acres, an additional 875 acres will be provided beyond the existing 415 acres in the City limits. Therefore, the proposed Planning Area

contains sufficient acreage to accommodate the forecasted population growth, and allows the flexibility for unaccounted residential, commercial or industrial growth.

## 4.4 FUTURE WATER DEMAND

### 4.4.1 Domestic Demand

Water demand was projected over the next 20 years by multiplying the existing per-capita flow (316 gpcd) by the projected population. It was assumed that the peaking factors for maximum day demand (2.5) and peak hourly demand (1.5) would remain the same throughout the 20 year planning period. Table 4-2 summarizes the year-by-year flow projections.

**Table 4-2. Domestic Year-by-Year Water Demand Projections**

| Year | Population | Average Day Demand (gpm) | Maximum Day Demand (gpm) | Peak Hourly Demand (gpm) |
|---|---|---|---|---|
| 2008 | 430 | 108 | 270 | 405 |
| 2009 | 439 | 110 | 276 | 413 |
| 2010 | 447 | 112 | 281 | 422 |
| 2011 | 456 | 115 | 287 | 430 |
| 2012 | 465 | 117 | 292 | 439 |
| 2013 | 475 | 119 | 298 | 447 |
| 2014 | 484 | 122 | 304 | 456 |
| 2015 | 494 | 124 | 310 | 466 |
| 2016 | 504 | 127 | 317 | 475 |
| 2017 | 514 | 129 | 323 | 484 |
| 2018 | 524 | 132 | 329 | 494 |
| 2019 | 535 | 134 | 336 | 504 |
| 2020 | 545 | 137 | 343 | 514 |
| 2021 | 556 | 140 | 350 | 524 |
| 2022 | 567 | 143 | 357 | 535 |
| 2023 | 579 | 145 | 364 | 545 |
| 2024 | 590 | 148 | 371 | 556 |
| 2025 | 602 | 151 | 378 | 567 |
| 2026 | 614 | 154 | 386 | 579 |
| 2027 | 626 | 157 | 394 | 590 |
| 2028 | 639 | 161 | 401 | 602 |

### 4.4.2 Industrial Demand

The industrial water demand was projected by analyzing Glanbia's water flow trend over the last 7 years (2002-2008) (see Figure 4-2) and then extending that trend over the next 20 year period (see Figure 4-3). As seen in Figure 4-2, the flows between July 2004 and February 2005 are significantly higher than the normal flows. Based on conversations with Glanbia personnel this anomaly was due to one of their polishers, which allows the recycling of water, being down for the given period. As such, the data for this time period was excluded in the calculation of Glanbia's flow trend. It was assumed that the peaking factors for maximum day demand (1.9) and peak hourly demand (1.5) would remain the same throughout the 20 year planning period. Table 4-3 summarizes the year-by-year flow projections for Glanbia.

### 4.4.3 Total Demand

The total water demand projected over the next 20 years was calculated by adding the domestic demand to the corresponding industrial demand. Table 4-4 summarizes the total year-by-year flow projections.

**Figure 4-3. Glanbia Flow Trend Last 72 Months - 20 Year Projection**

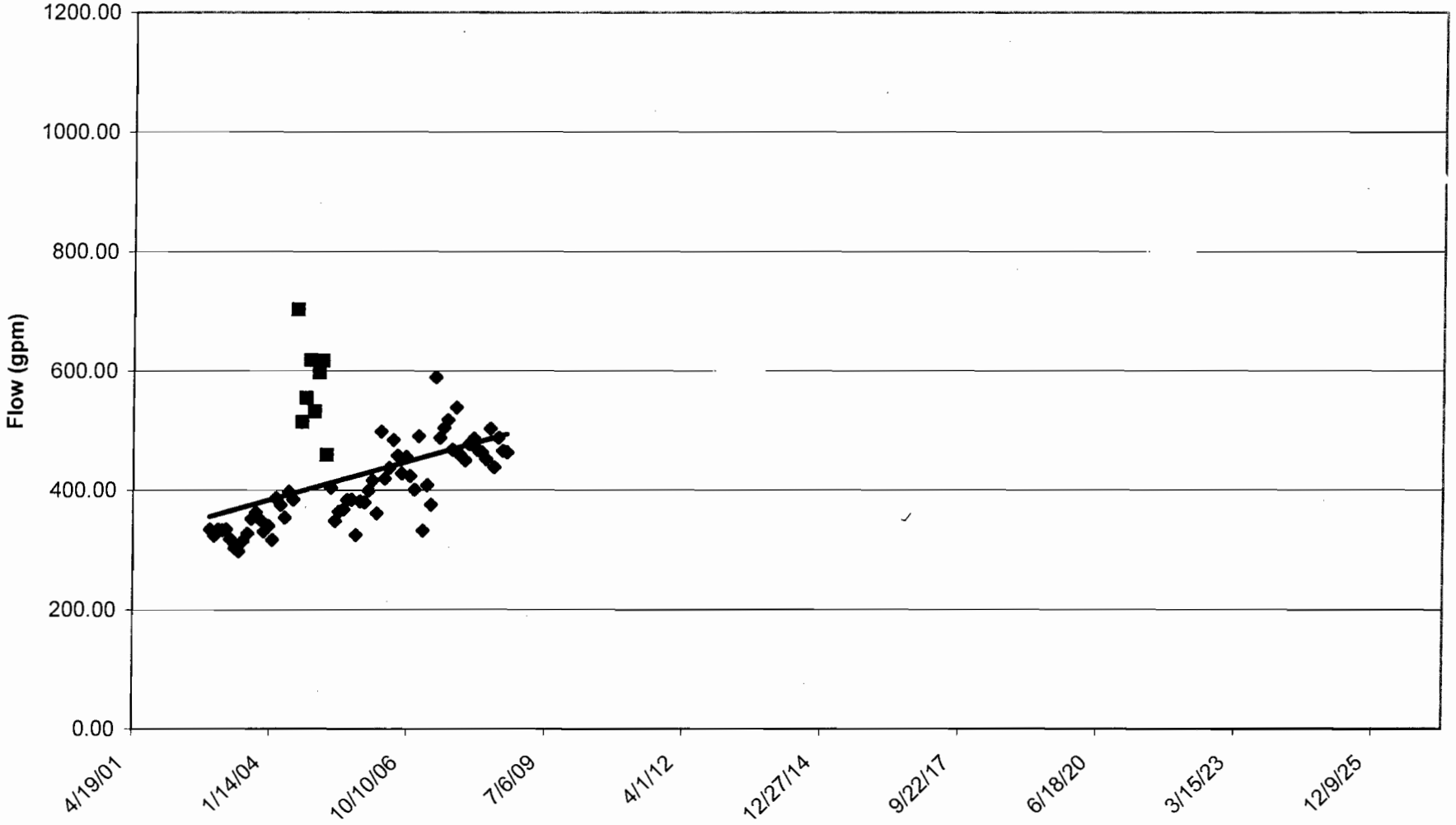


**Figure 4-2. Glanbia Flow Trend Last 72 Months**

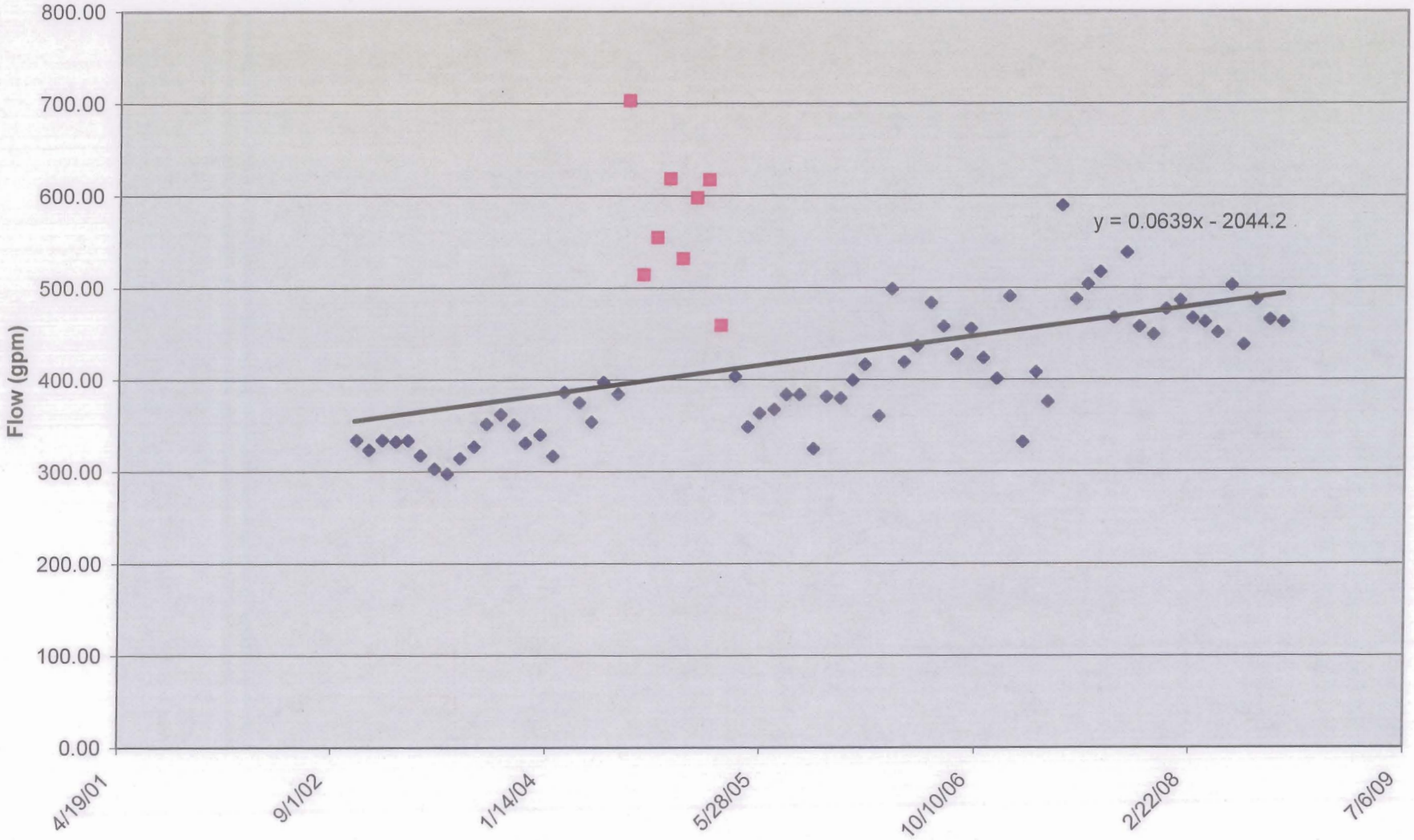
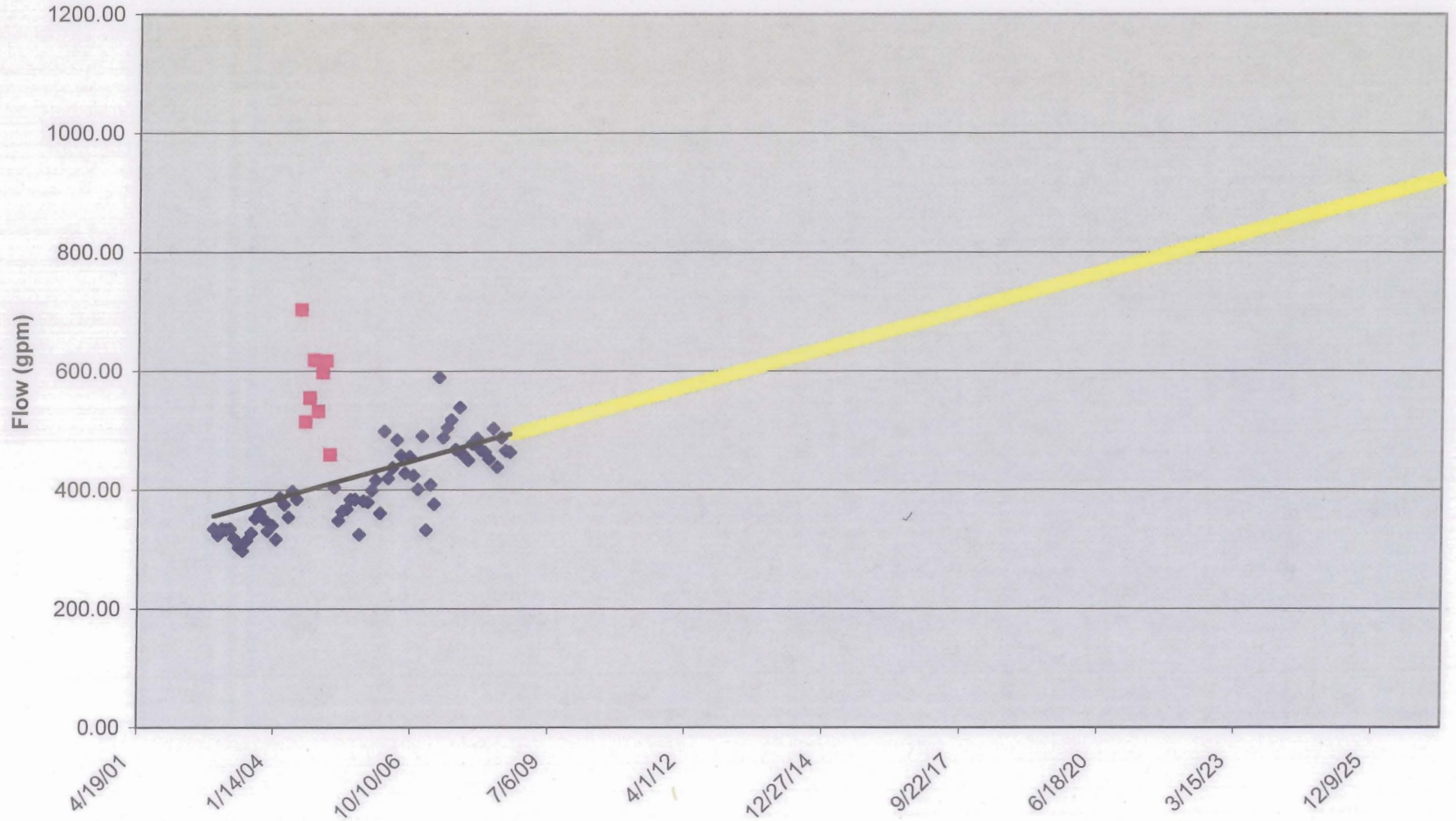


**Figure 4-3. Glanbia Flow Trend Last 72 Months - 20 Year Projection**



## Table 4-3. Glanbia Year-by-Year Water Demand Projections

| Year | Population | Average Day Demand (gpm) | Maximum Day Demand (gpm) | Peak Hourly Demand (gpm) |
|---|---|---|---|---|
| 2008 | 430 | 399 | 757 | 1,136 |
| 2009 | 439 | 489 | 930 | 1,395 |
| 2010 | 447 | 522 | 992 | 1,488 |
| 2011 | 456 | 545 | 1,036 | 1,554 |
| 2012 | 465 | 569 | 1,080 | 1,620 |
| 2013 | 475 | 592 | 1,125 | 1,687 |
| 2014 | 484 | 615 | 1,169 | 1,754 |
| 2015 | 494 | 639 | 1,213 | 1,820 |
| 2016 | 504 | 662 | 1,258 | 1,887 |
| 2017 | 514 | 685 | 1,302 | 1,953 |
| 2018 | 524 | 709 | 1,346 | 2,020 |
| 2019 | 535 | 732 | 1,391 | 2,086 |
| 2020 | 545 | 755 | 1,435 | 2,153 |
| 2021 | 556 | 779 | 1,479 | 2,219 |
| 2022 | 567 | 802 | 1,524 | 2,286 |
| 2023 | 579 | 825 | 1,568 | 2,352 |
| 2024 | 590 | 849 | 1,612 | 2,419 |
| 2025 | 602 | 872 | 1,657 | 2,485 |
| 2026 | 614 | 895 | 1,701 | 2,552 |
| 2027 | 626 | 919 | 1,746 | 2,618 |
| 2028 | 639 | 942 | 1,790 | 2,685 |

## Table 4-4. Total Year-by-Year Water Demand Projections

| Year | Population | Average Day Demand (gpm) | Maximum Day Demand (gpm) | Peak Hourly Demand (gpm) |
|---|---|---|---|---|
| 2008 | 430 | 507 | 1,028 | 1,541 |
| 2009 | 439 | 600 | 1,205 | 1,808 |
| 2010 | 447 | 634 | 1,273 | 1,909 |
| 2011 | 456 | 604 | 1,323 | 1,984 |
| 2012 | 465 | 639 | 1,373 | 2,059 |
| 2013 | 475 | 665 | 1,423 | 2,135 |
| 2014 | 484 | 690 | 1,473 | 2,210 |
| 2015 | 494 | 716 | 1,524 | 2,286 |
| 2016 | 504 | 742 | 1,574 | 2,361 |
| 2017 | 514 | 768 | 1,625 | 2,438 |
| 2018 | 524 | 794 | 1,676 | 2,514 |
| 2019 | 535 | 820 | 1,727 | 2,590 |
| 2020 | 545 | 846 | 1,778 | 2,667 |
| 2021 | 556 | 872 | 1,829 | 2,744 |
| 2022 | 567 | 898 | 1,880 | 2,820 |
| 2023 | 579 | 924 | 1,932 | 2,898 |
| 2024 | 590 | 950 | 1,983 | 2,975 |
| 2025 | 602 | 977 | 2,035 | 3,053 |
| 2026 | 614 | 1,003 | 2,087 | 3,131 |
| 2027 | 626 | 1,029 | 2,139 | 3,209 |
| 2028 | 639 | 1,056 | 2,191 | 3,287 |

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 5: EVALUATION OF EXISTING FACILITIES AT FUTURE CONDITIONS

# 5.0 EVALUATION OF EXISTING FACILITIES AT FUTURE CONDITIONS

## 5.1 WATER SUPPLY

The projected maximum day demand for the year 2028 would require a water supply of approximately 2,140 gpm. Under current operating conditions, the existing three wells could not meet this demand. In addition, if any of the three wells were to be out of service, the City would be further restricted in the amount of flow that could be supplied. This indicates that an additional well should be developed to provide for adequate flow to meet the design maximum day demand and to allow for a backup supply in the event that any one of the existing wells should be out of service.

## 5.2 WATER STORAGE

As discussed earlier in this report, the three storage requirements for the water system are: 1) fire protection storage, 2) equalization storage and 3) emergency storage.

- **Fire Protection Storage** - For existing conditions, the storage volume needed for future fire protection was estimated from the fire flow recommendations established by the ISRB for the elementary school. This value was assumed to remain unchanged at approximately 540,000 gallons.

- **Equalization Storage** - Future equalization storage volume requirements were determined from the formula set by IDEQ. For existing conditions, it was assumed that the City would maintain sufficient water supply to meet the maximum day demand. The volume of equalization storage required was then estimated as the volume required to meet the peak hour demands that occur for the high use periods during the day. For the purposes of this analysis, it was assumed that the largest well (i.e., Well #3) would be down for repair, limiting the available well capacity to that of Well #1 and #2. Based on these assumptions, the equalization storage volume required for the future conditions was calculated to be 544,320 gallons.

- **Emergency Storage** - Emergency storage was based on a 2 hour supply at the future domestic maximum day demand of 351 gpm. This equates to an emergency storage volume of approximately 42,120 gallons.

Table 5-1 summarizes the storage requirements for the City of Richfield under future conditions.

**Table 5-1. Future Water Storage Requirements**

| Storage Requirement | Volume (gallons) |
|---|---|
| Fire Protection | 540,000 |
| Flow Equalization | 544,320 |
| Emergency | 42,120 |
| **Total Storage Required** | **1,126,440** |
| Available Storage | 0 |
| **Additional Storage Required** | **1,126,440** |

Summing all three storage requirements results in a total storage volume requirement of approximately 1,126,440 gallons under future conditions. As previously discussed, the City 's

current 60,000 gallon storage tank will not be used in the future. As such, the additional storage volume needed is equal to the total storage volume.

## 5.3 DISINFECTION SYSTEM

As previously discussed, the impending requirements of the Ground Water Rule may require the City to disinfect all water sources. Water from Well #3 is currently chlorinated prior to entering the existing distribution system. However, adequate disinfection contact time is not provided prior to reaching the first service connection under current conditions; nor would it be adequate under future conditions. This indicates that water from Well #3 may need to be discharged to a storage tank or chlorine contact basin to provide for sufficient disinfection contact time in the future. If disinfection of all the wells is required in the future, Wells #1 and #2 will need a central system or localized systems for disinfecting and will need to be discharged to a storage tank or contact basin to provide sufficient contact time.

## 5.4 DISTRIBUTION SYSTEM

As was previously stated, the water velocity in the distribution mains should typically be maintained at less than 5 feet per second (fps) during peak flow conditions and less than 10 fps during fire flow conditions. Otherwise, excessive headloss and reduced pressures may occur.

It is anticipated that there will be significant pressure losses throughout the city due to the smaller main lines as development occurs. It is also anticipated that there will be problems with low pressures if there is ever a fire/demand that depletes the storage tank, or if Well #3 is ever down for maintenance.

It is not anticipated that fire flow requirements will change for the existing buildings. However, if any large buildings are built, a fire flow analysis should be conducted by ISRB to determine the recommended fire flows. In addition, further analysis of the water system should be conducted; in particular, the services adjacent to the new building should be analyzed.

Maximum day demand will increase as the city increases in size. As such, the distribution system was analyzed using the 20 year projected maximum day demands. The following areas of concern were analyzed:

- **Residential Max Day Demand** - It is not anticipated that more than 20 homes would be on a 4 inch connection. Analysis for a 4 inch line with 20 homes connected was conducted in chapter 3. It was concluded that the 4 inch lines were sufficient to carry the max day demand. The future system analysis is based solely on three-fourths of the future max day demand flowing through a 6 inch line. With three-fourths of the future max day demand of 351 gpm, the estimated velocity in the 6 inch line would be approximately 3.98 fps. Therefore, the current system appears to be sufficiently sized for the future max day demand.

- **Residential Fire plus Max Day Demand - North 320 Acres** - At the recommended minimum fire flow of 1,000 gpm and a maximum day demand of 879 gpm, due to the potential number of houses to be built (0.5 acre lots), the fire flow plus maximum day demand is 1,879 gpm. For a single line carrying the entire flow to the new subdivision, a main of 10 inches would be required (7.7 fps at 1,879 gpm). If the system is looped, 8 inch lines would be needed (6.0 fps at 1,879 gpm).

- **Residential Fire plus Max Day Demand - South 30 homes plus 90 acres** - At the recommended minimum fire flow of 1,000 gpm and a maximum day demand of 288 gpm, due to the potential number of houses to be built (0.5 acre lots), the fire plus maximum day demand is 1,288 gpm. For a single line carrying the entire flow to the new subdivision, a main of 8 inches would be required (8.2 fps at 1,288 gpm). If the system is looped, 6 inch lines would be sufficient (7.3 fps at 1,288 gpm).

- **Residential Fire plus Max Day Demand - Inner City** - Throughout the city there are several lots and small acreages that can potentially be developed. Due to the relatively low impact these developments would have on the system they were not analyzed individually. With the recommended mains for the larger developments and the minimum 6 inch mains, there should be sufficient capacity to support these smaller developments.

- **Glanbia Fire plus Max Day Demand** - With a recommended minimum fire flow of 2,000 gpm and a projected future maximum day demand of 1,790 gpm, the line to Glanbia will need to supply a total of 3,790 gpm. The velocity in the existing 6 inch line servicing Glanbia would be approximately 43.0 fps. In order to provide sufficient fire flow at a velocity less than 10fps, the 6 inch line needs to be replaced with a 14 inch line (7.9 fps at 3,790 gpm) or looped with a 10 inch line.

- **Glanbia Peak Hour Demand** - With a future peak hour demand of 2,685 gpm, the velocity in the existing 6 inch line servicing Glanbia would be approximately 30.5 fps. In order to provide the peak hour demand at a velocity less than 5 fps, the 6 inch line needs to be replaced with a 16 inch line (4.3 fps at 2,685 gpm) or looped with a 12 inch line.

As stated previously, dead end water mains should be looped: to prevent stagnant water, to provide better service to customers during repairs, and to increase flow. All fire hydrants should be 400-600 feet apart and be connected to a minimum 6 inch line. Mains smaller than 6 inches should be replaced with at least 6 inch lines.

## 5.5 DRINKING WATER FACILITY NEEDS

Based on the analysis in this report, several improvements to the existing water system are required to meet the current and future water demands over the 20 year planning period. An additional well or other water source is needed to meet the current and future maximum day demand, to provide a backup water source in the event a well is down for repair and to allow for wells to be taken off-line for routine maintenance and repair. A new elevated storage tank or storage tank and booster pump station is necessary to provide adequate flows and pressures for fire protection, equalization during peak hour demands, and emergency storage. Improvements to the distribution system are essential for meeting adequate domestic demand, fire flow, and pressure requirements throughout the distribution network. Finally, new chlorination equipment is required to provide sufficient disinfection of the water supply.

## 5.6 FUTURE WITHOUT THE PROJECT

Without the needed improvements to the water system, the City will be unable to meet the current and future water demands of its residential, commercial and industrial customers. In addition, the existing system will not provide sufficient capacity to meet the fire flow and pressure requirements in some areas of the City, as established by the Uniform Fire Code and

ISRB. The lack of adequate water supply and storage poses a considerable risk to public health and the environment. In addition, without the needed improvements, the City's fire rating may increase, resulting in higher insurance rates for the City and its customers. As evidenced by the analysis in this report, the alternative for doing nothing to the water system (i.e., No Action Alternative) was eliminated from further consideration in this report.

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 6: DEVELOPMENT AND SCREENING OF ALTERNATIVES

# 6.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES

This chapter is intended primarily to indicate, in our opinion, which improvements to the existing system are necessary, what alternatives are available, and to discuss the priority in which they should be implemented. A recommended project has been included as part of this chapter. However, it is the City's judgment and its policy decisions that will dictate what improvements are made and the order in which these improvements are made.

## 6.1 WATER SUPPLY

The City's existing water sources are not capable of meeting the current maximum day demand should Well #3 be taken off-line for maintenance or repair. This condition will continue to worsen over the course of the 20 year planning period. In fact, the combined production capacity of the three existing wells will not be able to meet the maximum day demand by the year 2009, assuming all the wells are in operation. As a result, several alternatives were considered for meeting the current and future water supply needs.

### 6.1.1 Fully Develop Existing Wells

Fully developing the existing wells is one alternative to increasing the water supply. Since the existing wells have equipment and connections in place, they have the potential to provide a cost effective method of increasing supply. However, additional water rights will need to be obtained to use the wells to their developable capacity.

It may be possible for the City to further develop Well #1. The initial step in this process would be to conduct a pump drawdown test, which would cost approximately $9,000. The test would require removal of the existing pump, installation of a test pump, piping to dispose of the water, 24 hours of pumping, removal of the test pump and resetting the existing pump. Given the size of the hole (10 inches), the maximum anticipated yield from a well of this size is approximately 650 gpm. The current water right for Well #1 is 67.3 gpm.

It may be possible for the City to further develop Well #2. The initial step in this process would be to conduct a pump drawdown test, which would cost approximately $9,000. Given the size of the hole (10 inches), the maximum anticipated yield from a well of this size is approximately 650 gpm. The current water right for Well #2 is 62.8 gpm.

It may be possible for the City to further develop Well #3. According to the Well Driller's Report for Well #3, as of 1989 additional water could be pumped from this well. The initial step in this process would require an updated pump drawdown test, which would cost approximately $9,000. Given the size of the hole (12 inches), the maximum anticipated yield from a well of this size is approximately 900 gpm. The current water right for Well #3 is 731.6 gpm.

### 6.1.2 New Well(s)

If the existing wells are not fully developed developed, the City should consider developing two additional supply wells to provide additional capacity to meet the existing and future maximum day demand and to provide a backup water supply should one of the wells be taken off-line for repair. The capacity of the three existing wells is approximately 1160 gpm. In order to meet the maximum day demand of 2,140 gpm in the year 2028, the City would need to develop a new well source with a minimum capacity of approximately 980 gpm. Assuming that Well #3 is down for repair and that a new well of 980 gpm is provided, the maximum production capacity of the remaining three wells would be approximately 1,440 gpm. In

order to meet the maximum day demand of 2,140 gpm in the year 2028, the City would need to develop a second new well as a backup source with a minimum capacity of approximately 980 gpm.

If the 980 gpm well is off line, the capacity of the system would be 1,160 gpm. The current max day demand is 993 gpm. As such, the second well would not need to be drilled immediately. According to projections the max day demand will exceed 1,160 gpm in the year 2009, at which time the second new well of 980 gpm would need to be drilled.

If any or all of the existing wells are developed such that their combined flow is equal to or greater than the future maximum day demand, only one additional new well would be needed. If the capacity of the three wells is equal to the future max day demand the new well would need to have the same capacity as the largest of the three developed wells. If the capacity of the three wells is greater than the future max day demand, the capacity of the new well would need to be such that its capacity coupled with the two smaller wells is equal to the future max day demand. Also, if the capacity of the two smallest wells is less than the current max day demand the new well would need to be constructed immediately. If the capacity of the two smallest wells is greater than the current max day demand the new well would not have to be constructed until the max day demand exceeds the two wells.

The location of a new well is governed by IDEQ regulations to avoid possible contamination. The well should be located such that 30 minutes of chlorine contact time can be provided prior to the first service connection. Ideally, this would be at or near a new storage tank. This would allow the well to pump into storage after chlorination, prior to being pumped into the distribution system. Further analysis of the location of the new storage tank is provided later in this report.

Drilling and developing a new well would require the City to apply for a new water right and well drilling permit from the IDWR. The new well site must also be approved by IDEQ prior to drilling.

### 6.1.3 Existing Wells in Area

The development or use of idle wells in or around a city can potentially provide additional water sources. According to City Personnel there are no existing wells in the Richfield area that the city owns, or that could be purchased by the city as additional water sources. As such, this alternative is to be disregarded.

### 6.1.4 Water Conservation

Existing water supply records show that a large portion of the domestic water use during the summer months is for irrigation. Reducing this irrigation demand is a direct benefit to the City. A water conservation program can be effective in educating people to use water more efficiently. Also, converting large irrigated tracts such as parks and cemeteries to surface water irrigation can benefit the City by reducing the high summer demands.

## 6.2 WATER STORAGE

Based on the future growth projections for the 20 year planning period, the City will require approximately 1,126,440 gallons of storage in the year 2028. Given that the existing 60,000 gallon tank will no longer be used, the City should consider constructing a new 1.2 million gallon tank to meet the additional storage requirements in the year 2028.

The two most common options considered for providing the additional water storage are a steel tank or a concrete tank. For a 1.2 million gallon tank, an above ground steel tank is generally slightly less expensive than a partially buried concrete tank. Other factors, such as height, appearance, maintenance, downtime, weather restrictions, lifespan, and other related costs should be considered.

The City has selected two preliminary sites for the storage tank; one site is situated just north of the City, and the other situated on the southern end of the city. The southern parcel of land is 40 acres that the City currently owns. The northern parcel of land is not owned by the City, but it is for sale.

A booster pump station would be required to feed water from the tank to the distribution system. The pump station should contain booster pumps of varying capacities to meet various domestic and fire flow demands. The pumps should be located in a pumphouse adjacent to the new storage tank.

The storage tank should be situated such that the all of the wells could pump directly into it following chlorination. This would allow for an adequate chlorine contact time for the wells. The tank would then have four or five separate supply sources available to it. The tank should be situated in a centralized location to the wells that will be feeding it to minimize pumping and piping requirements. The location of the new storage tank must be approved by IDEQ prior to construction.

## 6.3 DISINFECTION SYSTEM

Thirty minutes of contact time should be provided following chlorination for proper disinfection of the water prior to delivery to the first customer. Pumping a well supply directly into a storage tank most effectively provides sufficient contact time due to the large storage volume. As previously discussed, Wells #1 and #2 currently do not have any disinfection equipment available; Well #3 is the only well that has disinfection equipment. Well #3 does not provide adequate contact time since it discharges directly to the distribution system following chlorination.

Three options considered for providing the 30 minute disinfection contact time for water from the new well(s), Well #1, Well #2 and Well #3, include: 1) pump to the existing 60,000 gallon water storage tank, 2) pump to a chlorine contact chamber with a booster pump, and 3) pump to the proposed new storage tank. The first option is not a viable alternative due to the desired discontinued use of the existing storage tank. The second option would require substantially more capital investment and operation and maintenance requirements than the third option, assuming that the new storage tank is located near the wells. One additional method to achieve the 30 minute contact time for Well #1 and Well #2 would be to install sufficient large diameter pipe between the well and the first service connection to provide the necessary volume.

The City should consider constructing a centralized chlorination system in the new booster pump station to disinfect the water from all the wells prior to discharging to the new storage tank. Two options for the centralized chlorination system include gaseous chlorine or a hypochlorite solution. A gas chlorine system requires that the system operators handle a hazardous material, while the hypochlorite solution is generally considered non-hazardous. Gas chlorination systems also require additional controls for the chlorination room (i.e.,

scrubbers, alarms, etc.). On-site chlorine generation systems are also an option for providing disinfection. They are generally more expensive to install, but less expensive to operate.

It is ideal to have a secondary/backup chlorination system. The secondary system can be centralized and near the first system or can consist of localized systems at each well source. A centralized system will reduce the operation and maintenance associated with several localized disinfection systems at each well source. However, having disinfection at each source allows the wells to pump directly to the distribution system and still be disinfected.

## 6.4 DISTRIBUTION SYSTEM

An initial hydraulic analysis of the existing distribution system indicates that it has good flow characteristics within the town site at maximum day demand. When available fire flows are analyzed, however, the weaknesses of the distribution system are quickly realized. Nearly eighty-percent of all the water lines in the distribution system are 4 inch or smaller. Many of the fire hydrants in the City are connected to these smaller lines. These small lines and hydrants simply do not have the capacity to supply the necessary fire flows. The City should consider replacing all of the 4 inch and smaller mains and hydrants with larger diameter mains.

There are several existing larger diameter mains throughout the City's distribution system. Any proposed improvements to the distribution system should be developed with the goal of looping these existing main lines where possible. In addition, there are several dead end lines within the system that should be looped or tied into the existing mainlines to improve flow conditions.

A minimum 6 inch line, but preferably 8 inch, should be used for local distribution. These lines should then be interconnected with larger main lines. The size of these mains would be determined by the number of existing distribution lines they serve and their expected function in the overall City grid system. A large diameter loop around the City or around portions of the City should be planned for future development as well. This loop will provide distribution to both the interior area and to future growth outside the loop.

A historical problem in many distribution systems is that subdivisions are installing undersized pipes where a larger grid should have been used. These undersized pipes cause critical gaps in system continuity and limit the effectiveness of the rest of the system. Special care should be taken to ensure that the master plan is followed, or appropriately modified, and any subdivision which happens to pass through a main gridline, must incorporate that gridline as part of their design. New subdivisions should be required to loop all water mains in order to avoid dead end lines.

As new water mains are installed, fire hydrants should be taken off of smaller mains wherever possible and installed on minimum six inch mains. All broken or inoperable hydrants should also be replaced.

A project to replace all the smaller lines and hydrants, and to install looping lines for the existing dead end mains and future development, would be cost prohibitive if done during one project. As a result, the City should consider a phased implementation of the distribution system improvements. To assist the City with phasing; the improvements have been sorted into three phases. The Phase I improvements represent only those enhancements which are

needed in the near term for the City to provide sufficient water to meet the max day demand of its users. Phase II improvements represent enhancements which are needed in the near term for the City to provide adequate fire flows and pressures throughout a majority of the distribution system. The long-term (Phase III) improvements represent enhancements which are needed to provide sufficient fire flows to the remainder of the city not impacted by Phases I and II and enhancements that are projected for future development. These improvements should be completed on an as-needed basis, or as budgetary constraints allow.

In general, the short-term improvements (Phase I) include:

- Installing dedicated mains from all of the wells to the new storage tank;
- Increasing the size of the mains near the new storage tank and booster station to allow for better distribution of water to the system;
- Connecting several of the long stretches of smaller lines into larger diameter mains at regular intervals to boost the fire flow capability; and
- Installing large mains to provide fire flows for the elementary school and Glanbia and provide sufficient water for Glanbia's processing needs;

In general, the Phase II improvements include:

- Replacing all mains smaller than 4 inches with minimum 6 inch mains, as the annual budget allows;
- Looping of existing dead end lines; and
- Looping of larger mains within and around the City to provide adequate water flows and pressures to future residential, commercial and industrial development.

In general, the long-term improvements (Phase III) include:

- Continuing to replace the smaller mains with larger diameter mains, as the annual budget allows;
- Continuing to loop larger mains within and around the City to provide adequate water flows and pressures to future residential, commercial, and industrial development.

The proposed improvements will have three primary benefits: improvement to the main grid distribution system, improvement to available fire flow supply, and improvements to eliminate dead end lines.

## 6.5 CONTROL SYSTEM

The existing wells, new well(s), and pumps may all be controlled from localized controls in their individual buildings as is the current practice. However, as additional wells and pumps are put in place the use of a Supervisory Control and Data Acquisition (SCADA) system would make for easier and more efficient operation of the water system.

## 6.6 AUXILIARY POWER

Enough auxiliary power should be provided to sustain the average day Glanbia demand and the average day domestic demand. In order to provide adequate water during power outages or other emergencies, auxiliary power should be provided to the booster pumps and to at least one or two of the wells.

## 6.7 SELECTED PLAN

Figure 6-1 and 6-2 show the proposed improvements to the water system with the tank at the north end of town and the south end of town, respectively. These improvements include a new well, a 1.2 million gallon storage tank, a centralized disinfection system, booster pump station with auxiliary power, and Phase I distribution system improvements.

In order to meet the future maximum day demand, it is recommended that draw down tests be performed on the existing wells. If the tests support the option of further developing the wells such that the combination of the improvements is equal to or greater than the future max day demand, the city should further develop the wells. As previously stated, at least one new supply well will need to be constructed and may or may not be needed immediately. The timing for the construction of a new well or new wells is dependent upon the development of the existing wells. The new well(s) will provide additional capacity to meet the existing and future maximum day demand and a backup water supply should one of the existing wells be taken off-line for repair. A new wellhouse should be constructed with the well(s) to contain the necessary equipment and auxiliary power.

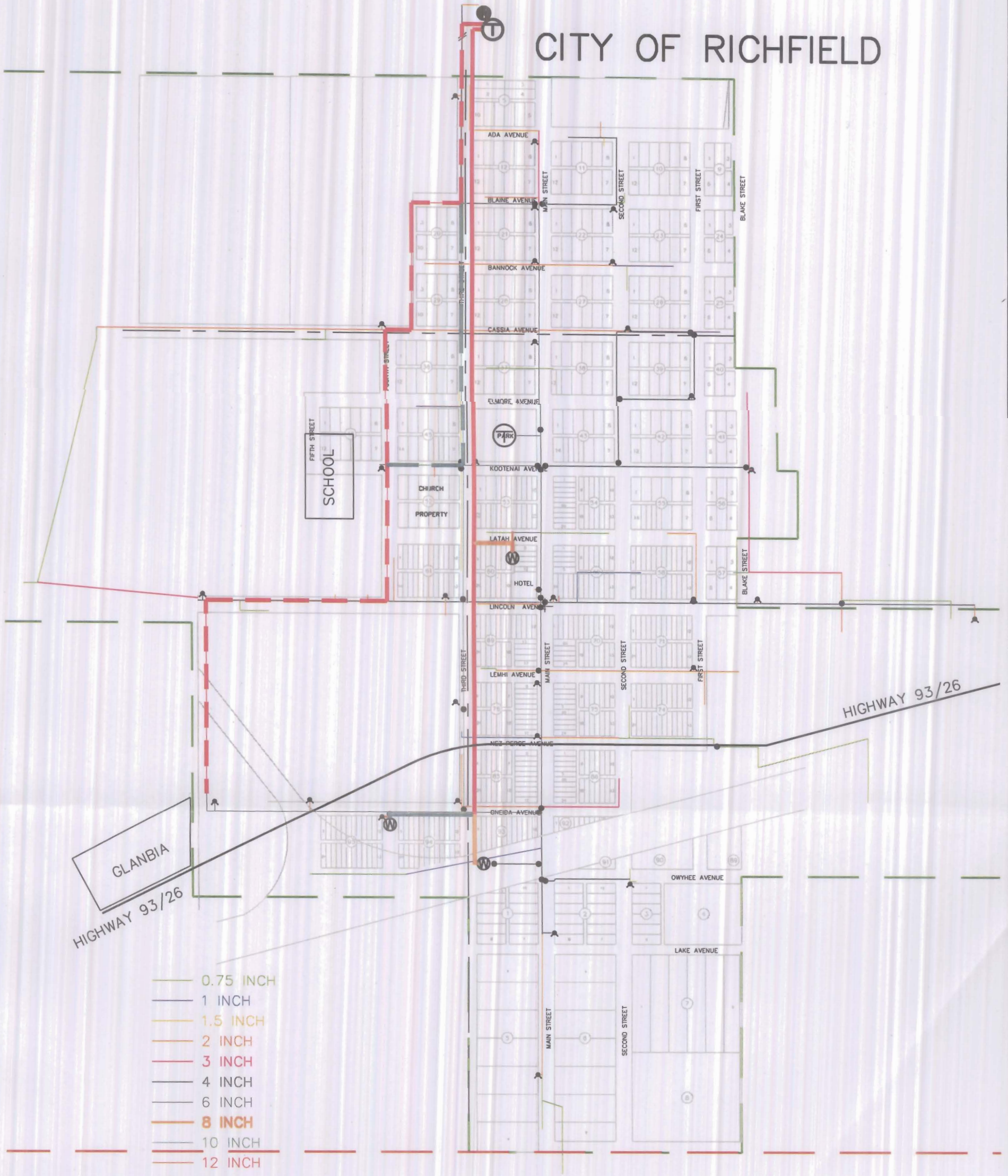
It is recommended that a new 1.2 million gallon storage tank be constructed to provide for the projected 20 year fire flow, equalization and emergency storage requirements. A new booster pump station should be located adjacent to the new storage tank and contain sufficiently sized booster pumps to satisfy all demands. It is recommended that the booster pump housing also contain a centralized disinfection system, a new well, and auxiliary power to power the well and enough of the booster pumps to provide the average day demand.

It is recommended that water from the new well(s) and existing wells be pumped to a centralized chlorination system located in the booster pump station prior to discharging to the new storage tank. This will allow for an adequate chlorine contact time of 30 minutes. For the purposes of this analysis, it is proposed that the centralized chlorination system consists of a hypochlorite solution disinfection system.

The short-term (Phase I) improvements for the distribution system should be included to improve the distribution of water throughout the system, and to improve fire flows in some of the smaller mains. Inclusion of only the Phase I improvements will also help to keep construction costs reasonable.

A SCADA control system is recommended to monitor all of the wells, storage tank, booster pump station, and disinfection equipment. The improvements should include installation of new equipment and programming of the SCADA control software.

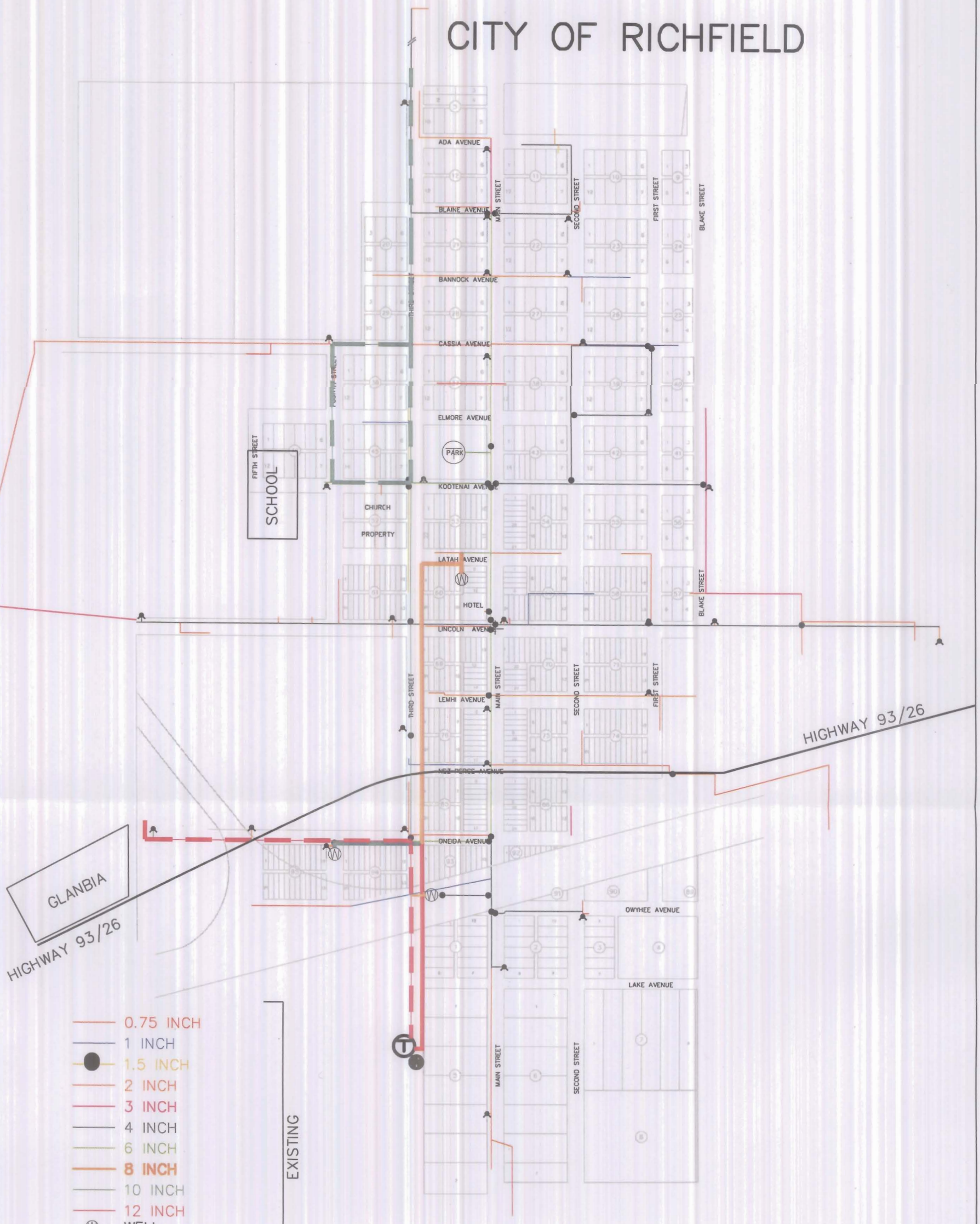
# CITY OF RICHFIELD




# FIGURE 6–1
# NORTH TANK
# WATER DISTRIBUTION
# SYSTEM
# IMPROVEMENTS

J·U·B
ENGINEERS · SURVEYORS · PLANNERS

# CITY OF RICHFIELD




## FIGURE 6–2
## SOUTH TANK
## WATER DISTRIBUTION
## SYSTEM
## IMPROVEMENTS

J·U·B
ENGINEERS · SURVEYORS · PLANNERS

N.

500 250 0 500

SCALE IN FEET

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

# CHAPTER 7: SELECTED PLAN DESCRIPTION AND IMPLEMENTATION

# 7.0 SELECTED PLAN DESCRIPTION AND IMPLEMENTATION

Since no other well sources are readily available, the City needs to determine if the existing wells can be further developed to meet existing and future maximum day demand. If the wells can be developed to meet the future maximum day demand, one additional well would be needed as a backup source in case a well is down for repair. If the existing wells can not be further developed, two new wells would need to be constructed; one immediately and one approximately in the year 2010. A new storage tank and booster station are necessary to provide adequate flows for fire protection, equalization during peak hours and emergency storage. Short-term distribution system improvements are essential for providing sufficient fire flows and pressures throughout the distribution network. New chlorination equipment is required in the booster pump station to disinfect water from the new well(s) and the existing wells prior to discharging to the new storage tank. The lack of adequate water supply and storage poses a considerable risk to public health, safety and the environment.

## 7.1 DEVELOPMENT OF EXISTING WELLS

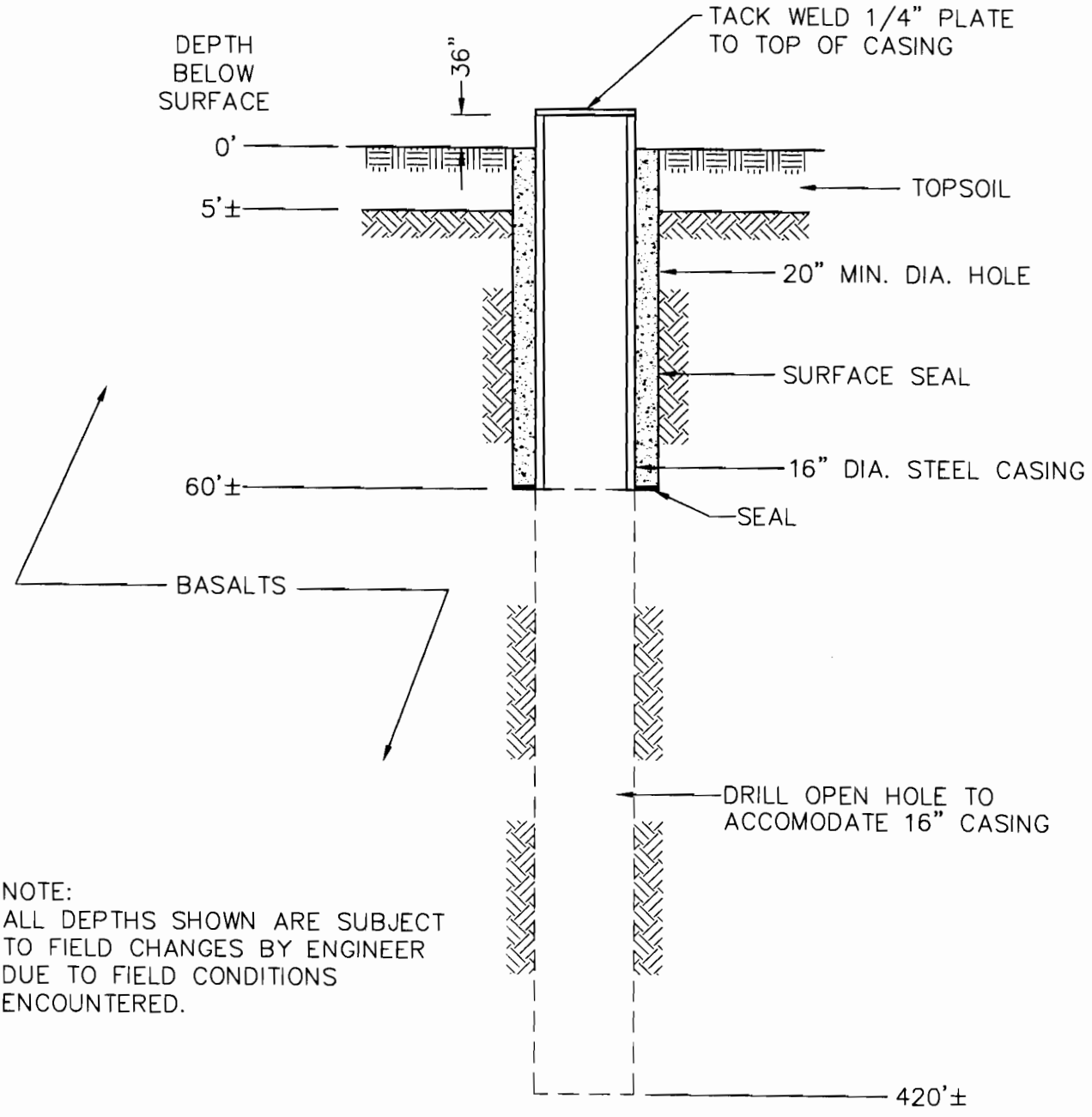
Well draw down tests should be performed on the existing wells to determine their potential development. If the wells can be further developed several different options may be available. Based on the options for development, one or two wells may be necessary to meet the future maximum day demand. Well draw down tests cost approximately $5,000 per well. Also, additional water rights should be obtained to meet the pumping rate of each well.

## 7.2 NEW WELL AND WELLHOUSE

IDEQ requires that certain specifications be met when developing a new well site. The well lot should be approximately one acre with a minimum dimension in any direction of 125 feet. The 125 foot dimension is important to maintain the required control of a 50-foot radius around the well. Currently, IDEQ also requires testing and monitoring for surface water impacts for wells within 500 feet of surface water such as open ditches, canals, ponds and rivers. If possible, it would be prudent to locate the well beyond this 500 foot limit. A hydrogeologist should review the location of a new well before being finalized. The City will also be required to apply for and secure an additional water right and well drilling permit from IDWR for the new well.

Preliminary design indicates that a new well will require a 175 hp vertical turbine pump and motor to achieve a production of 980 gpm. It is estimated that a hole will be drilled to accommodate a 16 inch diameter casing, with a 20 inch surface seal. It was estimated that the total depth of the well will be approximately 420 feet bgs. Figure 7-1 shows a schematic of the proposed well with a surface seal. It was assumed that water from the new well would be pumped to the proposed booster pump station for chlorination, prior to entering the new storage tank. A new wellhouse would also be constructed at the site to house the well, pump, motor, piping and appurtenances, electrical components and control equipment.

Table 7-1 shows an opinion of probable costs to construct and develop a new well and wellhouse. These costs are in current dollars and include only a rough estimate of the purchase of land and/or easement acquisition.




NOTE:
ALL DEPTHS SHOWN ARE SUBJECT TO FIELD CHANGES BY ENGINEER DUE TO FIELD CONDITIONS ENCOUNTERED.

J·U·B
ENGINEERS • SURVEYORS • PLANNERS

FIGURE 7–1
CITY OF RICHFIELD
PROPOSED WELL AND SURFACE SEAL SCHEMATIC
N.T.S.

## Table 7-1. Opinion of Probable Costs to Construct a New Well and Wellhouse

| Item | Estimated Quantity | Unit | Unit Price | Total Price |
|---|---|---|---|---|
| **NEW WELL (980 GPM)** | | | | |
| Mobilization/Demobilization (5%) | 1 | LS | $4,000.00 | $4,000 |
| Drilling Hole for 20" Temporary Casing | 60 | LF | $150.00 | $9,000 |
| Furnish, Install & Remove 20" Temporary Casing | 60 | LF | $70.00 | $4,200 |
| Furnish & Install 16" Surface Seal Casing | 63 | LF | $65.00 | $4,095 |
| Surface Seal | 60 | LF | $55.00 | $3,300 |
| Drill 16" Open Hole | 380 | LF | $130.00 | $46,800 |
| Well Development | 8 | HR | $250.00 | $2,000 |
| Pump Test & Well Monitoring | 1 | LS | $7,500.00 | $7,500 |
| Disinfection & Iron Bacteria Prevention | 1 | LS | $1,050.00 | $1,050 |
| Well Television Inspection | 1 | LS | $1,000.00 | $1,000 |
| Water Quality Sampling | 1 | LS | $2,500.00 | $2,500 |
| SUB-TOTAL NEW WELL | | | | $84,845 |
| **WELLHOUSE** | | | | |
| Mobilization/Demobilization (5%) | 1 | LS | $13,000.00 | $13,000 |
| Building - Structural | 360 | SF | $120.00 | $43,200 |
| Building - Mechanical | 1 | LS | $35,000.00 | $35,000 |
| Building - Electrical | 1 | LS | $60,000.00 | $60,000 |
| Pump, Bowls, Motor (175 hp) | 1 | LS | $50,000.00 | $50,000 |
| Flowmeter | 1 | LS | $4,300.00 | $4,300 |
| 8" Water Main Connection Pipe | 60 | LF | $70.00 | $4,200 |
| 8" Gate Valve | 1 | EA | $1,200.00 | $1,200 |
| Tee & Fittings | 1 | LS | $1,500.00 | $1,500 |
| Trench Rock Removal (20%) | 12 | CY | $120.00 | $1,440 |
| Site Work, Grading, and Drainage | 1 | LS | $5,000.00 | $5,000 |
| Site Fencing | 400 | LF | $16.00 | $6,400 |
| Gravel Access/Pad | 120 | SY | $12.00 | $1,440 |
| Fire Hydrant Assembly | 1 | EA | $4,200.00 | $4,200 |
| Land Acquisition | 1 | LS | $20,000.00 | $20,000 |
| Idaho Power Connection | 1 | LS | $10,000.00 | $10,000 |
| SUB-TOTAL WELLHOUSE CONSTRUCTION | | | | $260,880 |
| **TOTAL NEW WELL AND WELLHOUSE CONSTRUCTION COSTS** | | | | **$346,325** |

Either the New Well or Well #3 would serve as a back-up well once the New Well had been constructed. If the New Well was taken off-line for repair, the maximum production capacity of the system would be 1,160 gpm. This would provide sufficient capacity to meet the maximum day demand to the year 2009, based on the future growth projections in this report (see Table 4-4). Therefore, the City may need to develop an additional well source by the year 2010 to meet the maximum day demand should one of the large wells (700 or 980 gpm) be down.

## 7.3 WATER STORAGE TANK, BOOSTER PUMP STATION, AND DISINFECTION

Refer to Figures 6-1 and 6-2 for the preliminary locations of the proposed 1.2 million gallon storage tank and booster pump station. Historically, steel tanks have been cheaper when their storage capacity is less than 1 million gallons and concrete tanks have been cheaper when their storage capacity is greater than 1 million gallons. It is assumed that the 1.2 million gallon tank will be roughly the same price whether concrete or steel is selected (the accuracy of this assumption is difficult to verify, due to the volatility of prices). Assuming a water depth of 30 feet, the diameter of the tank would be approximately 83 feet. An opinion of probable cost estimates was developed for the storage tank based on these assumptions. Costs were included for site work and grading, earthwork, rock removal, tank construction, overflow structures and piping and appurtenances.

An opinion of probable cost was also developed for the booster pump station. It was assumed that four vertical booster pumps of varying capacity would be installed. Costs were included in the booster pump summary for auxiliary power and a new hypochlorite disinfection system, including a metering pump, control module, piping and storage container

Table 7-2 summarizes the opinion of probable costs in current dollars for the construction of the 1.2 million gallon storage tank and booster pump station.

## 7.4 DISTRIBUTION SYSTEM

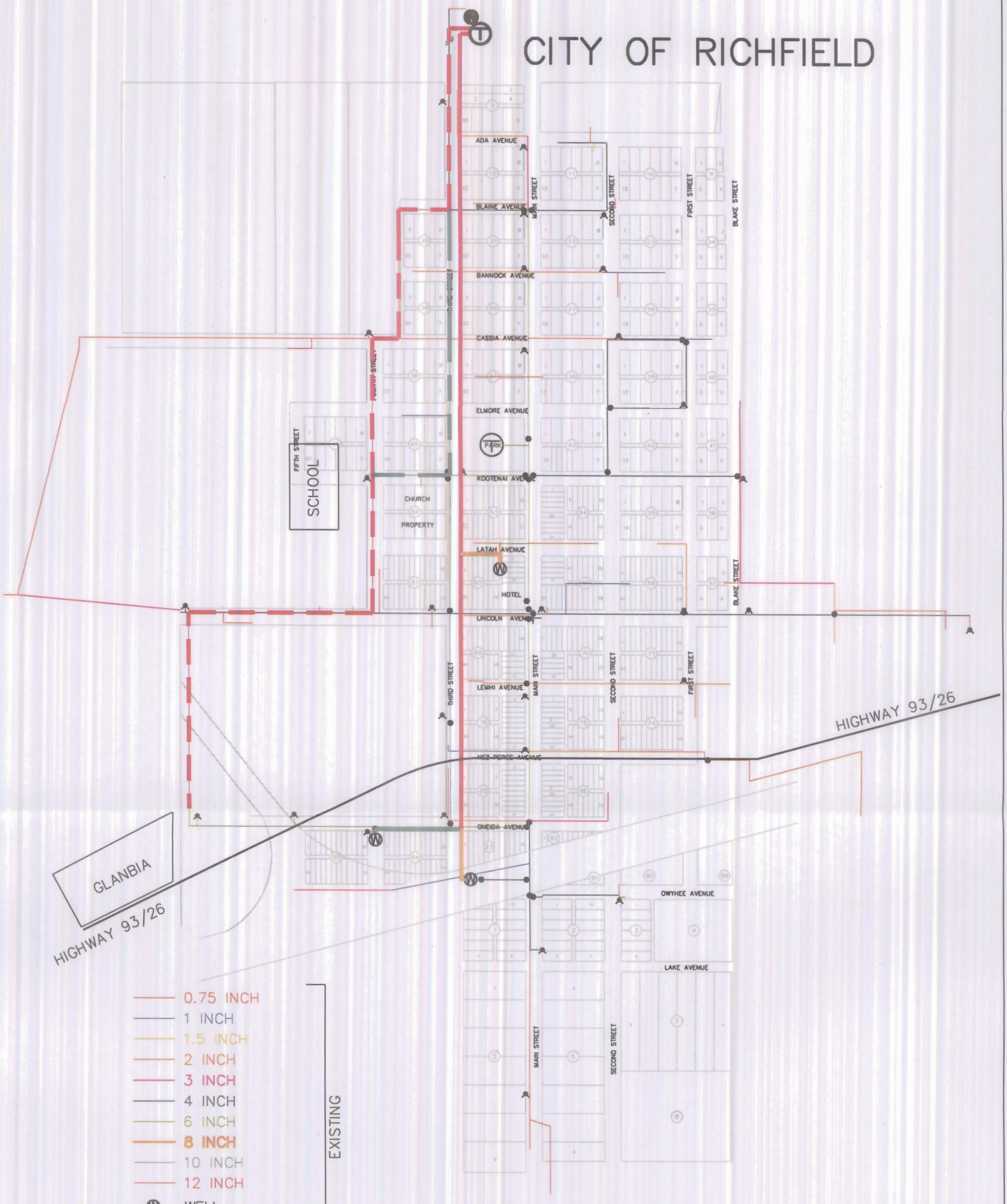
As discussed earlier all mains that are smaller than 6 inches should be replaced with at least 6 inch mains. All mains should be looped to provide for better service to the users, as well as, better flow and pressures. In addition, all wells should be piped directly to the storage tank for disinfection. Due to the amount of capital required to complete all of the recommended improvements, the improvements have been separated into three phases according to importance. Due to two preliminary locations for the storage tank the piping for the different phases vary slightly. As such, section 7.4.1 will address the phases for the Northern tank location and 7.4.2 will address the phases for the Southern tank location. The goal of each phase is explained and will be the same for either tank location.

### 7.4.1 North Tank Phases

#### *7.4.1.1 Phase I Improvements*

The proposed Phase I improvements consists of two parts, distribution system enhancements and dedicated main piping. Figure 7-2 shows the proposed Phase I improvements.

# CITY OF RICHFIELD




## FIGURE 7–2
## NORTH TANK PHASE–I
## WATER DISTRIBUTION SYSTEM IMPROVEMENTS

J·U·B
ENGINEERS · SURVEYORS · PLANNERS

**Table 7-2. Opinion of Probable Costs to Construct a Storage Tank and Booster Pump Station**

| Item | Estimated Quantity | Unit | Unit Price | Total Price |
|---|---|---|---|---|
| Mobilization/Demobilization (5%) | 1 | LS | $49,440.00 | $49,440 |
| Tank Excavation | 5,000 | CY | $10.00 | $50,000 |
| Rock Removal | 1,000 | CY | $120.00 | $120,000 |
| Concrete Tank | 1,200,000 | GAL | $0.60 | $720,000 |
| Tank Overflow Structure | 1 | LS | $10,000.00 | $10,000 |
| 12" Gravity Overflow Pipe | 1 | LS | $10,000.00 | $10,000 |
| Storage Tank Piping | 1 | LS | $37,000.00 | $37,000 |
| Sitework, Grading & Drainage | 1 | LS | $15,000.00 | $15,000 |
| Asphalt Access Road/Parking | 400 | SY | $20.00 | $8,000 |
| Site Fencing | 800 | LF | $16.00 | $12,800 |
| Irrigation Structure | 1 | LS | $6,000.00 | $6,000 |
| Land Acquisition | 1 | LS | $30,000.00 | $30,000 |
| SUB-TOTAL TANK | | | | $1,068,240 |
| Mobilization/Demobilization (5%) | 1 | LS | $34,050.00 | $34,050 |
| Building - Structural | 1,600 | SF | $120.00 | $192,000 |
| Building - Mechanical | 1 | LS | $100,000.00 | $100,000 |
| Building - Electrical/Controls | 1 | LS | $90,000.00 | $90,000 |
| 15 hp VFD Pump | 1 | EA | $5,000.00 | $5,000 |
| 65 hp VFD Pump | 1 | EA | $18,000.00 | $18,000 |
| 55 hp Constant Speed Pump | 1 | EA | $16,000.00 | $16,000 |
| 115 hp Constant Speed (Fire) Pump | 1 | EA | $25,000.00 | $25,000 |
| Hypochlorite Disinfection System | 1 | LS | $5,000.00 | $5,000 |
| Yard Piping | 1 | LS | $95,000.00 | $95,000 |
| Flow Monitor Manhole | 1 | EA | $15,000.00 | $15,000 |
| Backup Generator | 1 | LS | $100,000.00 | $100,000 |
| Idaho Power Connection | 1 | LS | $20,000.00 | $20,000 |
| *SUB-TOTAL BOOSTER PUMP STATION* | | | | $715,050 |
| **TOTAL STORAGE TANK AND BOOSTER PUMP STATION CONSTRUCTION COSTS** | | | | **$1,783,290** |

#### 7.4.1.1.1 Distribution System

The Phase I improvements represent the minimum distribution system enhancements that should be installed to allow for proper fire flow to the elementary school and Glanbia, to provide sufficient water for Glanbia's processing needs, to boost the fire flow capability in some of the smaller lines, and to provide a backbone for the City's water distribution system. These improvements include:

- Installing a 10 inch main along Third Street between Blaine Avenue to Kootenai Avenue to create a backbone to the City's water system and tie in some of the smaller lines, therefore, enhancing pressures and fire flow capabilities.
- Installing a 10 inch main along Kootenai Avenue between Third Street and Fourth Street to enhance fire flow capabilities to the school.
- Installing a 12 inch line starting at the tank going south down Third Street to Blaine Avenue, along Blaine Avenue to Fourth Street, along Fourth Street to Lincoln, along Lincoln until just North of Glanbia and then to Glanbia. This line is to enhance fire flows to the school and Glanbia, provide water for the processing needs of Glanbia and to create a portion of the City's water distribution backbone.

Table 7-3 summarizes the opinion of probable construction costs in current dollars to install the Phase I distribution system improvements.

**Table 7-3. Opinion of Probable Costs for Phase I Distribution Improvements, North Tank**

| | Pipe Size: | 10 inch | | |
|---|---|---|---|---|
| **Item** | **Quantity** | **Units** | **Unit Price** | **Total Costs** |
| C-900 PVC Water Main | 1,662 | LF | $35.00 | $58,170 |
| Traffic Control | 1 | LS | $1,662.00 | $1,662 |
| Gate Valve | 4 | EA | $1,525.00 | $6,100 |
| Fire Hydrant Assembly | 5 | EA | $4,200.00 | $21,000 |
| Service Connection/Reconnection | 17 | EA | $1,000.00 | $16,620 |
| NPWL Crossing | 4 | EA | $1,000.00 | $4,000 |
| Trench Rock Removal | 90 | CY | $120.00 | $10,800 |
| Type A Surface Repair (Asphalt) | 416 | LF | $25.00 | $10,400 |
| Type E Surface Repair (Natural) | 1,247 | EA | $5.00 | $6,235 |
| Contractor Mob/Demob | 1 | LS | 5% | $6,749 |
| | Pipe Size: | 12 | inch | |
| C-900 PVC Water Main | 5,159 | LF | $37.00 | $190,883 |
| Connection to Tank | 1 | LS | $2,500.00 | $2,500 |
| Highway Crossing | 1 | EA | $25,000.00 | $25,000 |
| Traffic Control | 1 | LS | $5,159.00 | $5,159 |
| Gate Valve | 11 | EA | $2,100.00 | $23,100 |
| Fire Hydrant Assembly | 13 | EA | $4,200.00 | $54,600 |
| Service Connection/Reconnection | 52 | EA | $1,000.00 | $51,590 |
| NPWL Crossing | 11 | EA | $1,000.00 | $11,000 |
| Trench Rock Removal | 290 | CY | $120.00 | $34,800 |
| Type A Surface Repair (Asphalt) | 1,290 | LF | $25.00 | $32,250 |
| Type E Surface Repair (Natural) | 3,869 | EA | $5.00 | $19,345 |
| Contractor Mob/Demob | 1 | LS | 5% | $22,511 |
| | | | **Subtotal Construction Costs:** | **$614,475** |

#### 7.4.1.1.2 Well Piping

As part of phase I, it is recommended that water from the new well(s) and the existing wells be pumped to the proposed disinfection system within the new booster pump house prior to discharging to the new storage tank. Due to the close proximity of the wells in relation to one another, it was assumed that water from all of the wells would be pumped through the same pipeline to the new booster pump station. Under the assumption that all of the wells can be further developed, preliminary design indicates that the line from Well #1 and Well #2 should be 8 inches in diameter, the line from Well #3 should be 10 inches in diameter, and the main pipeline that all of the wells connect to should be 12 inches in diameter. Based on the results of the pump draw down tests the sizes of these lines may differ. Figure 7-2 shows the proposed alignment of the pipelines from the wells to the tank. Table 7-4 summarizes the opinion of probable costs in current dollars to install pipe lines from the wells to the proposed location of the new storage tank.

#### *7.4.1.2 Phase II Improvements*

Figure 7-3 shows the proposed Phase II distribution system improvements. The Phase II improvements represent the minimum distribution system enhancements that should be installed to improve flows, pressures, and service to the majority of the existing users.

Phase II improvements will also provide the opportunity for some growth around the city. These improvements consist of replacing all mains that are smaller than 4 inches in diameter and continuing to add larger diameter lines (i.e., 8 and 10 inch) on the edges of town to ultimately loop around the entire city.

Table 7-5 summarizes the opinion of probable construction costs in current dollars to install the Phase II distribution system improvements.

#### *7.4.1.3 Phase III Improvements*

Figure 7-4 shows the proposed Phase III distribution system improvements. The Phase III improvements represent the distribution system enhancements that should be installed to improve flows, pressures, and service to the remainder of the users and allow development both in and around the city. These improvements consist of replacing all remaining mains that are smaller than 6 inches in diameter and finishing looping larger diameter mains around the city.

It should be noted that many of the Phase III improvements should be completed as needed, i.e., when development occurs that would necessitate the corresponding improvement. As such, many of the phase III improvements may be paid for solely by the developer or jointly between the City and the developer. Table 7-6 summarizes the opinion of probable construction costs in current dollars to install the Phase III distribution system improvements.

### 7.4.2 South Tank Phases

#### *7.4.2.1 Phase I Improvements*

The proposed Phase I improvements consists of two parts, distribution system enhancements and dedicated main piping. Figure 7-5 shows the proposed Phase I improvements.

# CITY OF RICHFIELD




# FIGURE 7-3
# NORTH TANK PHASE-II
# WATER DISTRIBUTION SYSTEM IMPROVEMENTS

J-U-B
ENGINEERS · SURVEYORS · PLANNERS

# CITY OF RICHFIELD

ADA AVENUE
BANNOCK AVENUE
CASSIA AVENUE
ELMORE AVENUE
KOOTENAI AVENUE
LATAH AVENUE
LINCOLN AVENUE
LEMHI AVENUE
NEZ PERCE AVENUE
ONEIDA AVENUE
OWYHEE AVENUE
LAKE AVENUE

FIRST STREET
SECOND STREET
THIRD STREET
FOURTH STREET
FIFTH STREET
MAIN STREET
BLAKE STREET

SCHOOL
CHURCH PROPERTY
PARK
HOTEL

GLANBIA

HIGHWAY 93/26
HIGHWAY 93/26

EXISTING
- 0.75 INCH
- 1 INCH
- 1.5 INCH
- 2 INCH
- 3 INCH
- 4 INCH
- 6 INCH
- **8 INCH**
- 10 INCH
- 12 INCH
- WELL
- FIRE HYDRANT
- STORAGE TOWER

IMPROVEMENTS
- 6 INCH (IMPROVEMENTS)
- **8 INCH (IMPROVEMENTS)**
- 10 INCH (IMPROVEMENTS)
- 12 INCH (IMPROVEMENTS)

N.

500 250 0 500

SCALE IN FEET

# FIGURE 7-4
# NORTH TANK PHASE-III
# WATER DISTRIBUTION SYSTEM IMPROVEMENTS

J·U·B
ENGINEERS · SURVEYORS · PLANNERS

**Table 7-4. Opinion of Probable Costs to Pipe All Wells to the Proposed Storage Tank for Disinfection, North Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: 8 inch | | | | |
| C-900 PVC Water Main | 483 | LF | $30.00 | $14,490 |
| Connection to Pump Station/Wells | 2 | LS | $2,500.00 | $5,000 |
| Traffic Control | 1 | LS | $483.00 | $483 |
| Gate Valve | 3 | EA | $1,200.00 | $3,600 |
| NPWL Crossing | 1 | EA | $1,000.00 | $1,000 |
| Trench Rock Removal | 30 | CY | $120.00 | $3,600 |
| Type A Surface Repair (Asphalt) | 121 | LF | $25.00 | $3,025 |
| Type E Surface Repair (Natural) | 362 | EA | $5.00 | $1,810 |
| Contractor Mob/Demob | 1 | LS | 5% | $1,650 |
| Pipe Size: 10 inch | | | | |
| C-900 PVC Water Main | 449 | LF | $35.00 | $15,715 |
| Connection to Pump Station/Wells | 1 | LS | $2,500.00 | $2,500 |
| Traffic Control | 1 | LS | $449.00 | $449 |
| Gate Valve | 2 | EA | $1,525.00 | $3,050 |
| NPWL Crossing | 1 | EA | $1,000.00 | $1,000 |
| Trench Rock Removal | 20 | CY | $120.00 | $2,400 |
| Type A Surface Repair (Asphalt) | 112 | LF | $25.00 | $2,800 |
| Type E Surface Repair (Natural) | 337 | EA | $5.00 | $1,685 |
| Contractor Mob/Demob | 1 | LS | 5% | $1,480 |
| Pipe Size: 12 inch | | | | |
| C-900 PVC Water Main | 3,917 | LF | $37.00 | $144,929 |
| Connection to Tank | 1 | LS | $2,500.00 | $2,500 |
| Highway Crossing | 1 | EA | $25,000.00 | $25,000 |
| Traffic Control | 1 | LS | $3,917.00 | $3,917 |
| Gate Valve | 2 | EA | $2,100.00 | $4,200 |
| NPWL Crossing | 8 | EA | $1,000.00 | $8,000 |
| Trench Rock Removal | 220 | CY | $120.00 | $26,400 |
| Type A Surface Repair (Asphalt) | 979 | LF | $25.00 | $24,475 |
| Type E Surface Repair (Natural) | 2,938 | EA | $5.00 | $14,690 |
| Contractor Mob/Demob | 1 | LS | 5% | $12,706 |
| | | | **Subtotal Construction Costs:** | **$330,904** |

**Table 7-5. Opinion of Probable Costs for Phase II Distribution Improvements, North Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: 6 inch | | | | |
| C-900 PVC Water Main | 10,319 | LF | $28.00 | $288,932 |
| Traffic Control | 1 | LS | $10,319.00 | $10,319 |
| Gate Valve | 21 | EA | $1,000.00 | $21,000 |
| Fire Hydrant Connection | 26 | EA | $4,200.00 | $109,200 |
| Service Connection/Reconnection | 103 | EA | $1,000.00 | $103,190 |
| NPWL Crossing | 21 | EA | $1,000.00 | $21,000 |
| Trench Rock Removal | 570 | CY | $120.00 | $68,400 |
| Type A Surface Repair (Asphalt) | 2,580 | LF | $25.00 | $64,500 |
| Type E Surface Repair (Natural) | 7,739 | EA | $5.00 | $38,695 |
| Contractor Mob/Demob | 1 | LS | 5% | $36,262 |
| Pipe Size: 8 inch | | | | |
| C-900 PVC Water Main | 5,078 | LF | $30.00 | $152,340 |
| Highway Crossing | 1 | EA | $25,000.00 | $25,000 |
| Traffic Control | 1 | LS | $5,078.00 | $5,078 |
| Gate Valve | 11 | EA | $1,200.00 | $13,200 |
| Fire Hydrant Connection | 13 | EA | $4,200.00 | $54,600 |
| Service Connection/Reconnection | 51 | EA | $1,000.00 | $50,780 |
| NPWL Crossing | 11 | EA | $1,000.00 | $11,000 |
| Trench Rock Removal | 280 | CY | $120.00 | $33,600 |
| Type A Surface Repair (Asphalt) | 1,270 | LF | $25.00 | $31,750 |
| Type E Surface Repair (Natural) | 3,809 | EA | $5.00 | $19,045 |
| Contractor Mob/Demob | 1 | LS | 5% | $19,820 |
| | | | **Subtotal Construction Costs:** | **$1,177,710** |

**Table 7-6. Opinion of Probable Costs for Phase III Distribution Improvements, North Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: 6 inch | | | | |
| C-900 PVC Water Main | 3,820 | LF | $28.00 | $106,960 |
| Traffic Control | 1 | LS | $3,820.00 | $3,820 |
| Gate Valve | 8 | EA | $1,000.00 | $8,000 |
| Fire Hydrant Connection | 10 | EA | $4,200.00 | $42,000 |
| Service Connection/Reconnection | 38 | EA | $1,000.00 | $38,200 |
| NPWL Crossing | 8 | EA | $1,000.00 | $8,000 |
| Trench Rock Removal | 210 | CY | $120.00 | $25,200 |
| Type A Surface Repair (Asphalt) | 955 | LF | $25.00 | $23,875 |

| | | | | |
|---|---|---|---|---|
| Type E Surface Repair (Natural) | 2,865 | EA | $5.00 | $14,325 |
| Contractor Mob/Demob | 1 | LS | 5% | $13,519 |
| | Pipe Size: | 8 inch | | |
| C-900 PVC Water Main | 2,678 | LF | $30.00 | $80,340 |
| Traffic Control | 1 | LS | $2,678.00 | $2,678 |
| Gate Valve | 6 | EA | $1,200.00 | $7,200 |
| Fire Hydrant Connection | 7 | EA | $4,200.00 | $29,400 |
| Service Connection/Reconnection | 27 | EA | $1,000.00 | $26,780 |
| NPWL Crossing | 6 | EA | $1,000.00 | $6,000 |
| Trench Rock Removal | 150 | CY | $120.00 | $18,000 |
| Type A Surface Repair (Asphalt) | 670 | LF | $25.00 | $16,750 |
| Type E Surface Repair (Natural) | 2,009 | EA | $5.00 | $10,045 |
| Contractor Mob/Demob | 1 | LS | 5% | $9,860 |
| | Pipe Size: | 10 inch | | |
| C-900 PVC Water Main | 4,241 | LF | $35.00 | $148,435 |
| Traffic Control | 1 | LS | $4,241.00 | $4,241 |
| Gate Valve | 9 | EA | $1,525.00 | $13,725 |
| Fire Hydrant Connection | 11 | EA | $4,200.00 | $46,200 |
| Service Connection/Reconnection | 42 | EA | $1,000.00 | $42,400 |
| NPWL Crossing | 9 | EA | $1,000.00 | $9,000 |
| Trench Rock Removal | 240 | CY | $120.00 | $28,800 |
| Type A Surface Repair (Asphalt) | 1,060 | LF | $25.00 | $26,500 |
| Type E Surface Repair (Natural) | 3,181 | EA | $5.00 | $15,905 |
| Contractor Mob/Demob | 1 | LS | 5% | $16,761 |
| | Pipe Size: | 12 inch | | |
| C-900 PVC Water Main | 1,351 | LF | $37.00 | $49,987 |
| Traffic Control | 1 | LS | $1,351.00 | $1,351 |
| Gate Valve | 3 | EA | $2,100.00 | $6,300 |
| Fire Hydrant Connection | 4 | EA | $4,200.00 | $16,800 |
| Service Connection/Reconnection | 14 | EA | $1,000.00 | $13,510 |
| NPWL Crossing | 3 | EA | $1,000.00 | $3,000 |
| Trench Rock Removal | 80 | CY | $120.00 | $9,600 |
| Type A Surface Repair (Asphalt) | 338 | LF | $25.00 | $8,450 |
| Type E Surface Repair (Natural) | 1,013 | EA | $5.00 | $5,065 |
| Contractor Mob/Demob | 1 | LS | 5% | $5,703 |
| | | | **Subtotal Construction Costs:** | **$968,398** |

#### 7.4.2.1.1 Distribution System

The Phase I improvements represent the minimum distribution system enhancements that should be installed to allow for proper fire flow to the elementary school and Glanbia, to

provide sufficient water for Glanbia's processing needs, to boost the fire flow capability in some of the smaller lines, and to provide a back bone for the City's water distribution system. These improvements include:

- Installing a 10 inch main along Third Street between Kootenai Avenue and Blaine Avenue to create a back bone to the City's water system and tie in some of the smaller lines, therefore, enhancing pressures and fire flow capabilities.

- Installing a 10 inch main; along Kootenai Avenue between Third Street and Fourth Street, along Fourth Street between Kootenai Avenue and Cassia Avenue, along Cassia Avenue between Third Street and Fourth Street to enhance fire flow capabilities to the school.

- Installing a 12 inch line starting at the tank going north down Third Street to Oneida Avenue, along Oneida Avenue to Lincoln, along Lincoln until just South of Glanbia and then to Glanbia. This line is to enhance fire flows to the Glanbia, provide water for the processing needs of Glanbia and to create a portion of the City's water distribution backbone.

Table 7-7 summarizes the opinion of probable construction costs in current dollars to install the Phase I distribution system improvements.

#### 7.4.2.1.2 Well Piping

As part of phase I, it is recommended that water from the new well(s) and the existing wells be pumped to the proposed disinfection system within the new booster pump house prior to discharging to the new storage tank. Due to the close proximity of the wells in relation to one another, it was assumed that water from all of the wells would be pumped through the same pipeline to the new booster pump station. Under the assumption that all of the wells can be further developed, preliminary design indicates that the line from Well #1 and Well #2 should be 8 inches in diameter, the line from Well #3 should be 10 inches in diameter, and the main pipeline that all of the wells connect to should be 12 inches in diameter. Based on the results of the pump draw down tests the sizes of these lines may differ. Figure 7-5 shows the proposed alignment of the pipelines from the wells to the tank. Table 7-8 summarizes the opinion of probable costs in current dollars to install pipe lines from the wells to the proposed location of the new storage tank.

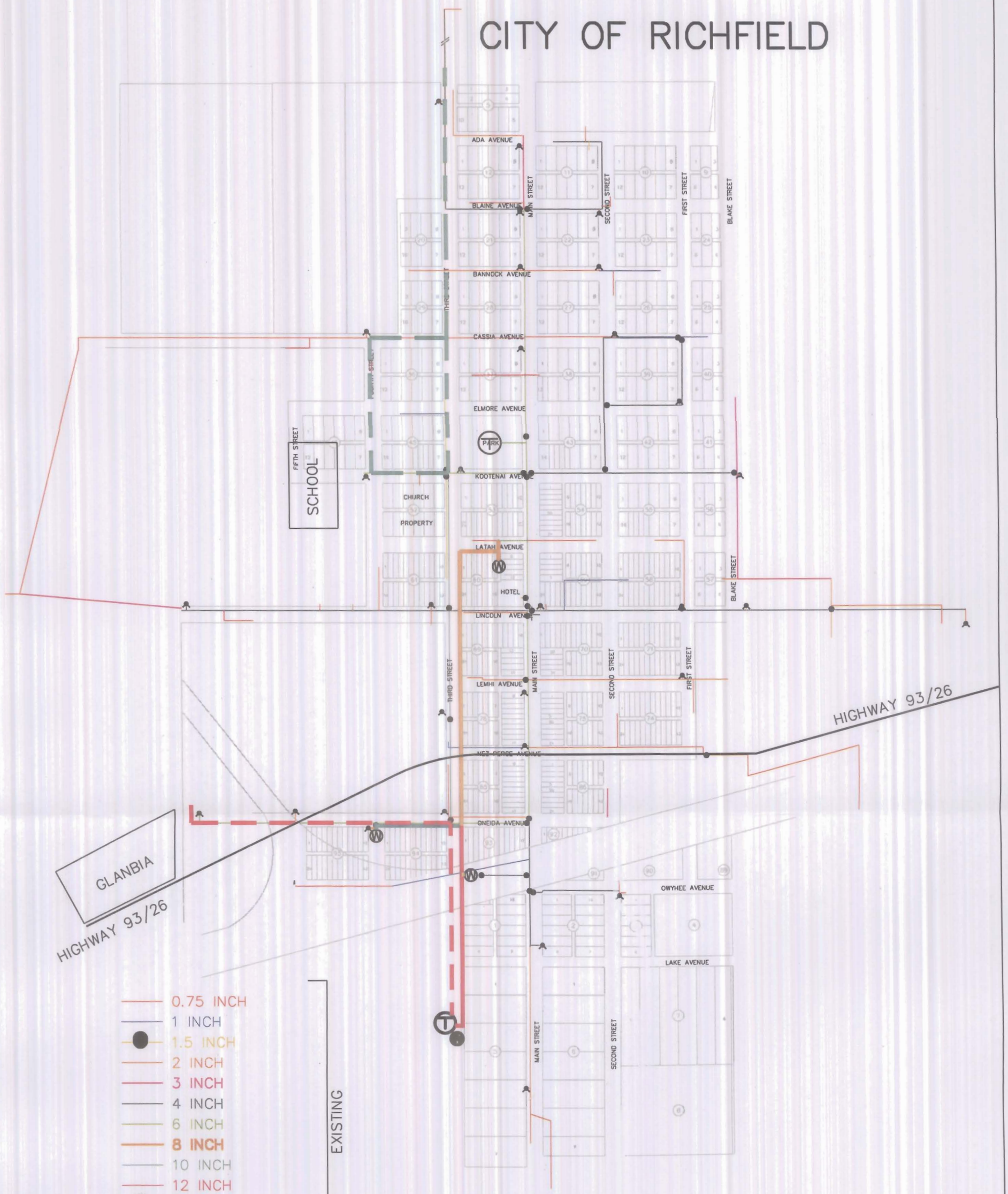
### *7.4.2.2 Phase II Improvements*

Figure 7-6 shows the proposed Phase II distribution system improvements. As previously mentioned, the Phase II improvements represent the minimum distribution system enhancements that should be installed to improve flows, pressures, and service to the majority of the existing users. Phase II improvements will also provide the opportunity for some growth around the city.

Figure 7-6. South Tank Phase -II Water Distribution System Improvements. These improvements consist of replacing all mains that are smaller than 4 inches in diameter and continuing to add larger diameter lines (i.e., 8 and 10 inch) on the edges of town to ultimately loop around the entire city

Table 7-9 summarizes the opinion of probable construction costs in current dollars to install the Phase II distribution system improvements.

# CITY OF RICHFIELD




# FIGURE 7-5
# SOUTH TANK PHASE-I
# WATER DISTRIBUTION SYSTEM IMPROVEMENTS

N.

500 250 0 500

SCALE IN FEET

J-U-B

ENGINEERS · SURVEYORS · PLANNERS

### *7.4.2.3 Phase III Improvements*

Figure 7-7 shows the proposed Phase III distribution system improvements. As previously mention, the Phase III improvements represent the distribution system enhancements that should be installed to improve flows, pressures, and service to the remainder of the users and allow development both in and around the city.

**Table 7-7. Opinion of Probable Costs for Phase I Distribution Improvements, South Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: | 10 | inch | | |
| C-900 PVC Water Main | 3,384 | LF | $35.00 | $118,440 |
| Traffic Control | 1 | LS | $3,384.00 | $3,384 |
| Gate Valve | 7 | EA | $1,525.00 | $10,675 |
| Fire Hydrant Connection | 9 | EA | $4,200.00 | $37,800 |
| Service Connection/Reconnection | 34 | EA | $1,000.00 | $33,840 |
| NPWL Crossing | 7 | EA | $1,000.00 | $7,000 |
| Trench Rock Removal | 190 | CY | $120.00 | $22,800 |
| Type A Surface Repair (Asphalt) | 846 | LF | $25.00 | $21,150 |
| Type E Surface Repair (Natural) | 2,538 | EA | $5.00 | $12,690 |
| Contractor Mob/Demob | 1 | LS | 5% | $13,389 |
| Pipe Size: | 12 | inch | | |
| C-900 PVC Water Main | 2,289 | LF | $37.00 | $84,693 |
| Highway Crossing | 1 | LS | $25,000.00 | $25,000 |
| Traffic Control | 1 | LS | $2,289.00 | $2,289 |
| Gate Valve | 5 | EA | $2,100.00 | $10,500 |
| Fire Hydrant Connection | 6 | EA | $4,200.00 | $25,200 |
| Service Connection/Reconnection | 23 | EA | $1,000.00 | $22,890 |
| NPWL Crossing | 5 | EA | $1,000.00 | $5,000 |
| Trench Rock Removal | 130 | CY | $120.00 | $15,600 |
| Type A Surface Repair (Asphalt) | 572 | LF | $25.00 | $14,300 |
| Type E Surface Repair (Natural) | 1,717 | EA | $5.00 | $8,585 |
| Contractor Mob/Demob | 1 | LS | 5% | $9,453 |
| | | | **Subtotal Construction Costs:** | **$505,928** |

These improvements consist of replacing all remaining mains that are smaller than 6 inches in diameter and finishing looping larger diameter mains around the city.

It should be noted that many of the Phase III improvements should be completed as needed, such as when development occurs that would necessitate the corresponding improvement. As such, many of the Phase III improvements may be paid for solely by the developer or jointly between the City and the developer. Table 7-10 summarizes the opinion of probable construction costs in current dollars to install the Phase III distribution system improvements.

**Table 7-8. Opinion of Probable Costs to Pipe All Wells to the Proposed Storage Tank for Disinfection, South Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: 8 inch | | | | |
| C-900 PVC Water Main | 1,584 | LF | $30.00 | $47,520 |
| Connection to Pump Station/Wells | 2 | LS | $2,500.00 | $5,000 |
| Highway Crossing | 1 | EA | $25,000.00 | $25,000 |
| Traffic Control | 1 | LS | $1,584.00 | $1,584 |
| Gate Valve | 3 | EA | $1,200.00 | $3,600 |
| NPWL Crossing | 4 | EA | $1,000.00 | $4,000 |
| Trench Rock Removal | 90 | CY | $120.00 | $10,800 |
| Type A Surface Repair (Asphalt) | 396 | LF | $25.00 | $9,900 |
| Type E Surface Repair (Natural) | 1,188 | EA | $5.00 | $5,940 |
| Contractor Mob/Demob | 1 | LS | 5% | $5,667 |
| Pipe Size: 10 inch | | | | |
| C-900 PVC Water Main | 449 | LF | $35.00 | $15,715 |
| Connection to Pump Station/Wells | 1 | LS | $2,500.00 | $2,500 |
| Traffic Control | 1 | LS | $449.00 | $449 |
| Gate Valve | 2 | EA | $1,525.00 | $3,050 |
| NPWL Crossing | 1 | EA | $1,000.00 | $1,000 |
| Trench Rock Removal | 20 | CY | $120.00 | $2,400 |
| Type A Surface Repair (Asphalt) | 112 | LF | $25.00 | $2,800 |
| Type E Surface Repair (Natural) | 337 | EA | $5.00 | $1,685 |
| Contractor Mob/Demob | 1 | LS | 5% | $1,480 |
| Pipe Size: 12 inch | | | | |
| C-900 PVC Water Main | 1014 | LF | $37.00 | $37,518 |
| Connection to Tank | 1 | LS | $2,500.00 | $2,500 |
| Traffic Control | 1 | LS | $1014.00 | $1,014 |
| NPWL Crossing | 3 | EA | $1,000.00 | $3,000 |
| Trench Rock Removal | 60 | CY | $120.00 | $7,200 |
| Type A Surface Repair (Asphalt) | 254 | LF | $25.00 | $6,350 |
| Type E Surface Repair (Natural) | 761 | EA | $5.00 | $3,805 |
| Contractor Mob/Demob | 1 | LS | 5% | $3,069 |
| | | | **Subtotal Construction Costs:** | **$214,547** |

**Table 7-9. Opinion of Probable Costs for Phase II Distribution Improvements, South Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: 6 inch | | | | |
| C-900 PVC Water Main | 9,829 | LF | $28.00 | $275,212 |
| Traffic Control | 1 | LS | $9,829.00 | $9,829 |
| Gate Valve | 20 | EA | $1,000.00 | $20,000 |
| Fire Hydrant Connection | 25 | EA | $4,200.00 | $105,000 |
| Service Connection/Reconnection | 98 | EA | $1,000.00 | $98,290 |
| NPWL Crossing | 20 | EA | $1,000.00 | $20,000 |
| Trench Rock Removal | 550 | CY | $120.00 | $66,000 |
| Type A Surface Repair (Asphalt) | 2,457 | LF | $25.00 | $61,425 |
| Type E Surface Repair (Natural) | 7,372 | EA | $5.00 | $36,860 |
| Contractor Mob/Demob | 1 | LS | 5% | $34,631 |
| Pipe Size: 8 inch | | | | |
| C-900 PVC Water Main | 5,078 | LF | $30.00 | $152,340 |
| Highway Crossing | 1 | LS | $25,000.00 | $25,000 |
| Traffic Control | 1 | LS | $5,078.00 | $5,078 |
| Gate Valve | 11 | EA | $1,200.00 | $13,200 |
| Fire Hydrant Connection | 13 | EA | $4,200.00 | $54,600 |
| Service Connection/Reconnection | 51 | EA | $1,000.00 | $50,780 |
| NPWL Crossing | 11 | EA | $1,000.00 | $11,000 |
| Trench Rock Removal | 280 | CY | $120.00 | $33,600 |
| Type A Surface Repair (Asphalt) | 1,270 | LF | $25.00 | $31,750 |
| Type E Surface Repair (Natural) | 3,809 | EA | $5.00 | $19,045 |
| Contractor Mob/Demob | 1 | LS | 5% | $18,570 |
| | | | **Subtotal Construction Costs:** | **$1,143,459** |

# CITY OF RICHFIELD




# FIGURE 7–6
# SOUTH TANK PHASE–II
# WATER DISTRIBUTION SYSTEM IMPROVEMENTS

N

500 250 0 500

SCALE IN FEET

J·U·B

ENGINEERS · SURVEYORS · PLANNERS

# CITY OF RICHFIELD

ADA AVENUE
BLAINE AVENUE
BANNOCK AVENUE
CASSIA AVENUE
ELMORE AVENUE
KOOTENAI AVENUE
LATAH AVENUE
LINCOLN AVENUE
LEMHI AVENUE
NEZ PERCE AVENUE
ONEIDA AVENUE
OWYHEE AVENUE
LAKE AVENUE

MAIN STREET
SECOND STREET
FIRST STREET
BLAKE STREET
THIRD STREET
FOURTH STREET
FIFTH STREET

SCHOOL
CHURCH PROPERTY
PARK
HOTEL
GLANBIA

HIGHWAY 93/26
HIGHWAY 93/26

EXISTING
- 0.75 INCH
- 1 INCH
- 1.5 INCH
- 2 INCH
- 3 INCH
- 4 INCH
- 6 INCH
- **8 INCH**
- 10 INCH
- 12 INCH
- WELL
- FIRE HYDRANT
- STORAGE TOWER

- 6 INCH (IMPROVEMENTS)
- **8 INCH (IMPROVEMENTS)**
- 10 INCH (IMPROVEMENTS)
- 12 INCH (IMPROVEMENTS)

N.

500 250 0 500
SCALE IN FEET

# FIGURE 7-7
# SOUTH TANK PHASE-III
# WATER DISTRIBUTION SYSTEM IMPROVEMENTS

J-U-B
ENGINEERS · SURVEYORS · PLANNERS

**Table 7-10. Opinion of Probable Costs for Phase III Distribution Improvements, South Tank**

| Item | Quantity | Units | Unit Price | Total Costs |
|---|---|---|---|---|
| Pipe Size: 6 inch | | | | |
| C-900 PVC Water Main | 3,110 | LF | $28.00 | $87,080 |
| Traffic Control | 1 | LS | $3,110.00 | $3,110 |
| Gate Valve | 7 | EA | $1,000.00 | $7,000 |
| Fire Hydrant Assembly | 8 | EA | $4,200.00 | $33,600 |
| Service Connection/Reconnection | 31 | EA | $1,000.00 | $31,100 |
| NPWL Crossing | 7 | EA | $1,000.00 | $7,000 |
| Trench Rock Removal | 170 | CY | $120.00 | $20,400 |
| Type A Surface Repair (Asphalt) | 778 | LF | $25.00 | $19,450 |
| Type E Surface Repair (Natural) | 2,333 | EA | $5.00 | $11,665 |
| Contractor Mob/Demob | 1 | LS | 5% | $10,540 |
| Pipe Size: 8 inch | | | | |
| C-900 PVC Water Main | 2,678 | LF | $30.00 | $80,340 |
| Traffic Control | 1 | LS | $2,678.00 | $2,678 |
| Gate Valve | 6 | EA | $1,200.00 | $7,200 |
| Fire Hydrant Assembly | 7 | EA | $4,200.00 | $29,400 |
| Service Connection/Reconnection | 27 | EA | $1,000.00 | $26,780 |
| NPWL Crossing | 6 | EA | $1,000.00 | $6,000 |
| Trench Rock Removal | 150 | CY | $120.00 | $18,000 |
| Type A Surface Repair (Asphalt) | 670 | LF | $25.00 | $16,750 |
| Type E Surface Repair (Natural) | 2,009 | EA | $5.00 | $10,045 |
| Contractor Mob/Demob | 1 | LS | 5% | $9,860 |
| Pipe Size: 10 inch | | | | |
| C-900 PVC Water Main | 3,868 | LF | $35.00 | $135,415 |
| Traffic Control | 1 | LS | $3,869.00 | $3,869 |
| Gate Valve | 8 | EA | $1,525.00 | $12,200 |
| Fire Hydrant Assembly | 10 | EA | $4,200.00 | $42,000 |
| Service Connection/Reconnection | 39 | EA | $1,000.00 | $38,690 |
| NPWL Crossing | 8 | EA | $1,000.00 | $8,000 |
| Trench Rock Removal | 210 | CY | $120.00 | $25,200 |
| Type A Surface Repair (Asphalt) | 967 | LF | $25.00 | $24,175 |
| Type E Surface Repair (Natural) | 2,901 | EA | $5.00 | $14,510 |
| Contractor Mob/Demob | 1 | LS | 5% | $15,203 |
| Pipe Size: 12 inch | | | | |
| C-900 PVC Water Main | 2,211 | LF | $37.00 | $81,807 |
| Traffic Control | 1 | LS | $2,211.00 | $2,211 |
| Gate Valve | 5 | EA | $2,100.00 | $10,500 |
| Fire Hydrant Assembly | 6 | EA | $4,200.00 | $25,200 |

**Table 7-10. Opinion of Probable Costs for Phase III Distribution Improvements, South Tank (Continued)**

| | | | | |
|---|---|---|---|---|
| Service Connection/Reconnection | 22 | EA | $1,000.00 | $22,110 |
| NPWL Crossing | 5 | EA | $1,000.00 | $5,000 |
| Trench Rock Removal | 120 | CY | $120.00 | $14,400 |
| Type A Surface Repair (Asphalt) | 553 | LF | $25.00 | $13,825 |
| Type E Surface Repair (Natural) | 1,658 | EA | $5.00 | $8,290 |
| Contractor Mob/Demob | 1 | LS | 5% | $9,167 |
| | | | **Subtotal Construction Costs:** | **$950,250** |

## 7.8 PROJECT COST SUMMARY

Tables 7-11 and 7-12 summarize the opinion of probable construction costs in current dollars for the proposed project with the tank at the north and the tank at the south, respectively. To account for contingencies that were not included in the preliminary design, 20% was added to the construction sub-total cost. An additional 15% was added for engineering, administration and construction observation and 10% for Funding, Legal, Administration, and Bonding.

Table 7-13 summarizes an opinion of probable increases in annual operation and maintenance costs associated with the proposed improvements. Costs were estimated for additional labor, power, maintenance, supplies, water quality sampling, and a short lived asset reserve for replacing water project assets after they have reached their useful life. Since either Well #3 or the new well would be in operation only when the other is off, it was assumed that there would be no additional power costs for the new well. For the purposes of this analysis, it was assumed that power costs would remain constant for the 20 year planning period. To account for contingencies that were not included in the preliminary design, 10% was added to the operation and maintenance sub-total cost.

**Table 7-11. Opinion of Probable Construction Costs for the Total Water System Project, North Tank**

| Item | Cost |
|---|---|
| Well and Wellhouse | $346,325 |
| Tank and Booster Pump Station | $1,783,290 |
| Dedicated Mains | $330,904 |
| Phase 1 Distribution System Improvements | $614,475 |
| SUB-TOTAL CONSTRUCTION COSTS | **$3,074,993** |
| Contingencies (20%) | $614,999 |
| Engineering, Admin., Construction Observation (20%) | $737,998 |
| Funding, Legal, Admin., Bonding (10%) | $368,999 |
| Inflation Factor (3% per year) (9% total) | $332,099 |
| TOTAL CONSTRUCTION COSTS | **$5,129,089** |

**Table 7-12. Opinion of Probable Construction Costs for the Total Water System Project, South Tank**

| Item | Cost |
|---|---|
| Well and Wellhouse | $344,080 |
| Tank and Booster Pump Station | $1,783,290 |
| Dedicated Mains | $214,547 |
| Phase 1 Distribution System Improvements | $505,928 |
| SUB-TOTAL CONSTRUCTION COSTS | **$2,847,844** |
| CONTINGENCIES (20%) | $569,569 |
| ENGINEERING, ADMIN., CONSTRUCTION OBSERVATION (20%) | $683,483 |
| FUNDING, LEGAL, ADMIN, BONDING (10%) | $341,741 |
| INFLATION FACTOR (3% PER YEAR) (9% TOTAL) | $307,567 |
| TOTAL CONSTRUCTION COSTS | **$4,750,204** |

**Table 7-13. Opinion of Probable Annual Operation and Maintenance Cost Increases for the Total Water System Project**

| Item | Cost |
|---|---|
| Labor | $11,076 |
| Power | $31,211 |
| Maintenance/Supplies | $5,000 |
| Water Quality Sampling | $1,000 |
| Chemicals | $1,163 |
| Short Lived Assets | $9,550 |
| SUB-TOTAL ANNUAL OPERATION AND MAINTENANCE COSTS | $58,999 |
| CONTINGENCIES (10%) | $5,900 |
| TOTAL ANNUAL OPERATION AND MAINTENANCE COSTS | **$64,899** |

## 7.9 FINANCING OPTIONS

The City should begin making application for financing of the proposed project. The City should apply for both loans and grants to minimize the cost to the water users. Potential sources of funding include the Idaho Water Resources Board revolving loan, Idaho Department of Environmental Quality State Revolving Loan Fund, Rural Development Agency loans and grants, the Department of Commerce Community Development Block Grant Program and the U.S. Department of Commerce Economic Development Administration Grants.

The Idaho Water Resources Board may make loans or grants from the Water Management Account for new water projects or the rehabilitation of existing water projects. The use of these funds for water systems is limited to water supply, water quality, recreation and water resource studies. Grants and loans may be made by the Board for any project in the public interest for no more than $60,000. The Board also controls the Revolving Development Account which is designated to financially assist and support the development of the water resources of the State through the construction of water projects, including the

rehabilitation, improvements, or extension of existing Systems. Loans are issued by the Board of up to $600,000 with typical repayment periods of 10 to 16 years. The Board can also issue "Revenue Bonds" to finance projects of any size sponsored by other entities. Repayment periods and interest rates vary depending on the bond size, project and bond markets.

The Idaho Department Environmental Quality has funds available through their Drinking Water Revolving Loan Fund (SRF). This program provides below market rate interest loans to Idaho communities to build new, or repair, existing drinking water facilities. Eligible facilities include water supply, treatment, storage and distribution. The loan term is 20 years; however, some applicants may qualify as disadvantaged and be eligible for reduced loan terms. The funding is derived from an appropriation from the Environmental Protection Agency (80%) and a 20% match from the Water Pollution Control Account. The installation of individual water meters is required for SRF funded projects, unless the total meter installation cost is considerably greater than the overall project costs. Since meters are already installed this criteria is met.

Rural Development Agency (RDA) makes loans and grants to public bodies and non-profit organizations in rural areas to construct or improve community facilities that are modest in size, cost and design. Water and Waste Disposal (WWD) Loans and Grants may be used to construct, repair, improve, expand or otherwise modify rural water supply/distribution facilities; acquire water supply or water rights; pay necessary fees and costs associated with the project; or finance facilities in conjunction with funds from other agencies or those provided by the applicant. The maximum loan term is 60 years and grant funds may be available for facilities serving the most financially needy communities. Individual water meters are required in all RDA funded projects.

The Idaho Community Development Block Grant program (ICDBG) assists Idaho Cities and Counties under 60,000 population with the development of needed public infrastructure and housing in an effort to support local economic diversification and growth. The program is administered by the Department of Commerce Division of Community Development, with funds received annually from the U.S. Department of Housing and Urban Development. ICDBG funds are used to construct projects that benefit low and moderate income persons, help prevent or eliminate slum and blight conditions, or solve catastrophic health and safety threats in local areas.

The U.S. Department of Commerce, Economic Development Administration (EDA) provides funding for the construction of public infrastructure under the authority of the Public Works and Economic Development Act of 1966. Eligible projects include water and wastewater improvement and projects that support economic development within the community. Cities, counties and special cities are eligible to apply. Projects must meet economic development eligibility criteria as established by Congress; specifically, per capita income, employment and other demographic characteristics, with an emphasis on resolving unemployment and barriers to economic growth and stability. EDA funds are provided as grants of an amount 60% to 80% of the project cost. Applicants must provide the local share from acceptable sources, including cash, local government bonds or a Community Development Block Grant.

The Idaho State Legislature ruled in March 1996 that communities can attach a price to new development. The law allows government entities to charge a developer for a "proportionate share" of the cost of public facilities impacted by residential, commercial and industrial building. The calculation of the proportionate share must be based on a sturdy planning

foundation that includes a comprehensive land use plan, a capital improvements plan and a cash flow analysis. The money must be spent on the specific project it was collected for, within five years of collection.

## 7.10 USER CHARGE RATE

For comparison purposes, two alternatives were considered for evaluating the increase in baseline user charge rates for the proposed water system project. Under the first alternative, the City would finance the entire project solely with loans at an anticipated interest rate of 4% over a 20 year period. For the second alternative, it was assumed that approximately three-fourths of the project ($3 million) would be financed with loans at an anticipated interest rate of 4% over a 20 year period, and the remaining portion would be paid for with grants. Results of the comparison indicate that financing a portion of the total project costs through grant monies will substantially reduce the increase in the user charge rate. Table 7-14 summarizes the results of the analysis for the two alternatives for the Northern tank location. Table 7-15 summarizes the results of the analysis for the two alternatives for the Southern tank location.

**Table 7-14. Comparison of User Charge Rate Increases, North Tank**

| Item | Cost |
|---|---|
| **Alternative 1** | |
| Total Construction Costs | $5,129,089 |
| Portion Financed by Grants | $0 |
| Portion Financed by Loans | $5,129,089 |
| | |
| Annual Construction Costs (4%, 20 years) | $377,407 |
| Annual O&M Cost Increase | $64,899 |
| Total Annual Costs | $442,307 |
| | |
| Equivalent Dwelling Units | 864 |
| Monthly Rate Increase | $42.66 |
| Existing Monthly Rate | $10.00 |
| New Monthly Rate | **$52.66** |
| **Alternative 2** | |
| Total Construction Costs | $5,129,089 |
| Portion Financed by Grants | $1,000,000 |
| Portion Financed by Loans | $4,129,089 |
| | |
| Annual Construction Costs (4%, 20 years) | $303,826 |
| Annual O&M Cost Increase | $64,899 |
| Total Annual Costs | $368,725 |
| | |
| Equivalent Dwelling Units | 864 |
| Monthly Rate Increase | $35.56 |
| Existing Monthly Rate | $10.00 |
| New Monthly Rate | **$45.56** |

Table 7-15. Comparison of User Charge Rate Increases, South Tank

| Item | Cost |
|---|---|
| **Alternative 1** | |
| Total Construction Costs | $4,750,204 |
| Portion Financed by Grants | $0 |
| Portion Financed by Loans | $4,750,204 |
| Annual Construction Costs (4%, 20 years) | $349,528 |
| Annual O&M Costs | $64,899 |
| Total Annual Costs | $414,428 |
| Equivalent Dwelling Units | 864 |
| Monthly Rate Increase | $39.97 |
| Existing Monthly Rate | $10.00 |
| New Monthly Rate | **$49.97** |
| **Alternative 2** | |
| Total Construction Costs | $4,750,204 |
| Portion Financed by Grants | $1,000,000 |
| Portion Financed by Loans | $3,750,204 |
| Annual Construction Costs (4%, 20 years) | $275,947 |
| Annual O&M Costs | $64,899 |
| Total Annual Costs | $340,846 |
| Equivalent Dwelling Units | 864 |
| Monthly Rate Increase | $32.87 |
| Existing Monthly Rate | $10.00 |
| New Monthly Rate | **$42.87** |

## 7.11 ENVIRONMENTAL AND OTHER CONSIDERATIONS

### 7.11.1 Environmental Impacts

The improvements to the water system for the City of Richfield as outlined in this Water System Master Plan will take place at different geographic locations in and around the City. It is beyond the scope of this study to determine the full impacts to the environment, as the study looks only at general locations for improvements. The environmental impacts of the proposed projects, however, should be beneficial in most aspects.

It is anticipated that there will not be any significant adverse impacts on surface water, agricultural lands, cultural resources, wetlands, plants or wildlife from this alternative. Most of the preliminarily selected locations of the improvements are at locations where there are existing buildings, structures, sidewalks, pavement or streets. It is not anticipated that any of the preliminary sites selected for the proposed improvements are within areas designated as flood zones.

There is a possibility that some of the improvements will be installed in residential areas, or parks, where trees and vegetation have been planted and the area has been landscaped. In

all areas where the construction or installation of the proposed improvements will take place, an extensive effort will be required by the contractor or City to reconstruct, replant and landscape the area to its former condition, prior to construction activities.

The additional source of water from the new well(s) will provide a positive social impact by developing further confidence in a continuous water supply. If located at the proper site, the well(s) will also enhance fire flows, further reducing public health and environmental risks. However, without additional improvements in the distribution system, the flows will not reach those flows recommended by the Idaho State Survey and Rating Bureau. The development of a new well or wells may create additional strain on the aquifer. However, until demand increases, there will be no additional groundwater withdrawals.

The improvements will have some adverse environmental impacts from construction activities. Heavy equipment and machinery will be used during construction, resulting in increased noise levels. However, construction activity will be limited to normal working hours to reduce the noise impacts on residential areas. In addition, construction noise will be temporary and can be minimized by the use of well maintained equipment and mufflers.

Air quality may be impacted due to dust and exhaust emissions from construction equipment, which will produce some minor air pollution. Debris created by construction should not be burned, but transported to a disposal area to avoid further air pollution. The impacts of construction dust can be mitigated by ceasing activity during exceptionally windy conditions and using watering equipment.

Open trenches, electrical utilities and heavy equipment will present health and safety hazards during construction. These hazards may be mitigated by educating project personnel about the applicable health and safety regulations, and establishing safe operating procedures. Traffic control may also result in a safety hazard, as traffic patterns are altered for construction purposes.

### 7.11.2 Implementability

It was assumed that implementability is a function of regulatory approval, public acceptance and constructability. It is anticipated that the City will be able to obtain regulatory approval, and the necessary permits and water rights for construction and operation. Public acceptance of the proposed projects is also very likely. Residents and business personnel within the City generally feel that the improvements to the system are necessary in order to meet the required water demands. Finally, based on past water construction projects in the area, it is not anticipated that any insurmountable construction problems will arise for the proposed projects. However, the well location(s) will need to be chosen carefully to avoid low yield areas of groundwater. A groundwater hydrogeologist should be consulted before finalizing the well location.

### 7.11.3 Reliability

The proposed improvements, if properly designed and constructed, should provide a reliable, long-term water system capable of meeting the existing and future water demands. Several other systems, including groundwater wells, storage tanks, booster pump stations and distribution system improvements have been constructed in other cities in southern Idaho, and have operated satisfactorily to date with no significant problems. It is essential, however, that City personnel perform the proper routine operation and maintenance of the proposed improvements to maintain the reliability of the system.

## 7.12 SUMMARY OF RECOMMENDATIONS

The following is a summary of the recommendations for the City.

Primary Improvements

- Obtain additional water rights and develop existing wells. (Section 7.1)
- Obtain additional water rights and construct a new 980 gpm well. (Section 7.2)
- Construct a 1.2 million (1,200,000) gallon water tank. (Section 7.3)
- Construct a pump station next to new tank. (Section 7.3)
- Install central chlorine disinfection system at pump station. (Section 7.3)
- Install a backup generator at the pump station (Section 7.3)

Phase I Improvements

- Install dedicated piping from wells to storage tank. (Sections 7.4.1.1 & 7.4.2.1)
- Replace distribution mains with recommended pipe sizes. (Sections 7.4.1.1 & 7.4.2.1)

Phase II Improvements

- Replace lines smaller than 4 inch with recommended size. (Sections 7.4.1.2 & 7.4.2.2)
- Install additional lines as recommended. (Sections 7.4.1.2 & 7.4.2.2)

Phase III Improvements

- Replace lines smaller than 6-inch with recommended size. (Sections 7.4.1.3 & 7.4.2.3)
- Install additional lines as new development occurs. (Sections 7.4.1.3 & 7.4.2.3)

Optional Improvements

- Obtain water rights and construct additional 980 gpm backup well. (Section 6.1.2)
- Convert parks and cemetery to surface water irrigation. (Section 6.1.4)
- Install secondary disinfection system at individual wells. (Section 6.3)
- Install central SCADA system. (Section 6.5)
- Provide backup power supply to existing wells. (Section 6.6)

# APPENDIX A

## WELLS
## DRILLER LOGS & REPORTS

Form 238-7
6/89

C

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

USE TYPEWRITER OR BALLPOINT PEN

# WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

**1. WELL OWNER**

Name City of Richfield

Address Richfield, Idaho

Owner's Permit No. 37-89-5-034

**2. NATURE OF WORK**

☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

**3. PROPOSED USE**

☐ Domestic ☐ Irrigation ☐ Test ☒ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

**4. METHOD DRILLED**

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

**5. WELL CONSTRUCTION**

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

| Thickness | Diameter | From | To |
|---|---|---|---|
| .250 Inches | 12 Inches + | 3 feet | 180 feet |
| _____ Inches | _____ Inches | _____ feet | _____ feet |
| _____ Inches | _____ Inches | _____ feet | _____ feet |
| _____ Inches | _____ Inches | _____ feet | _____ feet |

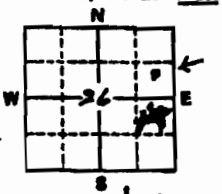
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☐ Yes ☒ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation _____ inches by _____ inches

| Number | From | To |
|---|---|---|
| _____ perforations | _____ feet | _____ feet |
| _____ perforations | _____ feet | _____ feet |
| _____ perforations | _____ feet | _____ feet |

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Diameter ____ Slot size ____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 180 Material used in seal: ☒ Cement grout
☐ Bentonite ☐ Puddling clay ☐ _____
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☒ Overbore to seal depth
Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata
Describe access port 1" Pipe + Cap

**6. LOCATION OF WELL**

Sketch map location must agree with written location.




Subdivision Name _____
Lot No. _____ Block No. _____

County Lincoln
SE¼ NE¼ Sec. 26, T. 4S N ☐ S ☒ R. 19E E ☒ W ☐

**7. WATER LEVEL**

Static water level 322 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ____ °F. Quality Good
Describe artesian or temperature zones below.

**8. WELL TEST DATA**

☒ Pump ☐ Bailer ☐ Air ☐ Other _____

| Discharge G.P.M. | Pumping Level | Hours Pumped |
|---|---|---|
| 360 | 322 | ½ |
| 600 | 322 | ½ |
| 1190 | 322 | ½ |
| 1350 | 322 | 5½ |

022040

**9. LITHOLOGIC LOG**

| Bore Diam. | Depth From | Depth To | Material | Water Yes | Water No |
|---|---|---|---|---|---|
| 16 | 0 | 15 | Overburden | | X |
| 16 | 15 | 106 | Black Basalt | | X |
| 16 | 106 | 119 | Red Basalt | | X |
| 16 | 119 | 164 | Black Basalt | | X |
| 16 | 164 | 178 | Brown Clay (Cascadam) | X | |
| 16 | 178 | 190 | Black Basalt | | X |
| 12 | 190 | 255 | Black Basalt | | X |
| 12 | 255 | 265 | Red & Black Basalt | | X |
| 12 | 265 | 322 | Black Basalt | | X |
| 12 | 322 | 330 | Last Cuttings | X | |
| 12 | 330 | 340 | Black Basalt | X | |
| 12 | 340 | 350 | Last Cuttings | X | |
| 12 | 350 | 422 | Black Basalt | X | |

MICROFILMED
JUN 13 1990

RECEIVED
NOV 28 1989
Department of Water Resources

RECEIVED
NOV 20 1989
Department of Water Resources
Southern Region Office

**10.**

Work started Aug 10, 1989 finished Nov 10, 1989

**11. DRILLERS CERTIFICATION** DL

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Eaton Drilling Firm No. 26
Address Wendell, Id Date _____
Signed by (Firm Official) Larry Eaton
and
(Operator) Bernard Singleton

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

RECEIVED
DEC 11 1961
Department of Reclamation

# WELL LOG AND REPORT OF THE STATE RECLAMATION ENGINEER OF IDAHO

Permit No. _____ Well No. _____ County LINCOLN

Owner Mrs. Da Es WILCOX

Address RICHFIELD, IDAHO

Driller SMITH DRILLING AND PUMP, INC.

Address 365 WEST MAIN JEROME, IDAHO

Well location SE ¼ SE ¼ Sec. 24, T. 4 N/S, R. 19 E/W

Size of drilled hole 6" WELL

Total depth of well 398

Locate well in section

| | |
|---|---|
| NW¼ | NE¼ |
| SW¼ | SE¼ |

Give depth to standing water from the ground 353 Water temp. _____ °Fahr.

On "Pumping Test" delivery was 20 g.p.m. or _____ c.f.s. Drawdown was None feet.

Size of pump and motor used to make test Bail Tested with Drilling Equipment

Length of time of test. 1 hours _____ minutes.

If flowing well, give flow _____ c.f.s. or _____ g.p.m. and of shut off pressure _____

If flowing well, described control works _____
(TYPE AND SIZE OF VALVE, ETC.)

Water will be used for STOCK WATER Weight of casing per lineal foot 12.9 lbs per ft.

Thickness of casing .108 Casing material Steel
(STEEL, CONCRETE, WOOD, ETC.)

Diameter, length and location of casing 6 5/8" O.D. or 6.4" I.D. - 7' 5" Long
(CASING 12" IN DIAMETER OR LESS, GIVE INSIDE DIAMETER; CASING OVER 12" IN DIAMETER, GIVE OUTSIDE DIAMETER)

## CASING RECORD

| Diam. Casing | From Feet | To Feet | Length | Remarks—seals, grouting, etc. |
|---|---|---|---|---|
| 6" | Flt. | 6'5" | 7'5" | Driven In. |
| | | | | |
| | | | | |
| | | | | |

Number and size of perforations _____ located _____ feet to _____ feet from ground

2-27-61

## WELL LOG

| From Feet | To Feet | Type of Material | Water-bearing Formation Any Yes or No | Casing Perforated Any Yes or No |
|---|---|---|---|---|
| 0 | 5 | TOP SOIL AND CLAY | NO | |
| 5 | 31 | GRAY LAVA | NO | |
| 31 | 36 | RED SAND AND CLAY | NO | |
| 36 | 79 | PINK AND GRAY LAVA | NO | |
| 79 | 79 | GRAY LAVA | NO | |
| 79 | 80 | LOOSE LAVA | NO | |
| 80 | 97 | GRAY HARD LAVA | NO | |
| 97 | 127 | RED LAVA | NO | |
| 127 | 132 | RED CRACKED LAVA | NO | |
| 132 | 158 | PINK LAVA | NO | |
| 158 | 160 | CRACKED LAVA | NO | |
| 160 | 169 | GRAY LAVA | NO | |
| 169 | 174 | BROWN CLAY | NO | |
| 174 | 210 | REDDISH GRAY LAVA | NO | |
| 210 | 227 | BROWN HARD LAVA | NO | |
| 227 | 241 | PINKISH GRAY LAVA | NO | |
| 241 | 281 | PINK LAVA | NO | |
| 281 | 282 | CREVICE | NO | |

If more space is required use Sheet No. 2

### WELL DRILLER'S STATEMENT

This well was drilled under my supervision and the above information is true and correct to the best of my knowledge and belief.

Signed: Smith Drilling & Pump Co. Inc

By: J. Emmett Smith

License No. 11

Dated NOVEMBER 30, _____, 1951

Well Driller SMITH DRILLING & PUMP Co.

Well Location RICHFIELD, IDAHO

T. 5 S. R. 19 E. S. 24 dcf 6

WELL LOG

| From Feet | To Feet | Type of Material | Water Encountered (Amount and Temperature if Any) | Casing Perforated (Feet) |
|---|---|---|---|---|
| 282 | 302 | GRAY LAVA | NO | |
| 302 | 310 | RED LAVA | NO | |
| 310 | 324 | LAVA - LOOSE CRACKS | NO | |
| 324 | 329 | LAVA PINKISH GRAY | NO | |
| 329 | 342 | LOOSE CRACKED LAVA RED | NO | |
| 342 | 356 | RED LAVA | NO | |
| 356 | 398 | LOOSE CRACKED LAVA PINK WATER IN AT 356' | YES | |

wdls

SESE S 24 T5S R19E

G.J. VERTI-LINE PUMPS, INC.
1970 Highland Ave. East • P.O. Box 892
Twin Falls, Idaho 83303
(208) 733-4278

# WELL TEST REPORT

ER Eaton Drilling (City of Richfield) DATE 11/15/89

CATION City of Richfield

LL DEPTH 422' WELL SIZE CASING 12"

T PUMP SETTING 400' telal pump BOWLS 10" F ORIFICE SIZE 8 STD x 6"

ATIC WATER LEVEL 321' STARTING TIME 10:00 AM

| E | PUMPING LEVEL | ORIFICE READING | G.P.M. | MINERS INCHES | |
|---|---|---|---|---|---|
| 25 | 321' | 5½ | 340 | 40" | |
| | 321' | 5½ | 360 | 40" | clean |
| 5 | 321' | 5½ | 360 | 40" | |
| 2 | 321' | 5½ | 360 | 40" | |
| 2 | 321' | 15" | 600 | 67" | clean |
| 45 | 321' | 15" | 600 | 67" | |
| 2 | 321' | 15" | 600 | 67" | |
| 5 | 321' | 38" | 950 | 105" | |
| 2 | 321' | 38" | 950 | 105" | clean |
| 45 | 321' | 37½" | 940 | 104" | |
| | Changed orifice to 8" STD x 7" | | | | |
| 00 | 321' | 21" | 1190 | 132" | slight Lava rock |
| 15 | 321' | 21" | 1190 | 132" | |
| 30 | 321' | 21" | 1190 | 132" | clean |
| 33 | 321' | 27" | 1350 | 150" | |
| 15 | 321' | 27" | 1350 | 150" | clean |

MARKS: 403' of Air line

# APPENDIX B

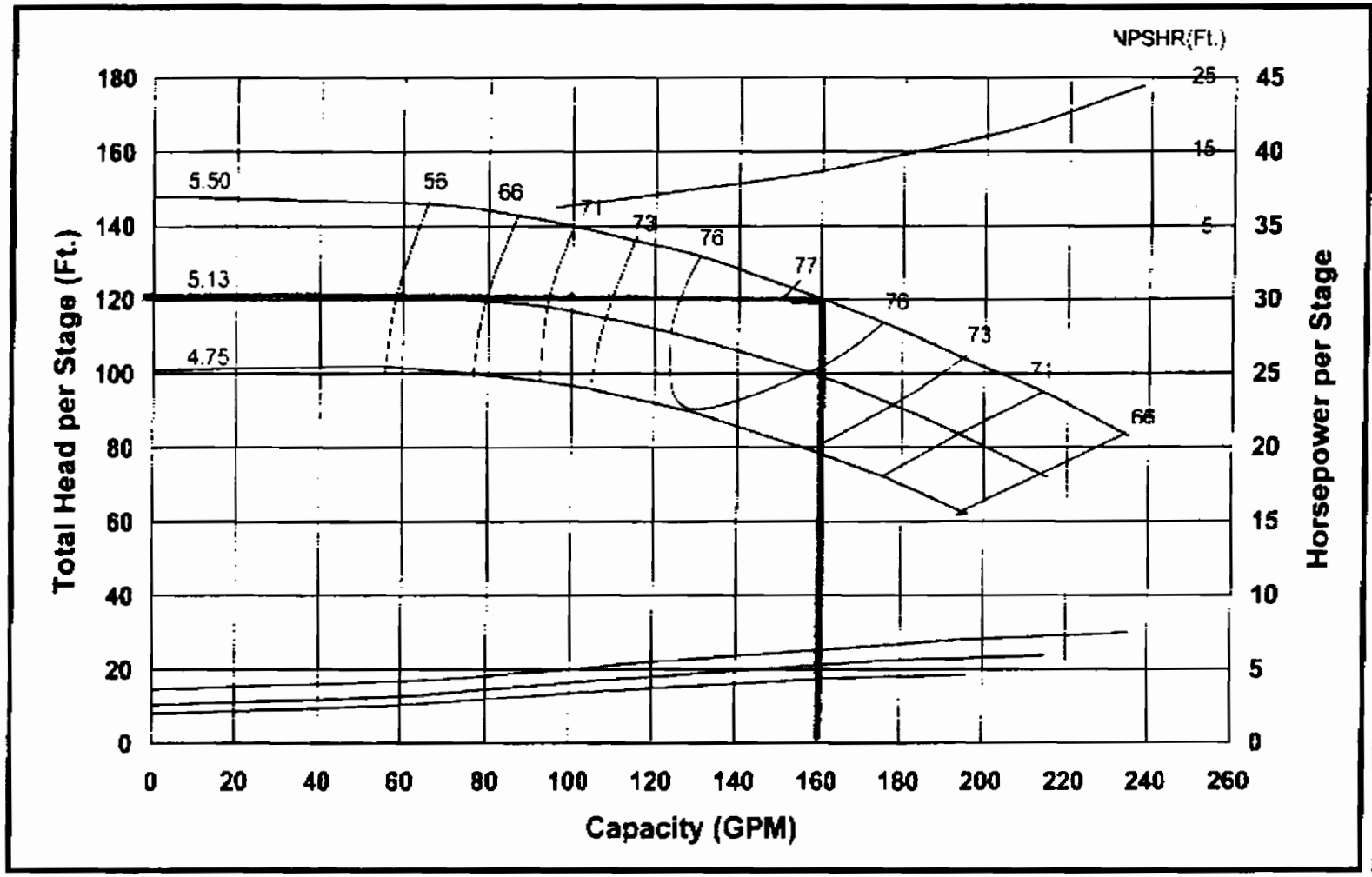
# PUMP CURVES & INFORMATION

GOULDS PUMPS

CITY OF LUBBOCK
25 HP SUBMERSIBLE

| GOULDS PROPOSAL NO | GOULDS S O NO | INQUIRY NO | CUSTOMER P O NO | P O DATE | ITEM NO. | CUSTOMER |
|---|---|---|---|---|---|---|
| | | | | | | |

| PROJECT | SERVICE | GPM CAPACITY | TDH | EFFICIENCY | NPSH |
|---|---|---|---|---|---|
| | | 1160 GPM | 480' | | |




| Curve No. | E6208AAPC5 |
|---|---|
| Model | 8RAHC |
| RPM | 3550 |

| EFFICIENCY CORRECTION | |
|---|---|
| 1-STAGE | -4.0 |
| 2-STAGE | -2.0 |
| 3-STAGE | -1.0 |
| 4-STAGE | 0.0 |

| | |
|---|---|
| Impeller | ENCLOSED |
| Ns = | 1185 |
| K = | 2.00 LBS/FT |
| K(Bal.)= | N/A |
| Bowl O.D. | 7.50" |
| Bowl Area | 0.25 |
| Max PSI | 430 |
| Disch size | 4" 5" 6" |

**TURBINE OPERATIONS**
Lubbock, Texas

BOWL PERFORMANCE CURVE BASED ON PUMPING CLEAR, NON-AERATED WATER RATED POINT ONLY IS GUARANTEED. CURVES REPRESENT SINGLE STAGE PERFORMANCE BASED ON TEST OF MULTI-STAGE BOWL ASSEMBLY. EFFICIENCY CORRECTION IS REQUIRED FOR LESSER STAGES

# Model 8RAHC

**June 2005**

Goulds Pumps

ITT Industries

Goulds Pumps is a brand of ITT Water Technology, Inc., a wholly owned subsidiary of ITT Industries, Inc.
Goulds Pumps and the ITT Engineered Blocks symbol are registered trademarks and trademarks of ITT Industries.
PRINTED IN U.S.A.
Specifications subject to change without notice.

Jun-06-06 10:17A Layne Pumps, Inc 208-423-5137 P.05

# PUMP DATA SHEET Turbine 60 Hz

ompany: Layne Pumps, Inc
ame:
ate: 08/06/06

Customer:City of Richfeild / 50HP Turbine

Order No: 50 HP TURBINE

**ump:**

Size: 8RJHC (20 stages)

Type: Lineshaft
Synch speed: 1800 rpm

Speed: 1760 rpm
Dia: 5.25 in

Curve: 3106

Specific Speeds: Ns: 2765

Pump Notes for Standard Sizes:
Suction Size-5" Discharge Sizes-5",6"

Vertical Turbine:
Bowl size: 7.5 in
Max lateral: 0.63 in
Thrust K factor: 4 lb/ft

**ump Limits for Standard Construction:**

Temperature: 120 °F
Sphere size: 0.43 in

Pressure: 425 psi g

**Search Criteria:**

Flow: 300 US gpm

Head: 504 ft

**Fluid:**

Water
SG: 1
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: — ft

**Motor:**

Standard: NEMA

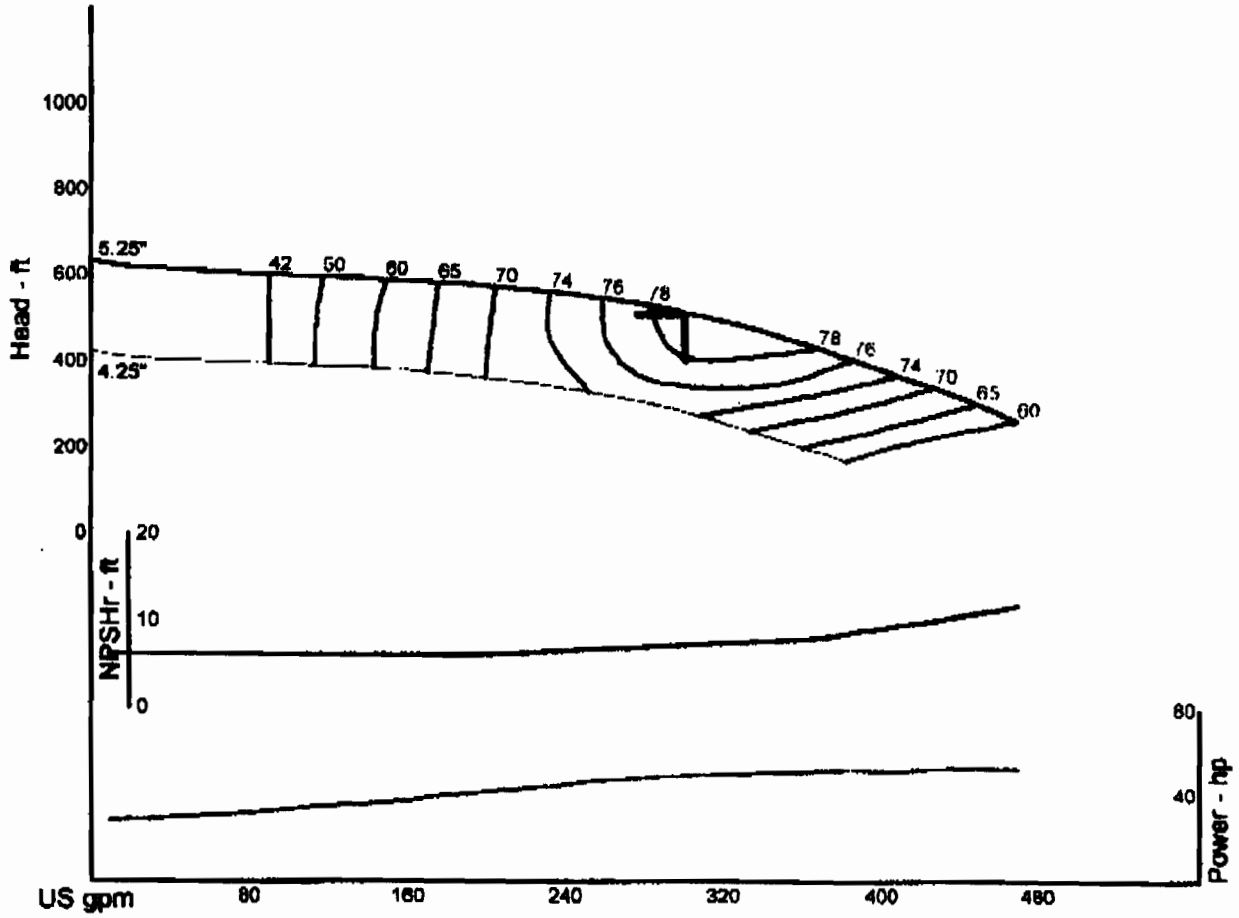
Size: 60 hp
Speed: 1800

Sizing criteria: Max Power on Design Curve

**— Data Point —**
Flow: 300 US gpm
Head: 506 ft
Eff: 78.7%
Power: 48.5 hp
NPSHr: 7.21 ft

**-- Design Curve --**
Shutoff Head: 622 ft
Shutoff dP: 269 psi
Min Flow: — US gpm
BEP: 79.5% eff
@ 323 US gpm
NOL Pwr: 52.2 hp
@ 448 US gpm

**-- Max Curve --**
Max Pwr: 52.2 hp
@ 448 US gpm

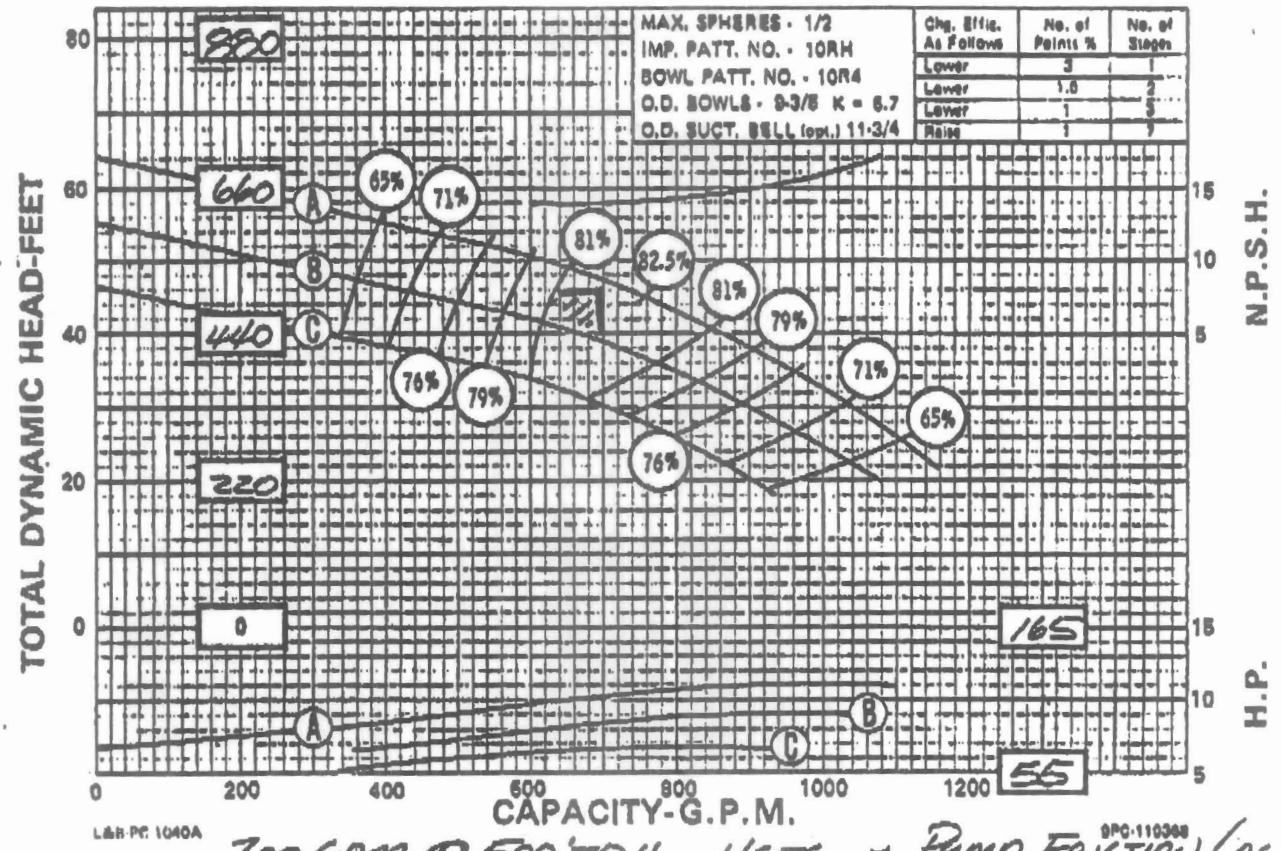



**Performance Evaluation:**

| Flow US gpm | Speed rpm | Head ft | Pump %eff | Power hp | NPSHr ft |
|---|---|---|---|---|---|
| 360 | 1760 | 435 | 78.3 | 50.4 | 7.99 |
| 300 | 1760 | 506 | 78.7 | 48.5 | 7.21 |
| 240 | 1760 | 560 | 74.6 | 44.5 | 6.46 |
| 180 | 1760 | 573 | 65.7 | 39.5 | 6 |
| 120 | 1760 | 586 | 50.8 | 34.8 | 6 |

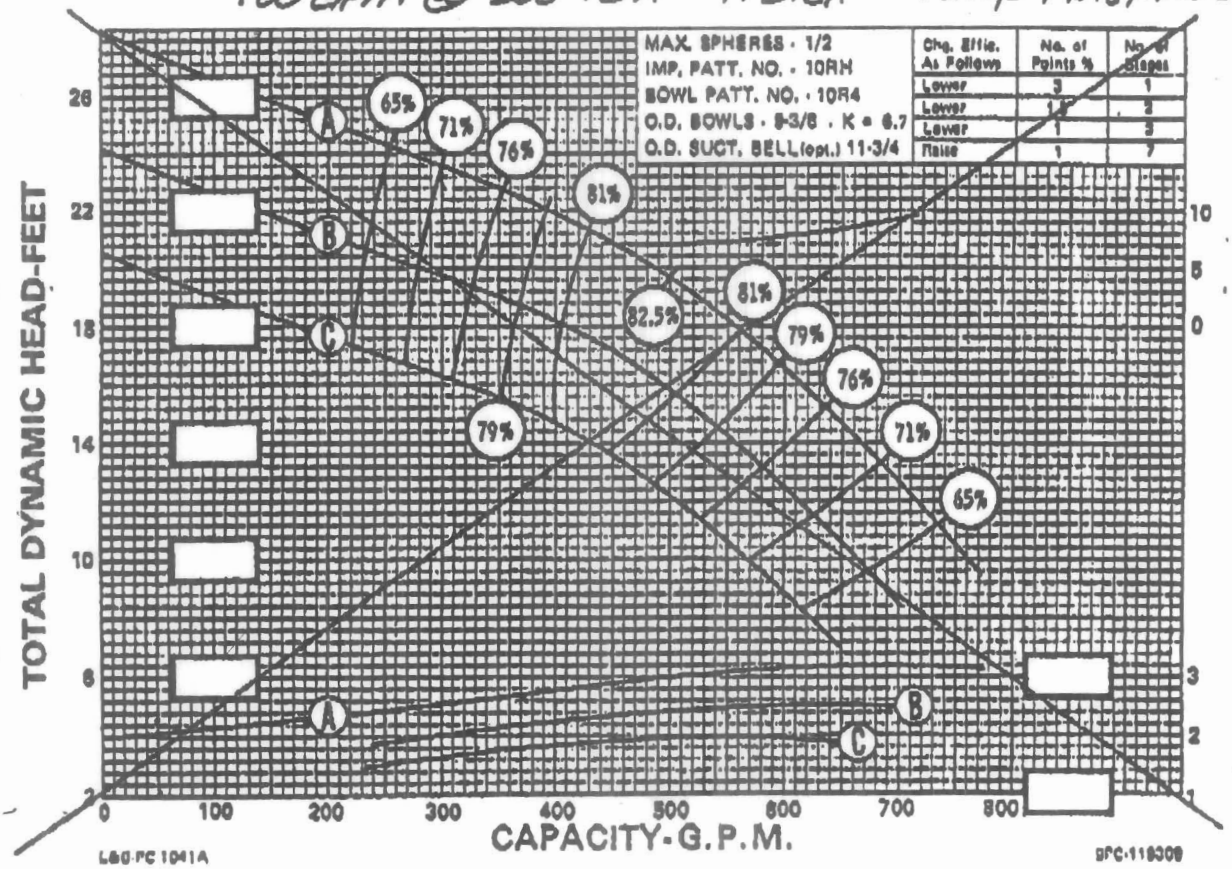
# 10RH SERIES 1110
## Verti-Line PUMP






L&B-PC 1040A

700 GPM @ 500 TDH 11 STG. + PUMP FRICTION LOSS




L&B-PC 1041A

**LAYNE PUMPS**
Box 640, Twin Falls, Idaho 83301
Phone: 208 733-3284
Fax: 208 423-5137

ORDER NO. _____ _____

# PUMP ESTIMATE AND ORDER

DATE 6 - 6 20 06

DEALER

_____

_____

Route _____ Date Desired _____

CUSTOMER

CITY OF RICHFIELD

25 HP SUBMERSIBLE

**PUMPING CONDITIONS**

| | | | | | |
|---|---|---|---|---|---|
| Inside Dia. of Well | 410' | Lift in Well | 340' | Capacity | 160 GPM |
| Depth of Well | 10" | Lift Above 57 Lbs. | 132' | Speed of Pump | 3450 RPM |
| Static Water Level | 335' (1997) | Column Friction | 8' | HP Required | 25.5 @ 76% |
| Drawdown | 2 | Total Dynm. Head | 480' | Allowable Shaft HP | |

| Number | DESCRIPTION | LIST PRICE | NET PRICE |
|---|---|---|---|
| 1 | 25 HP MOTOR 3 Phase 460 Volt 6" SUB FRANKLIN Make 3450 RPM | | |
| | { With / Without } Ratchet | | |
| 1 | 25 HP SUBTROL CONTROL PANEL | | |
| 1 | 4" HEAD ___ " Outlet _____ { Water Lub / Oil Lub } HD SUB WELL HEAD | | |
| | _____ OILER _____ Volt Solenoid 10" CASING X 4" PIPE | | |
| | _____ "X _____ "DISCHARGE NIPPLE { TOE / TBE } | | |
| 1 | 360' SETTING OF 4" "X SUB PIPE "X _____ " in _____ 'Length | | |
| 1 | 8" "BOWLS 8RAHC Type 4 Stage { Open / Close } Ports { Bronze / Cast Iron } Wear Rings | SUB PUMP END | |
| | { Bronze / Cast Iron } Impellers { Oversize / Standard } Shaft Fitted ___ X _____ X _____ X _____ | | |
| | _____ "X _____ " SUCTION { TOE / TBE } _____ ; _____ Couplings | | |
| | _____ "STRAINER { Bronze / Galvanized } { Screwed / Welded } { Basket / Cone } | | |
| | PULLED TURBINE PUMP 11-1-96, REPLACED WITH 25 HP SUBMERSIBLE 1-21-97 | | |
| | TOTAL | | |

Quoted By STEVE GRAVES _____

**LAYNE PUMPS**
Box 640, Twin Falls, Idaho 83301
Phone: 208-733-3284
Fax: 208-423-5137

ORDER NO. _____

# PUMP ESTIMATE AND ORDER

DATE 6 - 6 20 06

DEALER

CUSTOMER

CITY OF RICHFIELD
50 HP WELL PUMP

Route _____ Date Desired _____

## PUMPING CONDITIONS

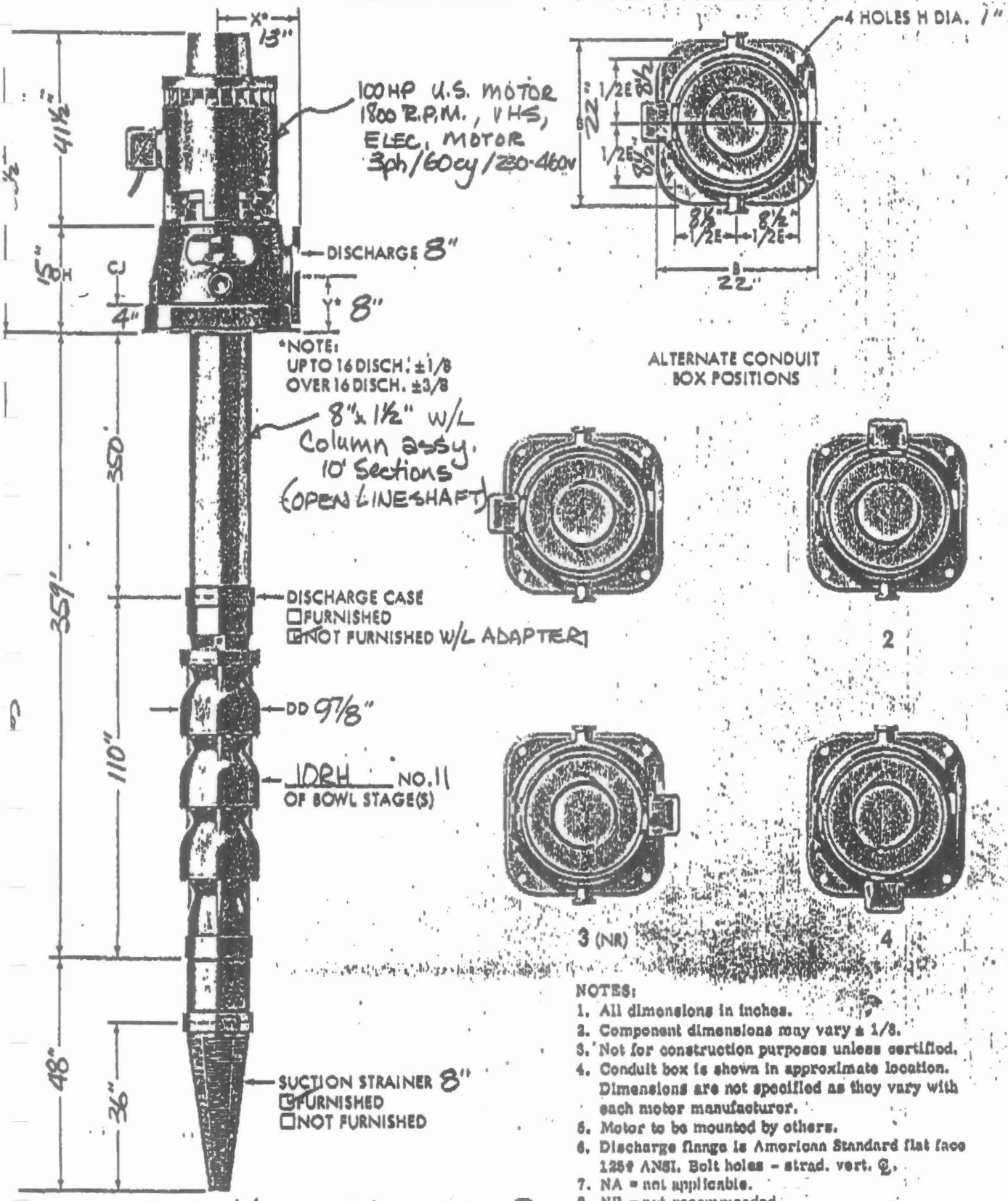
| | | | | | |
|---|---|---|---|---|---|
| Inside Dia. of Well | 10" | Lift in Well | 22. 360' | Capacity | 300 GPM |
| Depth of Well | 490' | Lift Above _____ Lbs. | | Speed of Pump | 1760 RPM |
| Static Water Level | 355' (1-3-06) | Column Friction | 9' | HP Required | 48.5 @ 78.7 % |
| Drawdown | 22 | Total Dynm. Head | 506' | Allowable Shaft HP | |

| Number | DESCRIPTION | LIST PRICE | NET PRICE |
|---|---|---|---|
| 1 | 50 HP MOTOR 3 Phase 230/460 Volt U.S. Make 1800 RPM | | |
| | { With / Without } Ratchet 326 TP SER # R6232-05-175 | | |
| 1 | 6"X6" HEAD 6 " Outlet _____ { Water Lub / Oil Lub } LAYNE DISCH HEAD | | |
| | _____ OILER _____ Volt Solenoid _____ | | |
| | _____ "X _____ "DISCHARGE NIPPLE { TOE / TBE } | | |
| 1 | 380' SETTING OF 6" "X 1 1/2" "X (W/L) " in _____ 'Length | | |
| 1 | 8 "BOWLS 8 RJHC Type 20 Stage { Open / Close } Ports { Bronze / Cast Iron } Wear Rings | | |
| | { Bronze / Cast Iron } Impellers { Oversize / Standard } Shaft Fitted _____ X _____ X _____ X _____ | | |
| | _____ "X _____ ' SUCTION { TOE / TBE } _____ ; Couplings | | |
| 1 | 5" "STRAINER { Bronze / Galvanized } { Screwed / Welded } { Basket / Cone } | | |
| | PUMP WAS PULLED 1-3-06, NEW BOWLS INSTALLED 1-20-06 (8RJHC - 20 STAGE) | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | TOTAL | | |

Quoted By STEVE GRAVES

# AURORA 1130 SERIES PUMPS

## ... ELECTRIC MOTOR DRIVE
## CAST ABOVE SURFACE "AC & R"
## DISCHARGE HEAD — CONE STRAINER




ALTERNATE CONDUIT BOX POSITIONS



2





3 (NR)



4

NOTES:
1. All dimensions in inches.
2. Component dimensions may vary ± 1/8.
3. Not for construction purposes unless certified.
4. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
5. Motor to be mounted by others.
6. Discharge flange is American Standard flat face 125# ANSI. Bolt holes - strad. vert. ℄.
7. NA = not applicable.
8. NR = not recommended.

City of Richfield 100HP DEEPWELL Pump
Submittal w/ Proposed column pipe and discharge head changes.

AURORA PUMP
A UNIT OF GENERAL SIGNAL
800 AIRPORT ROAD, NORTH AURORA, ILLINOIS 60542

# APPENDIX C

# WATER QUALITY DATA

**CITY OF RICHFIELD**
**WATER QUALITY SUMMARY**

| | Date | Nitrate | Nitrite | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Mercury | Nickel | Selenium | Sodium | Thallium | Cyanide | Fluoride | Alpha Activity | Uranium | Radium-226 | Radium-228 | Radium Combo | Beta/ Photon |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MCL** | | 10 | 1 | 0.006 | 0.01 | 2 | 0.004 | 0.005 | 0.1 | 0.002 | | 0.05 | | 0.002 | 0.2 | 4 | 15 | 30 | | | 5 | 4 |
| | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | pCi/L | ug/L | pCi/L | pCi/L | pCi/L | mREM |
| **Well 1** | | | | | | | | | | | | | | | | | | | | | | |
| | 5/19/97 | 0.98 | | ND | ND | ND | ND | ND | ND | ND | ND | ND | 14.3 | ND | ND | 0.3 | | | | | | |
| | 10/20/97 | | | | | | | | | | | | | | | | 3.7 | | | | | 3.5 |
| | 6/22/98 | 1.37 | | | | | | | | | | | | | | | | | | | | |
| | 7/19/99 | 1.57 | | | | | | | | | | | | | | | | | | | | |
| | 4/17/00 | 1.12 | | | | | | | | | | | | | | | | | | | | |
| | 8/28/00 | | | ND | 0.001 | | ND | | | | ND | | 16 | ND | | | | | | | | |
| | 5/21/01 | 1.53 | | | | | | | | | | | | | | | 3.3 | | | | | 2.6 |
| | 8/20/02 | 0.88 | | <0.005 | <0.005 | | <0.0005 | | | | <0.01 | | 14.5 | <0.002 | | | | | | | | |
| | 7/18/03 | | | | | ND | | ND | ND | ND | | ND | | | | 0.27 | 12 | 0.003 | ND | ND | ND | 4.6 |
| | 12/15/03 | 1.46 | <.002 | | | | | | | | | | | | | | | | | | | |
| | 10/19/04 | 0.84 | | | | | | | | | | | | | | | | | | | | |
| | 6/20/05 | 0.86 | | | | | | | | | | | | | | | | | | | | |
| | 5/15/06 | | | | <0.005 | | | | | | | | | | | | | | | | | |
| | 7/17/07 | 0.84 | | | | | | | | | | | | | | | | | | | | |
| | 6/16/08 | 0.88 | | | | | | | | | | | | | | | | | | | | |

ND - Non Detectable

| | Date | Nitrate | Nitrite | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Mercury | Nickel | Selenium | Sodium | Thallium | Cyanide | Fluoride | Alpha Activity | Uranium | Radium-226 | Radium-228 | Radium Combo | Beta/ Photon |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MCL** | | 10 | 1 | 0.006 | 0.01 | 2 | 0.004 | 0.005 | 0.1 | 0.002 | | 0.05 | | 0.002 | 0.2 | 4 | 15 | 30 | | | 5 | 4 |
| | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | pCi/L | ug/L | pCi/L | pCi/L | pCi/L | mREM |
| **Well 2** | | | | | | | | | | | | | | | | | | | | | | |
| | 5/19/97 | 1.37 | | ND | ND | ND | ND | ND | ND | ND | ND | ND | 20.8 | ND | ND | 0.32 | | | | | | |
| | 10/20/97 | | | | | | | | | | | | | | | | 2.5 | | 0.1 | | | 6.7 |
| | 6/22/98 | 1.33 | | | | | | | | | | | | | | | | | | | | |
| | 7/19/99 | 1.54 | | | | | | | | | | | | | | | | | | | | |
| | 4/17/00 | 1.31 | | | | | | | | | | | | | | | | | | | | |
| | 5/21/01 | 0.36 | | | | | | | | | | | | | | | | | | | | |
| | 8/20/02 | <0.06 | <0.06 | | | | | | | | | | | | | | | | | | | |
| | 7/18/03 | | | | | ND | | ND | ND | ND | | ND | | | | 0.28 | 2.8 | ND | 9.1 | ND | 9.1 | 4.1 |
| | 12/15/03 | 0.34 | 0.057 | | | | | | | | | | | | | | | | | | | |
| | 1/20/04 | | | | | | | | | | | | | | | | | | ND | ND | ND | |
| | 4/19/04 | | | | | | | | | | | | | | | | | | <0.2 | <1.0 | <1.2 | |
| | 8/18/04 | | | | | | | | | | | | | | | | | | <0.2 | <1.0 | | |
| | 10/16/04 | 0.35 | | | | | | | | | | | | | | | | | | | | |
| | 11/15/04 | | | | | | | | | | | | | | | | | | ND | ND | ND | |
| | 3/31/05 | | | | | | | | | | | | | | | | | | <0.2 | <1.0 | <1.0 | |
| | 6/20/05 | 1.09 | | | | | | | | | | | | | | | | | ND | ND | | |
| | 10/17/05 | | | | | | | | | | | | | | | | | | ND | ND | ND | |
| | 7/17/07 | <.03 | | | | | | | | | | | | | | | | | | | | |
| | 6/16/08 | <.30 | | | | | | | | | | | | | | | | | | | | |

ND - Non Detectable

**CITY OF RICHFIELD**
**WATER QUALITY SUMMARY**

| | Date | Nitrate | Nitrite | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Mercury | Nickel | Selenium | Sodium | Thallium | Cyanide | Fluoride | Alpha Activity | Uranium | Radium-226 | Radium-228 | Radium Combo | Beta/ Photon |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MCL** | | 10 | 1 | 0.006 | 0.01 | 2 | 0.004 | 0.005 | 0.1 | 0.002 | | 0.05 | | 0.002 | 0.2 | 4 | 15 | 30 | | | 5 | 4 |
| | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | pCi/L | ug/L | pCi/L | pCi/L | pCi/L | mREM |
| **Well 3** | | | | | | | | | | | | | | | | | | | | | | |
| | 5/19/97 | 1.36 | | ND | ND | ND | ND | ND | ND | ND | ND | ND | 21.3 | ND | ND | 0.32 | | | | | | |
| | 10/20/97 | | | | | | | | | | | | | | | | 6 | | 0.1 | | | 4.1 |
| | 6/22/98 | 1.39 | | | | | | | | | | | | | | | | | | | | |
| | 7/19/99 | 1.64 | | | | | | | | | | | | | | | | | | | | |
| | 4/17/00 | 1.29 | | | | | | | | | | | | | | | | | | | | |
| | 8/28/00 | | | ND | 0.001 | | ND | | | | ND | | 21 | ND | | | | | | | | |
| | 5/21/01 | 1.49 | | | | | | | | | | | | | | | 3 | | | | | 4.3 |
| | 8/20/02 | 1.09 | | <0.005 | <0.005 | | <0.0005 | | | | <0.01 | | 19.4 | <0.002 | | | | | | | | |
| | 7/18/03 | | | | | | | | | | | | | | | | 3.2 | 0.003 | ND | ND | | 4 |
| | 12/15/03 | 2.08 | 0.002 | | | | | | | | | | | | | | | | | | | |
| | 10/19/04 | 0.89 | | | | | | | | | | | | | | | | | | | | |
| | 6/20/05 | 1.04 | | | | | | | | | | | | | | | | | | | | |
| | 5/15/06 | | | | <0.005 | | | | | | | | | | | | | | | | | |
| | 7/17/07 | 1.12 | | | | | | | | | | | | | | | | | | | | |
| | 6/16/08 | 1.12 | | | | | | | | | | | | | | | | | | | | |

ND - Non Detectable

| | Date | Lead | Copper |
|---|---|---|---|
| **MCL** | | 0.015 | 1.3 |
| | | mg/L | mg/L |
| Buttcane | 6/23/98 | 0.0103 | 0.04 |
| | 5/29/01 | 0.001 | ND |
| | 10/19/04 | <0.005 | <0.01 |
| | 7/17/07 | <0.005 | <0.1 |
| M. Piper | 6/23/98 | 0.0028 | 0.01 |
| | 5/29/01 | 0.002 | ND |
| | 10/19/04 | <0.005 | <0.1 |
| | 7/17/07 | <0.005 | 0.15 |
| R. School | 6/23/98 | <0.002 | 0.29 |
| | 5/29/01 | 0.005 | ND |
| | 10/19/04 | 0.006 | <0.1 |
| | 7/17/07 | <0.005 | <0.1 |
| N. Riley | 6/23/98 | <0.002 | 0.16 |
| | 5/29/01 | 0.002 | 0.2 |
| | 10/19/04 | <0.005 | <0.1 |
| | 7/17/07 | <0.005 | 0.29 |
| R.C. Store | 6/23/98 | <0.002 | 0.29 |
| | 5/29/01 | 0.005 | ND |
| | 10/19/04 | <0.005 | <0.1 |
| | | <0.005 | <0.1 |

# APPENDIX D

# USER CHARGE RESOLUTION

RESOLUTION 21

**WHEREAS; BEING AN ORDINANCE TERMED FIXING AND DETERMINING STANDARDS FOR OBTAINING DOMESTIC WATER AND SEWER SERVICE. FIXING THE RATES THEREFORE; PROVIDING METHODS FOR COLLECTION OF CHARGES AND FIXING PENALTIES FOR NONPAYMENT THEREOF.**

**WHEREAS;** Councilman Holland made a motion to amend Ordinance No. 130, Section 4 and 5 to read as follows:

**Section 4.** Charges for water per month shall be as follows:

$10.00 for the first 1,000 gallons, or any part thereof;
$ 1.20 per 1,000 for the next 10,000 gallons or any part thereof;
$ .95 per 1,000 for the next 10,000 gallons or any part thereof;
$ .90 per 1,000 for any thing over 21,000 gallons

21,000 GALLONS = $31.50

**Section 5.** Charges for sewer services shall be as follows:

Sewer Charge base fee will be $15.00
Stub out fee $ 3.00

The motion was seconded by Councilman Johnson. Motion Carried

**BE IT RESOLVED; THAT** the above resolution raising water and sewer rates has been passed this day 10th day of June, 1996, to be in effect beginning July 31,1996 by the Mayor and City Council of the City of Richfield, Idaho. The Mayor where upon declared the above resolution passed and adopted and said resolution was signed by the mayor and attested by the City Clerk and sealed with the City Seal.

Councilman Johnson FJ
Councilman Norman JN
Councilman Holland BH
Councilman Chamberlin _____

Charles E Bullcare
MAYOR

Lucas Swanston
CLERK

(Seal)

# APPENDIX E
# WATER SYSTEM BUDGET

## NOTICE OF PUBLIC HEARING
## BUDGET FOR FISCAL YEAR 2008-2009
## CITY OF RICHFIELD, IDAHO

NOTICE IS HEREBY GIVEN that the City Council of the City of Richfield, Idaho will hold a public hearing for the consideration of the proposed budget for the fiscal period October 1, 2008 through September 30, 2009, pursuant to the provisions of Section 50-1002, Idaho Code. Said hearing will be held at the City Office, 180 W. Lincoln, Richfield, Idaho, at 7:00 PM on Monday, August 11, 2008. At said hearing all interested persons may appear and show cause, if any, why such budget should or should not be adopted.

### PROPOSED EXPENDITURES

| | 2006-2007 Actual | 2007-2008 Actual | 2008-2009 Proposed |
|---|---|---|---|
| General Fund | $76,100 | $78,000 | $80,000 |
| Revenue Sharing | 26,000 | 21,000 | 22,500 |
| Recreation | 3,900 | 4,000 | 4,500 |
| Street Lights | 6,400 | 7,000 | 7,800 |
| Tort | 15,000 | 15,000 | 15,000 |
| Irrigation | 5,000 | 5,000 | 5,500 |
| Street & Alley | 64,000 | 68,000 | 70,000 |
| Water System | 296,000 | 300,000 | 301,000 |
| Sewer System | 96,000 | 100,000 | 101,000 |
| **TOTAL** | **$588,400** | **$598,000** | **$606,800** |

### ESTIMATED REVENUE
### TAX LEVY AD VALOREM

| | | | |
|---|---|---|---|
| TOTAL TAX LEVY | 41,313 | 43,182 | 44,840 |
| NEW CONSTRUCTION | 458 | 613 | 346 |
| AGRICULTURAL REPLACEMENT MONEY | 554 | 554 | 554 |
| JUDGEMENT 63-1305 | | 4 | |
| **TAX LEVY AD VALOREM** | | | |
| General Fund | 20,113 | 21,582 | 22,840 |
| Recreation | 2,600 | 2,800 | 3,000 |
| Tort | 12,500 | 12,500 | 12,500 |
| Street Lights | 6,100 | 6,300 | 6,500 |
| **TOTAL** | **$39,651** | **$43,182** | **$44,840** |
| JUDGEMENT | | 4 | |
| | | $43,186 | |

| | | | |
|---|---|---|---|
| **OTHER REVENUE** | | | |
| G.F. County Taxes | 30,000 | 35,000 | 37,218 |
| G.F. Sales Tax | 12,500 | 13,000 | 13,500 |
| S.L. County Taxes | 7,500 | 8,000 | 8,500 |
| Rec. County Taxes | 3,500 | 3,500 | 3,500 |
| Tort County Taxes | 13,000 | 15,000 | 15,000 |
| S & A County Taxes | 4,500 | 5,500 | 6,000 |
| State Insurance Fund | | 250 | 250 |
| State Liquor Sales | 9,000 | 9,400 | 9,800 |
| State H.U.R. | 17,000 | 18,000 | 18,000 |
| State Rev. Sharing | 13,000 | 14,000 | 14,000 |
| Franchise Fee Power | 9,500 | 9,500 | 9,500 |
| Building Permits | 4,000 | 4,000 | 3,000 |
| Arena Revenue | | 300 | 500 |
| Idaho Depart. Of Labor | | | 1,272 |
| Licenses Beer & Liquor | 600 | 350 | 370 |
| Dog Tags | | 300 | 300 |
| Fines & Misc. | 200 | 200 | 200 |
| City Leases | | 50 | 50 |
| R. Highway District | | 900 | 1,500 |
| Water Assessments | 3,500 | 3,000 | 3,600 |
| Interest ALL Funds | | 35,000 | 35,000 |
| Water Fund | 289,287 | 289,434 | 290,000 |
| Sewer Fund | 97,000 | 90,130 | 90,400 |
| **TOTAL** | **$588,400** | **$598,000** | **$606,800** |

I, LuAnn Swainston, City Clerk of the City of Richfield, Idaho, do hereby certify that the above is a true and accurate statement of the Proposed Expenditures and Revenues for Fiscal Year 2008-2009.

I further certify that the City of Richfield, Idaho, did give notice for said hearing with notice having been published twice at least seven (7) days apart prior to the adoption of the Budget by the City Council. Citizens are invited to attend the budget hearing on Monday, August 11, 2008, at 7:00 PM and have the right to provide written or oral comments

City of Richfield, Idaho

## STATEMENT OF NET ASSETS - PROPRIETARY FUNDS

September 30, 2008

| | Water Fund | Sewer Fund | Totals |
|---|---|---|---|
| **ASSETS** | | | |
| Current assets | | | |
| Cash | $ 688,330 | $ 246,331 | $ 934,661 |
| Accounts receivable | 25,811 | 4,662 | 30,473 |
| Total current assets | 714,141 | 250,993 | 965,134 |
| Property, plant and equipment | 162,145 | 196,020 | 358,165 |
| Other assets | | | |
| Restricted cash | 1,023 | 71,978 | 73,001 |
| Total assets | 877,309 | 518,991 | 1,396,300 |
| **LIABILITIES AND NET ASSETS** | | | |
| Liabilities | | | |
| Current liabilities | | | |
| Customer deposits payable | 1,023 | 981 | 2,004 |
| Net assets | | | |
| Invested in capital assets, net of related debt | 162,145 | 196,020 | 358,165 |
| Retained earnings | | | |
| Restricted | 1,023 | 71,978 | 73,001 |
| Unrestricted | 713,118 | 250,012 | 963,130 |
| Total net assets | $ 876,286 | $ 518,010 | $ 1,394,296 |

The accompanying notes are an integral part of the basic financial statement.

City of Richfield, Idaho

## COMBINING STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND NET ASSETS - PROPRIETARY FUNDS

For the year ended September 30, 2008

| | Water Fund | Sewer Fund | Totals |
|---|---|---|---|
| Operating revenues | | | |
| Charges for service | $ 274,940 | $ 41,839 | $ 316,779 |
| Operating expenses | | | |
| General and administration | 6,246 | 2,969 | 9,215 |
| Operations | | | |
| Salaries and related costs | 162,059 | 0 | 162,059 |
| Depreciation expense | 6,712 | 9,952 | 16,664 |
| Insurance | 24,108 | 0 | 24,108 |
| Pumping expense | 36,143 | 6,848 | 42,991 |
| Supplies and maintenance | 11,042 | 7,445 | 18,487 |
| Treatment costs | 0 | 981 | 981 |
| Total operations | 240,064 | 25,226 | 265,290 |
| Total operating expenses | 246,310 | 28,195 | 274,505 |
| Operating profit (loss) | 28,630 | 13,644 | 42,274 |
| Non-operating revenues (expenses) | | | |
| Interest income | 19,408 | 8,891 | 28,299 |
| NET EARNINGS | 48,038 | 22,535 | 70,573 |
| Retained earnings, October 1, 2007 | 828,248 | 495,475 | 1,323,723 |
| Retained earnings, September 30, 2008 | $ 876,286 | $ 518,010 | $ 1,394,296 |

The accompanying notes are an integral part of the basic financial statement.

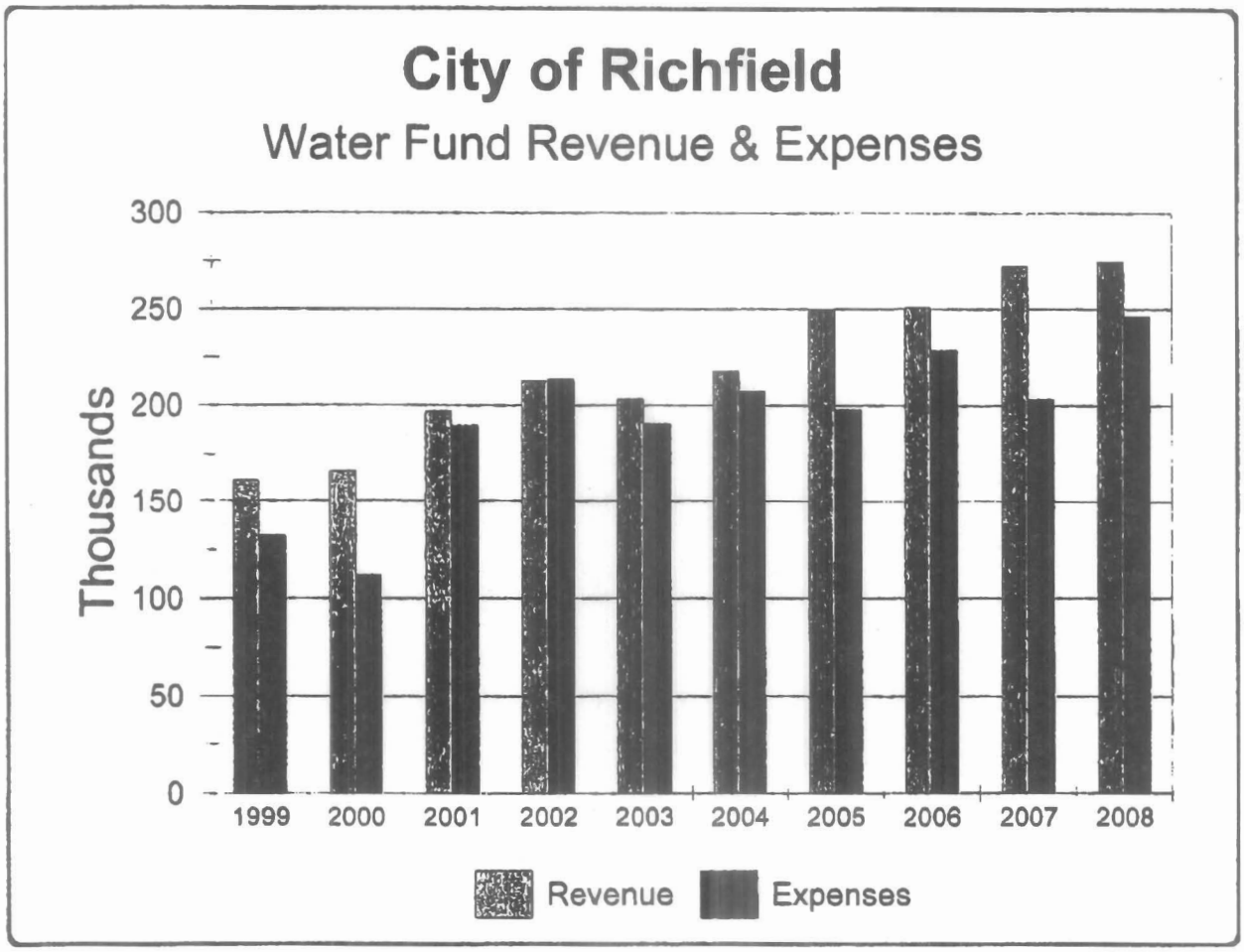
City of Richfield, Idaho

COMBINING STATEMENT OF CASH FLOWS
ALL ENTERPRISE FUNDS

For the year ended September 30, 2008

| | Water Fund | Sewer Fund | Totals |
|---|---|---|---|
| Net Increase (Decrease) in Cash and Cash Equivalents | | | |
| Cash flows from operating activities: | | | |
| Cash received from customers | $ 276,288 | $ 41,210 | $ 317,498 |
| Cash payments to vendors and suppliers | ( 77,529) | ( 18,278) | ( 95,807) |
| Cash payments to and for employees | ( 162,059) | 0 | ( 162,059) |
| Net cash provided (used) by operating activities | 36,700 | 22,932 | 59,632 |
| Cash flows from investing activities: | | | |
| Interest on deposits | 19,408 | 8,891 | 28,299 |
| NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS | 56,108 | 31,823 | 87,931 |
| Cash and cash equivalents October 1, 2007 | 633,245 | 286,486 | 919,731 |
| Cash and cash equivalents September 30, 2008 | $ 689,353 | $ 318,309 | $ 1,007,662 |
| Reconciliation of Operating Profit to Net Cash Provided by Operating Activities: | | | |
| Operating profit | $ 28,630 | $ 13,644 | $ 42,274 |
| Adjustments to Reconcile Operating Profit to Net Cash from Operating Activities: | | | |
| Depreciation | 6,712 | 9,952 | 16,664 |
| Change in accounts receivable | 1,348 | ( 629) | 719 |
| Change in customer deposit | 10 | ( 35) | ( 25) |
| Total adjustments | 8,070 | 9,288 | 17,358 |
| Net cash provided by operating activities | $ 36,700 | $ 22,932 | $ 59,632 |

The accompanying notes are an integral part of the basic financial statement.


City of Richfield
Water Fund Revenue & Expenses
Thousands
300
250
200
150
100
50
0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Revenue
Expenses

# APPENDIX F
# IDEQ SANITARY SURVEY

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1363 FILLMORE STREET • TWIN FALLS, IDAHO 83301 • (208) 736-2190

JAMES E. RISCH, GOVERNOR
TONI HARDESTY, DIRECTOR

**July 10, 2006**

Jeremy Orton
JUB Engineers
115 Northstar Avenue
Twin Falls, ID 83301

Re: Public Records Request for City of Richfield PWS Sanitary Survey

Dear Mr. Orton:

On July 5, 2006, the Idaho Department of Environmental Quality (DEQ) received a request from you to examine or copy certain public records maintained by DEQ.

Copies of the records that fall within the scope of your request were given to you at that time. If there are charges associated with your request, you will receive a separate mailing containing an invoice.

Please contact me at (208) 736-2190 if you have any questions relating to your request.

Sincerely,

Pat Hazen

Pat Hazen
Public Records Custodian
Twin Falls Regional Office

ph

J.U.B. ENGINEERS
RECEIVED
JUL 11 2006
TWIN FALLS, IDAHO

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

FILE COPY

1363 Fillmore Street • Twin Falls, Idaho 83301 • (208) 736-2190

Dirk Kempthorne, Governor
Toni Hardesty, Director

March 6, 2006

Mr. Jack Riley
City of Richfield
P.O. Box 97
Richfield, ID 83349-0097

Re: Enhanced Sanitary Survey conducted on February 15, 2006, PWS # 5320005

Dear Jack,

You will find a list of the significant deficiencies and recommended improvements for your system summarized below:

***Significant Deficiencies***

**Groundwater Sources:**

**Well #1, source Tag #A0004221**

#7: Well #1, Tag #A0004221. The well lot has toxic or hazardous material stored on it, which is not in accordance with IDAPA 58.01.08.550.03.r.

*The well lot is also the location of the City Shop (Well #1 is in the shop building). Pesticides, herbicides, petroleum products, paint, road salt, batteries, gasoline power equipment and other potential contaminants associated with equipment maintenance and repair are stored in the city shop.*

#8: Well #1, Tag #A0004221. Well lot has had pesticides and/or herbicides and/or fertilizers applied to the well lot, which is not in accordance with IDAPA 58.01.08.550.03.q.

*No pesticides, herbicides or fertilizers shall be applied to a well lot without prior approval from the IDEQ.*

#14: Well #1, Tag #A0004221. The well casing for this groundwater source is not vented with the open end of the vent screened and/or terminated downward at least 18 inches above the final ground surface, as required by IDAPA 58.01.08.550.03.k.

*The vent needs to be turned downward and screened with non-corrodible (24) mesh screen*

#17: Well #1, Tag #A0004221. The discharge pipe for this groundwater source does not provide a sample tap pursuant to IDAPA 58.01.08.550.03.g, or the sample tap that is used to collect bacteria samples is not of the smooth-nosed type without interior or exterior threads and/or is a mixing facet and/or is an aerator and/or has a screen, as required by

IDAPA 58.01.08.550.01. which incorporates by reference the Recommended Standards for Water Works 2.10. *(A threaded sample tap is approved if it is provided with an appropriate backflow prevention device.)*

#25: Well #1, Tag #A0004221. All threaded non-sample taps installed in the well house are not equipped with an appropriate backflow prevention device, as required by IDAPA 58.01.08.550.03.g.

#30: Well #1, Tag #A0004221. The well house for groundwater source has a floor drain(s) connected to a possible source of contamination, which is not in accordance with IDAPA 58.01.08.550.03.m.iv.

*There is a potential for hazardous materials to enter dry well through floor drain in shop/well house.*

**Well #2, Tag #A0004222**

#14: Well #2, Tag #A0004222. The well casing for this groundwater source is not vented with the open end of the vent screened and/or terminated downward at least 18 inches above the final ground surface, as required by IDAPA 58.01.08.550.03.k.

*The vent needs to be turned downward and screened with non-corrodible (24) mesh screen*

**Well #3, Tag #A0004223.**

#7: Well #3, Tag # A0004223. The well lot has toxic or hazardous materials stored on it, which in not in accordance with IDAPA 58.010855003.q.

*Non food grade Oil is stored in well house (oil stored in antifreeze container).*

#17& 25: Well #3, Tag # A0004223. The discharge pipe for this groundwater source does not provide a sample tap pursuant to IDAPA 58.01.08.550.03.g. or the sample tap that is used to collect bacteria samples is not of the smooth-nosed type and or is a mixing facet and/or is an aerator and or has a screen, which is not in accordance with IDAPA 58.01.08.002.01.b. which incorporates by reference the Recommended Standards for Water Works 2.10. *(A threaded sample tap is approved if it is provided with an appropriate backflow prevention device.)*

All threaded non-sample taps installed in the well house are not equipped with an appropriate backflow prevention device, which is not in accordance with IDAPA 58.01.08.550.03.g.

*The threaded taps must be equipped with an approved backflow prevention device, such as an atmospheric vacuum breaker.*

**Storage, Richfield City Park Water Tower:**
#8: One or more of the overflows does not open downward and/or screened with four (4) mesh non-corrodible screen within the overflow pipe and/or a flapper valve is not provided with a screen inside the valve, as required by IDAP58.01.08.550.01 which incorporates by reference the Recommended Standards for Water Works 7.0.7.c.

*Overflow pipe needs to be turned downward and screened.*

**Distribution:**
#17: There is no cross connection control program for the PWS, as required by IDAPA 58.01.08.550.07. and IDAPA 58.01.08.550.01 which incorporates by reference the Recommended Standards for Water Works 8.10.1.

*Current operators not trained in cross connection control.*

#21: The open end of the air relief valve(s) does not extend to at least one foot above grade and/or is not provided with a screen and/or does not have a downward-facing elbow, as required by IDAPA 58.01.08.550.01 which incorporates by reference the Recommended Standards for Water Works 8.5.2.c.

*The air relief valve needs to be turned downward and screened with non-corrodible (24) mesh screen*

**Pumping:**
#1: Pumps on Well #2 & Well #3 are not capable of providing the maximum pumping demand of the system, as required by IDAPA 58.01.08.550.01 which incorporates by reference the Recommended Standards for Water Works 6.3

*The 50 hp vertical turbine pump on well #3 and the 25 hp submersible pump on Well #2 (Back-up well) are not capable of meeting demand unless operated in tandem.*

**RECOMMENDATIONS**

**Groundwater Sources**
There are no well logs on file for well #1 and well #2. The pump capacity, date drilled, well depth, casing depth, grout depth, static water depth, screen and/or perforation depth are all unknown for this well. DEQ recommends the operators identify and record this information the next time maintenance is conducted on this well.

**Distribution:**
#8: DEQ recommends that a leak detection program be put in place and utilized.

#18: DEQ recommends the certified operator obtain training in cross connection control

**Managerial Capacity:**
**#7:** DEQ recommends that routine operation and maintenance records be kept and made readily available to the certified operator.

Sincerely,

John Bokor
Drinking Water Protection Coordinator

JB:gl

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

FILE COPY

1363 Fillmore Street • Twin Falls, Idaho 83301 • (208) 736-2190

Dirk Kempthorne, Governor
Toni Hardesty, Director

March 6, 2006

Mr. Jack Riley
City of Richfield
P.O. Box 97
Richfield, Idaho 83349-0097

Subject: Enhanced Sanitary Survey conducted on February 15, 2006

Dear Jack,

A copy of the Enhanced Sanitary Survey and photos for Public Water System ID5320005 are enclosed with this mailing for your records. Attached, you will find a list of the significant deficiencies and/or recommended improvements for your system.

**Pursuant to IDAPA 58.01.08.302.03, the water system must respond in writing not later than forty-five (45) days after receipt of the sanitary survey report describing how and on what schedule the system will address significant deficiencies identified in the survey.**

For all new water systems or modifications to existing water systems, an engineering report must be submitted to the Department of Environmental Quality (DEQ) for review and approval prior to or concurrent with the submittal of plans and specifications as required in Subsection 551.04, pursuant to IDAPA 58.01.08.551.01.

Prior to construction of a new public water supply system or modifications to an existing public water supply system, plans and specifications must be submitted to the DEQ for review, and approved, pursuant to IDAPA 58.01.08.551.04.a.

This system will be in substantial compliance with regulations if the significant deficiencies of this survey are implemented. Thank you and Sean for your time and cooperation in the completion of this survey. If you have any questions, please contact this office at 736-2190.

Sincerely,

John Bokor
Regional Drinking Water Protection Coordinator

for David Anderson
Regional Manager, Engineering

JB\DA:gl

Enclosures: Enhanced Sanitary Survey Inspection Forms
Photos

# State of Idaho Public Water System Enhanced Sanitary Survey

## WATER SYSTEM INVENTORY INFORMATION

SURVEY DATE: 2/15/2006 (mm/dd/yyyy) | PWS #: 5320005

Name of Public Water System: **City of Richfield**

# of Groundwater Sources: 3 | # of Storage Facilities: 1

# of Surface Water Sources: | Total Storage (gal): 60,000

Date of Last Survey: 01/19/1995 | Health District: ☐ N/A SCDH Region 5 | DEQ Region: ☐ N/A TFRO | County: Lincoln

Number of Service Connections: 210 | Residential Population: 420 | Status: ☑ Approved ☐ Disapproved | Water Purchased From: ☐ N/A Name: PWS #: | Water Sold To: ☐ N/A Name: PWS #:

Owner Type: 4 | Legal Entity: GA

Water System Classification: ☑ Community Water System ☐ Nontransient Noncommunity ☐ Transient Noncommunity - TNC

Combined Source? ☐ Yes ☑ No If yes, ☐ Well Fields ☐ Manifolds Sources Manifolded:

System Certification Class: Distribution I

Seasonal Operation Dates: ☑ N/A Date Open: Date Closed:

**Responsible Person In Charge (RIC):** ☑ Mr. ☐ Ms. Jack Riley

RIC Properly Certified? ☑ Yes ☐ No ☐ N/A-GW-TNC | Certification Level: DWD1 ☐ N/A

Mailing Address: City of Richfield

City, State, Zip Code: PO Box 97 Richfield, Idaho 83349

E-mail:richfield@west.net

Telephone Day: (208) 487-2755 Night: (208) 487-2128 Fax:

**Legal Owner's Name:** ☐ Mr. ☐ Ms.

Mailing Address:

City, State, Zip Code:

Telephone Day: Night: Fax:

E-mail:

**Substitute (RIC):** ☐ No Sub. RIC Identified ☐ N/A ☑ Mr. ☐ Ms. Sean West

Sub.RIC Certified? ☑ Yes ☐ No ☐ N/A-GW-TNC | Certification Level: DWD1 ☐ N/A

Mailing Address: 225 E. Cassia

City, State, Zip Code: Richfield, ID 83349

E-mail: richfield@west.n et

Telephone Day: 487-2755 Night: 482-2206 Fax:

Individuals present during inspection:

| Name | Title |
|---|---|
| John Bokor | DEQ |
| Jack Riley | Operator |
| Sean West | Operator |

Physical location of the PWS (Township, Range, Section):

Samples taken at the time of survey by inspector? ☐ Yes ☑ No

If yes, what:

Survey performed by: Name: John Bokor

Title: Regional Drinking Water Protection Coordinator

Phone #: (208) 736-2190

Agency: ☑ IDEQ ☐ Health Dept. ☐ Other:_____

### General Information

| yes | no | n/a | unk | note | |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 1. Have modifications been made to the PWS since the last ESS? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 2. If yes, are the modifications considered to be significant? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 3. If yes, were plans and specs submitted to and approved by DEQ? |

**Comments:**

### Sanitary Survey Index

| Modules used: | # |
|---|---|
| ☑ General Information | 1 |
| ☑ Groundwater Source | 3 |
| ☑ Storage | 1 |
| ☐ Hydropneumatic Tanks | |
| ☑ Distribution | 1 |
| ☑ Pumping | 1 |
| ☑ Financial Capacity | 1 |
| ☑ Managerial Capacity | 1 |
| ☑ Treatment Application | 1 |
| ☑ Disinfection | 1 |
| ☑ Notes | |
| ☑ Photo Log | 1 |
| Total Modules | 12 |

# GROUNDWATER SOURCE

SURVEY DA | PWS #

A separate sources form must be filled out for each groundwater source in the PWS. | 2/15/2006 (mm/dd/yyyy) | 5320005

| Tag #: | Common Name of Source: | Source: | Is this Source Treated? ☐ Yes ☑ N |
|---|---|---|---|
| A0004223 | Well #3 | ☑ Well ☐ Spring ☐ Infiltration Gallery | Treatment Objective: ☐ N/A Disinfection as needed (sodium hypochlorite) |
| Physical Location: 300 West Oneida | | | Treatment Types: ☑ N/A *(Identify Treatment Train in Comments)* |

Is there a well log for the groundwater source? ☑ Yes ☐ No ☐ N/A ☐ Unk

| Pump Capacity (GPM) | Casing Size (In) | Date Drilled: | Well Depth (Ft) | Casing Depth (Ft) | Grout Depth(Ft) | Static Water Depth (Ft) |
|---|---|---|---|---|---|---|
| 650 gpm ☐ Unk | 12 inches ☐ Unk | ####### ☐ Unk | 2/25/1901 ☐ Unk | 180 ☐ Unk | 180 ☐ Unk | 322 ☐ Un |

| Is the Casing Screened? | Screen Depth (Ft): ☑ N/A ☐ Unk | Is the Casing Perforated? | Perforation Depth (Ft): ☑ N/A |
|---|---|---|---|
| ☐ Yes ☑ No ☐ Unk ☐ N/A | From: To: | ☐ Yes ☑ No ☐ Unk ☐ N/A | From: ☐ Unk To: |

Latitude (Decimal):

Longitude (Decimal):

(+) IF A GROUNDWATER SOURCE HAS BEEN DETERMINED TO FALL UNDER THE DIRECT INFLUENCE OF SURFACE WATER, THE SURFACE WATER SYSTEM INSPECTION RESULTS AND TURBIDITY SECTIONS MUST BE FILLED OUT IN addition TO THE GROUNDWATER SYSTEM INSPECTION RESULTS SECTION.

## GROUNDWATER SOURCE

1. This source is:
   ☑ Active ☐ Proposed ☐ Inactive ☐ Emergency (<60 days per year)

| yes | no | n/a | unk | note | |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 2. Has there been a Source Water Assessment conducted for the source? Date: 9/27/02 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Has a final GWUDI determination been done for this source? Date: 10/8/99 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 4. Is the well on a separate lot that is large enough to provide a minimum distance of 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 5. Is the well lot owned in fee simple by the supplier of water or controlled by lease with a term of not less than the useful life of the well? |
| | | | | | 6. Are the following minimum distances from the PWS well being met? |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Sewer line.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home septic tank.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home disposal field.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home seepage pit.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Privies.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Livestock.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft. |
| ☐ | ☑ | ☐ | ☐ | ☐ | - Any other potential source of contamination observed at time of inspection.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 7. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 8. Are pesticides, herbicides, or fertilizers applied to the well lot? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 9. Is the well in a pit? If yes, Date constructed: _____ |
| ☐ | ☐ | ☑ | ☐ | ☐ | 10. Was the well that is located in a pit installed after 11/5/64? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 11. If pit was installed prior to 11/5/64 – Does the pit have water tight construction of pit walls and floor, a floor drain and an acceptable pit cover? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Is the source protected from unauthorized entry? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Does the casing extend a minimum of 18 inches above the final ground surface and/ or 12 inches above the well house floor? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 14. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the final ground surface? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 15. Is the well cap sanitary seal properly installed and maintained? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 16. Is the well cased and sealed in such a manner that surface water cannot enter the well? |

**COMMENTS:**
(Please indicate question number)

#7 - Non-food grade oil for turbin pump stored in wellhouse (oils stored in antifreeze container).

## GROUNDWATER SOURCES PG. 2

| Common Name | SURVEY DATE | (mm/dd/yyyy) | PWS # |
|---|---|---|---|
| Well #3 | 2/15/2006 | | 5320005 |

| yes | no | n/a | unk | note | GROUNDWATER SOURCE (cont.) |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 18. Is an instantaneous and totalizing flow meter installed on the pump distribution line of the well and is it maintained and working properly 370626 ga |
| ☑ | ☐ | ☐ | ☐ | ☐ | 19. Is a pressure gauge provided at all installations and is it maintained and working properly? 60 psi. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 20. Can the well be pumped to waste at the design capacity of the well via an approved air gap at a location prior to the first service connection? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 21. Has the source been known to have caving or sand problems? |

| yes | no | n/a | unk | note | WELL HOUSE *(Any structure containing important water system components)* |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 22. Is the source located in a well house? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 23. Is the well house kept clean and in good repair? *(Floor cracks?)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 24. Is the well house protected from unauthorized personnel? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 25. Are all non-sample taps installed in the well house equipped with an appropriate backflow prevention device? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 26. Is an electrical fan or automated air flow system provided in the well house to remove excess heat and moisture during peak summer temperatures? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 27. Is a thermostatically regulated heater installed in the well house to prevent moisture buildup during cold weather? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 28. Is the well house protected from flooding, have adequate drainage and is the floor surface at least six (6) inches above the final ground surface? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 29. Is the sump for well house floor drains closer than 30 feet from the well? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination? |

| yes | no | n/a | unk | note | SPRING INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 31. Is the entire area within one hundred (100) feet of the spring owned by the supplier or controlled by a long term lease? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 32. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and void of buildings, dwellings and sources of contamination? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 33. Is surface water and drainage ditches diverted from the 100 foot protection zone around the spring? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 34. Is the spring housed in a permanent structure and protected from contamination including the entry of surface water, animals and dust? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 35. Is a sample tap provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 36. Is a flow meter or other flow measuring device provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 37. Is there a screened overflow? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 38. Is the supply intake located above the floor of the collection chamber? |

| | | | | | INFILTRATION GALLERY INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 39. Is there a lid over the gallery? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 40. Is the lid watertight and locked? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 41. Is the manhole elevated at least 24 inches above the top of the tank or covering sod? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 42. Is the collector in sound condition and maintained as necessary? |

**COMMENTS:**
(Please indicate question number)
#17 & #25 - Need to install vacume breakers of threaded taps.

## GROUNDWATER SOURCE

SURVEY DA: 2/15/2006 (mm/dd/yyyy) | PWS #: 5320005

A separate sources form must be filled out for each groundwater source in the PWS.

| Tag #: | Common Name of Source: | Source: | Is this Source Treated? |
|---|---|---|---|
| A0004221 | Well #1 | ☑ Well ☐ Spring ☐ Infiltration Gallery | ☐ Yes ☐ No |

Treatment Objective: ☐ N/A

Physical Location: 145 West Latah

Treatment Types: ☐ N/A (Identify Treatment Train in Comments)

Is there a well log for the groundwater source? ☐ Yes ☑ No ☐ N/A ☐ Unk

| Pump Capacity (GPM) | Casing Size (In) | Date Drilled: | Well Depth (Ft) | Casing Depth (Ft) | Grout Depth(Ft) | Static Water Depth (Ft) |
|---|---|---|---|---|---|---|
| 226 ☐ Unk | 10 ☐ Unk | ☑ Unk | 490 ☐ Unk | ☑ Unk | ☑ Unk | ☐ Unk |

| Is the Casing Screened? | Screen Depth (Ft): ☑ N/A ☑ Unk | Is the Casing Perforated? | Perforation Depth (Ft): ☐ N/A |
|---|---|---|---|
| ☐ Yes ☐ No ☑ Unk ☐ N/A | From: To: | ☐ Yes ☐ No ☑ Unk ☐ N/A | From: ☑ Unk To: |

Latitude (Decimal):

Longitude (Decimal):

(+) IF A GROUNDWATER SOURCE HAS BEEN DETERMINED TO FALL UNDER THE DIRECT INFLUENCE OF SURFACE WATER, THE SURFACE WATER SYSTEM INSPECTION RESULTS AND TURBIDITY SECTIONS MUST BE FILLED OUT IN addition TO THE GROUNDWATER SYSTEM INSPECTION RESULTS SECTION.

### GROUNDWATER SOURCE

1. This source is:
   ☑ Active ☐ Proposed ☐ Inactive ☐ Emergency (<60 days per year)

| yes | no | n/a | unk | note | |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 2. Has there been a Source Water Assessment conducted for the source? Date: 9/27/02 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Has a final GWUDI determination been done for this source? Date: 1/19/95 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 4. Is the well on a separate lot that is large enough to provide a minimum distance of 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 5. Is the well lot owned in fee simple by the supplier of water or controlled by lease with a term of not less than the useful life of the well? |
| | | | | | 6. Are the following minimum distances from the PWS well being met? |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Sewer line.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home septic tank.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home disposal field.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home seepage pit.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Privies.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Livestock.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Any other potential source of contamination observed at time of inspection.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 7. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 8. Are pesticides, herbicides, or fertilizers applied to the well lot? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 9. Is the well in a pit? If yes, Date constructed: _____ |
| ☐ | ☐ | ☑ | ☐ | ☐ | 10. Was the well that is located in a pit installed after 11/5/64? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 11. If pit was installed prior to 11/5/64 – Does the pit have water tight construction of pit walls and floor, a floor drain and an acceptable pit cover? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Is the source protected from unauthorized entry? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Does the casing extend a minimum of 18 inches above the final ground surface and/ or 12 inches above the well house floor? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 14. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the final ground surface? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 15. Is the well cap sanitary seal properly installed and maintained? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 16. Is the well cased and sealed in such a manner that surface water cannot enter the well? |

**COMMENTS:**
(Please indicate question number)

#6 - Well #1 is located in a separate room located within the City shop.
#7 - Pesticides, herbicides, petroleum products, road salt, batteries, gasoline power equipment and other potential contaminants associated with equipment maintainance and repair are stored with the the city shop where the well is located
#8 - Roundup is used for weed control on well lot.

#14 - Well vent needs to be turned downward and screened.

| Common Name | SURVEY DATE | | PWS # |
|---|---|---|---|
| Well #1 | 2/15/2006 | (mm/dd/yyyy) | 5320005 |

| yes | no | n/a | unk | note | GROUNDWATER SOURCE (cont.) |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 18. Is an instantaneous and totalizing flow meter installed on the pump distribution line of the well and is it maintained and working properly? 5,429,619 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 19. Is a pressure gauge provided at all installations and is it maintained and working properly? _____ psi. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 20. Can the well be pumped to waste at the design capacity of the well via an approved air gap at a location prior to the first service connection? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 21. Has the source been known to have caving or sand problems? |

| yes | no | n/a | unk | note | WELL HOUSE *(Any structure containing important water system components)* |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 22. Is the source located in a well house? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 23. Is the well house kept clean and in good repair? *(Floor cracks?)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 24. Is the well house protected from unauthorized personnel? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 25. Are all non-sample taps installed in the well house equipped with an appropriate backflow prevention device? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 26. Is an electrical fan or automated air flow system provided in the well house to remove excess heat and moisture during peak summer temperatures? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 27. Is a thermostatically regulated heater installed in the well house to prevent moisture buildup during cold weather? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 28. Is the well house protected from flooding, have adequate drainage and is the floor surface at least six (6) inches above the final ground surface? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 29. Is the sump for well house floor drains closer than 30 feet from the well? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination? |

| yes | no | n/a | unk | note | SPRING INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 31. Is the entire area within one hundred (100) feet of the spring owned by the supplier or controlled by a long term lease? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 32. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and void of buildings, dwellings and sources of contamination? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 33. Is surface water and drainage ditches diverted from the 100 foot protection zone around the spring? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 34. Is the spring housed in a permanent structure and protected from contamination including the entry of surface water, animals and dust? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 35. Is a sample tap provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 36. Is a flow meter or other flow measuring device provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 37. Is there a screened overflow? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 38. Is the supply intake located above the floor of the collection chamber? |

| | | | | | INFILTRATION GALLERY INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 39. Is there a lid over the gallery? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 40. Is the lid watertight and locked? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 41. Is the manhole elevated at least 24 inches above the top of the tank or covering sod? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 42. Is the collector in sound condition and maintained as necessary? |

**COMMENTS:**
(Please indicate question number)

#17 - Discharge pipe has a threaded tap.

#25 - need to install appropriate backflow devices on all threaded taps.

#30 - Potential for hazardous materials to enter drywell through floor drain in shop

## GROUNDWATER SOURCE

SURVEY DA.. 2/15/2006 (mm/dd/yyyy) | PWS # 5320005

A separate sources form must be filled out for each groundwater source in the PWS.

| Tag #: | Common Name of Source: | Source: | Is this Source Treated? ☐ Yes ☐ No |
|---|---|---|---|
| A0004222 | Well #2 | ☑ Well ☐ Spring ☐ Infiltration Gallery | Treatment Objective: ☐ N/A |

Physical Location: 165 West Oneida (Old Railroad Well)

Treatment Types: ☐ N/A (Identify Treatment Train in Comments)

Is there a well log for the groundwater source? ☐ Yes ☑ No ☐ N/A ☐ Unk

| Pump Capacity (GPM) | Casing Size (In) | Date Drilled: | Well Depth (Ft) | Casing Depth (Ft) | Grout Depth(Ft) | Static Water Depth (Ft) |
|---|---|---|---|---|---|---|
| 122 ☐ Unk | 8 ☐ Unk | ☐ Unk | 410 ☐ Unk | ☑ Unk | ☑ Unk | ☑ Unk |

| Is the Casing Screened? | Screen Depth (Ft): ☐ N/A ☑ Unk | Is the Casing Perforated? | Perforation Depth (Ft): ☐ N/A |
|---|---|---|---|
| ☐ Yes ☐ No ☑ Unk ☐ N/A | From: To: | ☐ Yes ☐ No ☑ Unk ☐ N/A | From: ☑ Unk To: |

Latitude (Decimal):

Longitude (Decimal):

(+) IF A GROUNDWATER SOURCE HAS BEEN DETERMINED TO FALL UNDER THE DIRECT INFLUENCE OF SURFACE WATER, THE SURFACE WATER SYSTEM INSPECTION RESULTS AND TURBIDITY SECTIONS MUST BE FILLED OUT IN addition TO THE GROUNDWATER SYSTEM INSPECTION RESULTS SECTION.

### GROUNDWATER SOURCE

1. This source is:
   ☐ Active ☐ Proposed ☐ Inactive ☑ Emergency (<60 days per year)

| yes | no | n/a | unk | note | |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 2. Has there been a Source Water Assessment conducted for the source? Date: 9/27/02 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Has a final GWUDI determination been done for this source? Date: 10/8/99 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 4. Is the well on a separate lot that is large enough to provide a minimum distance of 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 5. Is the well lot owned in fee simple by the supplier of water or controlled by lease with a term of not less than the useful life of the well? |
| | | | | | 6. Are the following minimum distances from the PWS well being met? |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Sewer line.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home septic tank.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home disposal field.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Individual home seepage pit.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Privies.....100 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Livestock.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft. |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Any other potential source of contamination observed at time of inspection.....50 Ft. |
| ☐ | ☑ | ☐ | ☐ | ☐ | 7. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 8. Are pesticides, herbicides, or fertilizers applied to the well lot? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 9. Is the well in a pit? If yes, Date constructed: _____ |
| ☐ | ☐ | ☑ | ☐ | ☐ | 10. Was the well that is located in a pit installed after 11/5/64? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 11. If pit was installed prior to 11/5/64 – Does the pit have water tight construction of pit walls and floor, a floor drain and an acceptable pit cover? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Is the source protected from unauthorized entry? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Does the casing extend a minimum of 18 inches above the final ground surface and/ or 12 inches above the well house floor? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 14. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the final ground surface? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 15. Is the well cap sanitary seal properly installed and maintained? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 16. Is the well cased and sealed in such a manner that surface water cannot enter the well? |

**COMMENTS:** (Please indicate question number)

#14 - Vent is not down turned or screened (see photo. #8)

## GROUNDWATER SOURCES PG. 2

| Common Name | SURVEY DATE | | PWS # |
|---|---|---|---|
| Well #2 | 2/15/2006 | (mm/dd/yyyy) | 5320005 |

| yes | no | n/a | unk | note | GROUNDWATER SOURCE (cont.) |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 18. Is an instantaneous and totalizing flow meter installed on the pump distribution line of the well and is it maintained and working properly? 243,341 g |
| ☑ | ☐ | ☐ | ☐ | ☐ | 19. Is a pressure gauge provided at all installations and is it maintained and working properly? 65 psi. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 20. Can the well be pumped to waste at the design capacity of the well via an approved air gap at a location prior to the first service connection? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 21. Has the source been known to have caving or sand problems? |

| yes | no | n/a | unk | note | WELL HOUSE *(Any structure containing important water system components)* |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 22. Is the source located in a well house? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 23. Is the well house kept clean and in good repair? *(Floor cracks?)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 24. Is the well house protected from unauthorized personnel? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 25. Are all non-sample taps installed in the well house equipped with an appropriate backflow prevention device? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 26. Is an electrical fan or automated air flow system provided in the well house to remove excess heat and moisture during peak summer temperatures? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 27. Is a thermostatically regulated heater installed in the well house to prevent moisture buildup during cold weather? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 28. Is the well house protected from flooding, have adequate drainage and is the floor surface at least six (6) inches above the final ground surface? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 29. Is the sump for well house floor drains closer than 30 feet from the well? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination? |

| yes | no | n/a | unk | note | SPRING INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 31. Is the entire area within one hundred (100) feet of the spring owned by the supplier or controlled by a long term lease? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 32. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and void of buildings, dwellings and sources of contamination? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 33. Is surface water and drainage ditches diverted from the 100 foot protection zone around the spring? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 34. Is the spring housed in a permanent structure and protected from contamination including the entry of surface water, animals and dust? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 35. Is a sample tap provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 36. Is a flow meter or other flow measuring device provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 37. Is there a screened overflow? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 38. Is the supply intake located above the floor of the collection chamber? |

| | | | | | INFILTRATION GALLERY INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 39. Is there a lid over the gallery? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 40. Is the lid watertight and locked? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 41. Is the manhole elevated at least 24 inches above the top of the tank or covering sod? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 42. Is the collector in sound condition and maintained as necessary? |

**COMMENTS:**
(Please indicate question number)

## GROUNDWATER SOURCES PG. 2

| Common Name | SURVEY DATE | | PWS # |
|---|---|---|---|
| Well #2 | 2/15/2006 | (mm/dd/yyyy) | 5320005 |

| yes | no | n/a | unk | note | GROUNDWATER SOURCE (cont.) |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 18. Is an instantaneous and totalizing flow meter installed on the pump distribution line of the well and is it maintained and working properly? 243,341 g |
| ☑ | ☐ | ☐ | ☐ | ☐ | 19. Is a pressure gauge provided at all installations and is it maintained and working properly? 65 psi. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 20. Can the well be pumped to waste at the design capacity of the well via an approved air gap at a location prior to the first service connection? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 21. Has the source been known to have caving or sand problems? |

| yes | no | n/a | unk | note | WELL HOUSE *(Any structure containing important water system components)* |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 22. Is the source located in a well house? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 23. Is the well house kept clean and in good repair? *(Floor cracks?)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 24. Is the well house protected from unauthorized personnel? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 25. Are all non-sample taps installed in the well house equipped with an appropriate backflow prevention device? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 26. Is an electrical fan or automated air flow system provided in the well house to remove excess heat and moisture during peak summer temperatures? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 27. Is a thermostatically regulated heater installed in the well house to prevent moisture buildup during cold weather? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 28. Is the well house protected from flooding, have adequate drainage and is the floor surface at least six (6) inches above the final ground surface? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 29. Is the sump for well house floor drains closer than 30 feet from the well? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination? |

| yes | no | n/a | unk | note | SPRING INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 31. Is the entire area within one hundred (100) feet of the spring owned by the supplier or controlled by a long term lease? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 32. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and void of buildings, dwellings and sources of contamination? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 33. Is surface water and drainage ditches diverted from the 100 foot protection zone around the spring? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 34. Is the spring housed in a permanent structure and protected from contamination including the entry of surface water, animals and dust? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 35. Is a sample tap provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 36. Is a flow meter or other flow measuring device provided? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 37. Is there a screened overflow? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 38. Is the supply intake located above the floor of the collection chamber? |

| | | | | | INFILTRATION GALLERY INFORMATION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 39. Is there a lid over the gallery? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 40. Is the lid watertight and locked? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 41. Is the manhole elevated at least 24 inches above the top of the tank or covering sod? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 42. Is the collector in sound condition and maintained as necessary? |

**COMMENTS:**
(Please indicate question number)

# STORAGE

SURVEY DATE: 2/15/2006 (mm/dd/yyyy) | PWS #: 5320005

A separate storage form must be filled out for **each** storage unit in the PWS.

| | | |
|---|---|---|
| Storage Structure Name: Water tower | Storage Structure ID #: Unknown | COMMENTS: (Please indicate the question number) |
| Physical Location: City park | Date in service: ☐ Unk 1909 | |
| | Volume (gal): ☐ Unk 60,000 | |
| Storage Type: ☑ Reservoir/Tank ☐ Standpipe | Construction: ☑ Elevated ☐ Above Ground ☐ Below Ground ☐ Partially Below Ground | Type of material: ☐ Plastic ☐ Wood ☐ Fiberglass ☑ Metal ☐ Concrete ☐ Naturally Contained |
| Total Days Supply (This structure): less than a day ☐ Unk | Date Last: Inspected: year 2,000 ☐ Unk | Cleaned: year 2,000 ☐ Unk |
| How is the water level measured? Pressure guage sensor ☐ Unk | | |

#7 - Tank overflow not down turned or screened.

| yes | no | n/a | unk | note | STORAGE |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 1. Is the storage structure safely accessible to the inspector? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 2. Is the PWS storage tank located within 500 feet of any municipal or Industrial wastewater treatment plant or any land which is spray irrigated with wastewater or used for sludge disposal? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Is there a minimum distance of 50 feet between any buried or partially buried storage tank or clear well and any sanitary sewers or septic tank? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 4. Is the area surrounding the storage structure graded in a manner to protect it against flooding and prevent water from standing within 50 feet? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 5. Are all vents extended 12 inches above the roof and constructed and screened to exclude potential sources of contamination? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 6. Is the storage structure provided with an overflow? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 7. **Elevated Storage Structure** - Does the elevated tank overflow open downward and screened with four (4) mesh non-corrodible screen within the overflow pipe, or a flapper valve provided with a screen inside the valve? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 8. **Ground-level Storage Structure** - Are all overflows downturned, discharge to daylight, and provided with either a twenty-four (24) mesh noncorrodible screen installed within the pipe when practical, or an expanded metal screen installed within the pipe plus a weighted flapper? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 9. Are overflows and drains brought down to an elevation between 12 and 24 inches above the ground surface? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 10. Do overflows and drains discharge over a drainage inlet structure or a splash plate and not connected to a sewer? (storm or sanitary) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 11. Do all drains discharge to daylight in a way that will preclude the possibility of backflow to the reservoir and, where practical, provided with an expanded metal screen installed within the pipe to exclude rodents? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Is the storage structure secure from unauthorized access? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Does the storage reservoir have a watertight roof or cover and is it sloped so that water will drain? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 14. Is the storage water protected from contamination? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 15. Is the storage structure structurally sound? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 16. Could vegetation in the area potentially impact the storage structure? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 17. Is the storage structure designed so that it can be isolated from the distribution system without necessitating loss of pressure in the distribution system? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 18. Is the discharge pipe form the water storage structure located in a manner that will prevent the flow of sediment into the distribution system? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 19. Is leakage evident at time of inspection? |
| ☐ | ☐ | ☐ | ☑ | ☐ | 20. Is the storage structure interior coating or liner peeling or cracked? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 21. Is the storage structure used to store finished water? |
| ☐ | ☐ | ☐ | ☑ | ☐ | 22. Are manhole openings overlapping, water tight, locked and four-inches or greater above the reservoir roof surface? |

# DISTRIBUTION DATA

SURVEY DATE: 2/15/2006 (mm/dd/yyyy) | PWS #: 5320005

One form for all distribution systems in the PWS.

What are water lines made of:

Material(s): ☐ Unk

☑ Steel ☐ HDPE (black) ☐ Asbestos/Cement

☑ PVC ☐ Ductile Iron ☑ Other: Cast Iron

Size(s): ☐ Unk

4" to 10" PVC
6" cast Iron
3/4" to 2" steel

How many services are metered?

210 out of

Number of Fire Hydrants:

**COMMENTS:** (Please indicate the question number

#8 - City does not have a leak program.

#17 - City does not have a cross-connection program

#18 - No current operators trained in cross-connection control

#21 - Air relief valve not down turned or screened

## DISTRIBUTION

| yes | no | n/a | unk | note | |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 1. Have there been any interruptions in service during the past year? (including pressure loss) |
| ☐ | ☐ | ☑ | ☐ | ☐ | 2. If a loss of pressure occurred (>20 psi), did the PWS provide public notice and disinfect the system? (Reminder) |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Is the PWS able to maintain a minimum pressure of twenty (20) psi throughout the distribution system (including fire flow), or forty (40) psi for PWSs constructed after 7/1/1985 (excluding fire flow), during maximum hourly demand conditions? |
| ☐ | ☐ | ☐ | ☑ | ☐ | 4. Was the pressure observed at a service connection? |
| | | | | | 5. If yes, psi: _____ Location: _____ Time: _____ ☐ A.M. ☐ P.M. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 6. Do all water mains that provide fire flow have a diameter of at least 6 inches? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 7. Are valves exercised regularly? *(Recommended)* If yes, how often? every 2 years |
| ☐ | ☑ | ☐ | ☐ | ☐ | 8. Is there a leak detection program? *(Recommended)* |
| ☐ | ☑ | ☐ | ☐ | ☐ | 9. Is 15% or more of the water unaccounted for? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 10. Is a water conservation program in effect? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 11. Is an adequate map of the distribution system maintained? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Does the system flush all main lines annually? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Are all dead end water mains equipped with a means to flush |
| ☑ | ☐ | ☐ | ☐ | ☐ | 14. If yes, are the deadends flushed at least semiannually? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 15. Are there any distribution materials used that should not be in contact with the drinking water? If yes, explain in comments section. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 16. Is the system adequately protected from freezing? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 17. Is there a cross connection control program? (Community PWSs Only) |
| ☐ | ☑ | ☐ | ☐ | ☐ | 18. Is the operator trained in cross connection control? *(Recommended)* |
| ☐ | ☑ | ☐ | ☐ | ☐ | 19. Is the operator aware of any cross connections or were any cross connections observed during the course of the survey? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 20. If a separate non-potable irrigation system is provided for the consumer, are all mains, hydrants, and appurtenances easily identified as non-potable? (Purple Tape or other) *(Recommended)* |

**Air/Vacuum Relief Valves** - Placed at high points in water mains.

| | | | | | |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 21. Is the open end of the automatic air relief valve(s) extended to at least one foot above grade and provided with a screened, downward-facing elbow? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 22. Is the discharge pipe from the air relief valve(s) connected directly to any storm sewer, or sanitary sewer? (manual or automatic) |

## PUMPING DATA

SURVEY DATE: 2/15/2006 (mm/dd/yyyy) | PWS #: 5320005

One form for all Pumps.

**PUMPS, PUMPHOUSES, AND CONTROLS**

| Pump ID# | Physical Location: | Type of Pump: | Brand: | Model: | Horsepower: | Purpose: |
|---|---|---|---|---|---|---|
| | Well #1, 145 West Latah | Vertical Turbine | U.S. Electric | 6347-S09515-9R006R-4 | 100 | Distribution/Withdraw |
| | Well#3, 300 West Oneida | Vertical Turbine | U.S. Electric | R623205175 | 50 | Distribution/Withdraw |
| | Well #2, 165 West Oneida | Submersible | | | 25 | Distribution/Withdraw |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| yes | no | n/a | unk | note | PUMPING |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 1. Are all pumps capable of providing the maximum pumping demand of the system? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 2. Does the pump(s) cycle excessively? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Is the pumphouse(s) clean and orderly? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 4. Are there spare pump parts or a replacement pump that is capable of providing the maximum daily pumping demand? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 5. Are gate valves located on the suction and/or discharge sides of each pump? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 6. Is a positive-acting check valve located above ground on the discharge side between each pump and the shut-off valve? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 7. Is the pump station(s) adequately lighted throughout? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 8. Is a water pressure relief valve installed where the pump is directly connected to the distribution system? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 9. If the system has a vertical turbine motor driven pump(s), is an air release-vacuum relief valve located upstream from the check valve, with exhaust/relief piping terminating in a down-turned position at least 18 inches above the floor and covered with a 24 mesh corrosion resistant screen? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 10. If the pump(s) is "oil lubricated", is the oil NSF approved and suitable for human consumption? |
| | | | | | **AUXILIARY POWER** |
| ☑ | ☐ | ☐ | ☐ | ☐ | 11. Is there auxiliary power on-site? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Is auxiliary power tested? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. If a diesel or gasoline fueled engine is used on the well lot; is the fuel tank and connecting piping double walled? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 14. Is the fuel tank above ground? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 15. Is a certified operator present during the filling of the fuel tank? |
| | | | | | 16. If the engine is in the well house; |
| ☑ | ☐ | ☐ | ☐ | ☐ | - *Is the engine exhaust directly discharged outside the well house?* |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Is a spill containment structure surrounding all fuel tanks adequate? (Secondary containment - 110% fuel tank capacity) |

**COMMENTS:**
(Please indicate the question number)

#1 = 100 horsepower pump capable of meeting system demands. 50 horsepower and 25 horsepower pumps need to run in tandum to supply needs.

## PUMPING DATA PG. 2

| SURVEY DATE (mm/dd/yyyy) | PWS # |
|---|---|
| 2/15/2006 | 5320005 |

| yes | no | n/a | unk | note | BOOSTER PUMPS | COMMENTS: (Please indicate the question number |
|---|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 17. Is the pump facility properly protected against unauthorized entry? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 18. Does the booster pump maintain an operating pressure of 20 psi or greater (>40 psi for systems built after 7/1/1985)? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 19. Is a standard pressure gauge installed on the discharge line? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 20. Are all in-line booster pumps supplied with an automatic cutoff that activates when intake pressure is less than or equal to 5 psi ? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 21. Is the booster pump located on a suction line that is directly connected to any storage reservoir? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 22. If yes, are all booster pumps protected by an automatic cutoff to prevent pump damage and avoid excessive reservoir drawdown? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 23. Is a water pressure relief valve installed where the pump is directly connected to the distribution system? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 24. Is an instantaneous and totalizing flow meter installed where the booster pump is directly connected to the distribution system? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 25. Is the building that encloses the booster pump provided with an electric ventilation fan or an automated air flow system that will remove heat and moisture during peak summer temperatures? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 26. Is a thermostatically regulated heater installed in the booster pump house to prevent moisture buildup during cold weather? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 27. Is proper drainage provided? (Outside the pumphouse) | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 28. Is the pump station properly protected from flooding? (Inside the pumphouse) | |

# FINANCIAL CAPACITY

SURVEY DATE (mm/dd/yyyy): 2/15/2006

PWS #: 5320005

| yes | no | n/a | unk | note | FINANCIAL CAPACITY |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 1. Is the PWS current with the payment of drinking water fees? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 2. Does the PWS charge a drinking water fee to the user? If yes, what is the fee: $ $31.50 |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Is the PWS in the business of selling water? - If no, identify why in the comments section and mark "N/A" on questions 4 - 21. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 4. Does the PWS provide and use an annual budget? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 5. If applicable, is the PWS fund separate from the waste water/sewer utility fund? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 6. Do water system revenues exceed expenditures? *(Recommended)* |
| ☐ | ☑ | ☐ | ☐ | ☐ | 7. Are controls established to prevent expenditures from exceeding revenues? If yes, describe in the comments section. |
| ☑ | ☐ | ☐ | ☐ | ☐ | 8. Has an independent financial audit been completed? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 9. If yes, is a copy of the most recent balance sheet for the water system available? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 10. Does the water system include a cash budget within its annual budget for cash flow? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 11. Does the water system management review the user fee, user charge, or rate system at least annually? *(Recommended)* |
| | | | | | 12. When was the last user fee, user charge, or rate system adjustment? 8/1/1996 *mm/dd/yyyy* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Does the water system management review financial reports at least monthly? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 14. Does the PWS provide and use a capital budget? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 15. Has this PWS produced and does it currently utilize a capital improvements plan? *(Recommended)* |
| | | | | | 16. If yes, when was the capital improvements budget produced? unknown *mm/dd/yyyy* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 17. Has the capital improvement budget been updated in the last 18 months? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 18. Does the water system budget provide funding for depreciation of existing plant in service and/or for the funding of reserves for system replacement? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 19. Are there sufficient funds for training personnel? |

**COMMENTS:**
(Please indicate the question number)

#2 - $10.00 for first 1,000 gal.
$1.20 for next 10,000 gal.
$0.95 for next 10,000 gal.
$0.90 for next 10,000 gal.
31.50 for 21,000 gal.

## MANAGERIAL CAPACITY

SURVEY DATE: 02/15/2006 (mm/dd/yyyy) | PWS #: 5320005

### MANAGERIAL CAPACITY

| yes | no | n/a | unk | note | |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 1. Is a licensed operator available at all times? (N/A for TNC PWS) |
| ☐ | ☑ | ☐ | ☐ | ☐ | 2. Is there a Certified Drinking Water Protection Plan developed for this system? Date: _____ |
| ☑ | ☐ | ☐ | ☐ | ☐ | 3. Does this PWS have a governing body or board of directors? If no, please indicate: ☐ Sole Proprietorship ☐ Partnership ☐ Limited Liability Corp. ☑ Other: City Council |

4. How often does the board meet? ☐ N/A

☐ weekly ☐ semi-annually ☐ never
☑ monthly ☐ annually ☐ other: _____
☐ bimonthly ☐ as necessary ☐ unknown

| yes | no | n/a | unk | note | 5. Are the following records maintained onsite or located near by? |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | - Bacteriological Analysis - **5 years retention.** |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Chemical Analysis - **10 years retention.** |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Records of actions taken to correct violations - **3 years retention.** |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Copies of reports, summaries or communication related to sanitary surveys - **10 years retention.** |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Reports concerning variances or exemptions - **5 years retention.** |
| ☑ | ☐ | ☐ | ☐ | ☐ | - Copies of public notices issued - **3 years retention.** |
| | | | | | - Daily free chlorine residuals *(required disinfection)* - **1 year retention.** |

| | | | | | |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 6. Are routine maintenance schedules established? *(Recommended)* |
| ☐ | ☑ | ☐ | ☐ | ☐ | 7. Are routine operation and maintenance records kept? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 8. Is there a clear plan of organization and control among the people responsible for management and operations of the water system? *(Recommended)* |

| yes | no | n/a | unk | note | 9. Are any samples of the following parameters past due? |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | Coliform |
| ☐ | ☑ | ☐ | ☐ | ☐ | Nitrates |
| ☐ | ☑ | ☐ | ☐ | ☐ | Nitrites |
| ☐ | ☑ | ☐ | ☐ | ☐ | Lead and Copper |
| ☐ | ☑ | ☐ | ☐ | ☐ | IOCs |
| ☐ | ☑ | ☐ | ☐ | ☐ | VOCs |
| ☐ | ☑ | ☐ | ☐ | ☐ | SOCs |
| ☐ | ☑ | ☐ | ☐ | ☐ | Disinfection Byproducts |
| ☐ | ☑ | ☐ | ☐ | ☐ | Radionuclide |

| | | | | | |
|---|---|---|---|---|---|
| ☑ | ☐ | ☐ | ☐ | ☐ | 10. Is a written total coliform rule (TCR) sample site plan available for review? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 11. Does the (TCR) sample site plan meet the minimum requirements? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 12. Does the system have a sufficient supply of approved sampling bottles properly stored? *(Recommended)* |
| ☑ | ☐ | ☐ | ☐ | ☐ | 13. Does the PWS provide stairways, ladders and handrails where needed? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 14. Are treads of non-slip material provided where needed? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 15. Is a health hazard produced from inadequately protected electrical wiring? |
| ☑ | ☐ | ☐ | ☐ | ☐ | 16. Are all confined space entry requirements considered? *(Recommended)* |
| ☐ | ☑ | ☐ | ☐ | ☐ | 17. Are there any unused subsurface water storage tanks that need to be abandoned? |
| ☐ | ☑ | ☐ | ☐ | ☐ | 18. Are there any water supply wells that are no longer being used that need to be abandoned? |

**COMMENTS:**
(Please indicate the question number)

# TREATMENT APPLICATION & C TROL

Su Date: 2/15/2006 (mm/dd/yyyy) | PWS #: 5320005

A separate form must be filled out for each Treatment Application in the PWS.

| Purpose of Treatment: | Treatment Facility Location: | Date Online: ☑ Unk | Treated Water (GPD): ☑ Unk |
|---|---|---|---|
| Disinfection | Lincoln St.Well | | |

Identify one process in the treatment train for inspection: ☑ N/A

☐ Sedimentation Basin ☐ Filtration ☐ Blending ☐ Oxidation ☐ Ion Exchange ☐ Aeration ☐ Sequestration by Polyphosphates
☐ Detention Basin ☐ Chemical Coagulation ☐ Softening ☑ Disinfection (Complete Disinfection Mod.) ☐ Sequestration by Sodium Silicates

| Sources Treated by Facility: (Tag #) | Equipment Manufacturer: | Model #: |
|---|---|---|
| Well #1 - A0004221 | 1. | 1. |
| Well #2 - A0004222 | 2. | 2. |
| Well #3 - A0004223 | 3. | 3. |

| Chemical Trade Name: | Chemical Manufacturer: | NSF/ANSI certified? |
|---|---|---|
| 1. | 1. | ☐ Yes ☐ No ☐ N/A ☐ Unk |
| 2. | 2. | ☐ Yes ☐ No ☐ N/A ☐ Unk |
| 3. | 3. | ☐ Yes ☐ No ☐ N/A ☐ Unk |

| yes | no | n/a | unk | note | | |
|---|---|---|---|---|---|---|
| | | | | | **WASTE HANDLING and DISPOSAL** | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 1. Are provisions made for proper disposal of water treatment plant waste such as sanitary, laboratory, clarification sludge, softening sludge, iron sludge, filter backwash water, brines and treatment media? | |
| | | ☑ | | ☐ | 2. If yes, how are wastes being disposed of? (Identify in comments) | |
| yes | no | n/a | unk | note | **SAMPLE TAPS** | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 3. Are smooth-nosed sampling taps provided prior to and after each form of treatment? | |
| | | ☑ N/A 4-26 | | | **CHEMICAL APPLICATION** If no chemical applied, questions 4-26 are n/a | |
| yes | no | n/a | unk | note | | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 4. Are spare parts available for all feeders to replace parts which are subject to wear and damage? | |
| | | ☑ | | | 5. Are the feeders manually or automatically controlled? ☐ Manual ☐ Automatic | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 6. Are chemical feed rates proportional to flow? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 7. Is a means to measure water flow provided in order to determine chemical feed rates? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 8. Are provisions made for measuring the quantities of chemicals used? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 9. Is cross-connection control provided on the service water lines that discharge to the solution tanks? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 10. Is cross-connection control provided so that liquid chemical solutions cannot be siphoned through solution feeders into the water supply? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 11. Is the chemical feed equipment readily accessible for servicing, repair, and observation of operation? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 12. Is space provided for convenient/efficient storage and handling of chemicals? *(Recommended* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 13. Are chemicals that are incompatible stored or handled together? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 14. Are chemical solution tanks kept covered? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 15. Are chemical solution tank overflow pipes, when provided, turned downward with the end screened? *(Recommended)* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 16. Do chemical solution tank overflow pipes, when provided, have free fall discharge? *(Recommended)* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 17. Are day tanks and tank refilling line entry points properly labeled to designate the chemical contained? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 18. Do feed lines have problems with scale-forming or solids deposits? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 19. Are floor surfaces smooth and impervious, slip-proof and well drained? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 20. Are vents from feeders, storage facilities and equipment exhaust discharged to the outside atmosphere above grade and remote from air intakes? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 21. Are chemical shipping containers fully labeled to include chemical name, purity, concentration, supplier name and address? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 22. Are acids and caustics kept in closed corrosion-resistant shipping containers or storage units? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 23. Are at least one pair of rubber gloves, a dust respirator of a type certified by NIOSH for toxic dusts, an apron or other protective clothing and goggles or face mask provided for each operator as required by the reviewing authority? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 24. Is a deluge shower and/or eyewashing device installed where strong acids and alkalis are used or stored? *(Recommended)* | |

Comments:
(Please indicate the question number)
Disinfection treatment is used as needed.

**DISINFECTION** - Systems Using Only G dwater

Sur Date: 1/0/1900 (mm/dd/yyyy) | PWS #: 5320005

A separate form must be filled out for **each** disinfection unit in the PWS.

Date Online: 2/15/2006 ☑ Unk

Treatment Facility Name: Lincoln St.

Treatment Facility Location: Lincoln St.

Treated Water (GPD): ☑ Unk

Select all disinfection types used:

☐ Gas cl2 ☐ UV Light ☑ Sodium Hypochlorite ☐ Calcium Hypochlorite ☐ Miox ☐ Other

| yes | no | n/a | unk | note | DISINFECTION |
|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☐ | ☐ | 1. Is disinfection used on a voluntary basis to prevent bacterial contamination of the distribution system? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 2. Any interruptions in disinfection in the past year? If yes, comment. |
| ☐ | ☐ | ☑ | ☐ | ☐ | 3. Have any changes been made to this treatment facility since the last ESS? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 4. If yes, were plans and specs submitted to DEQ? Date approved:_____ |
| ☐ | ☐ | ☑ | ☐ | ☐ | 5. Does the system have a means of measuring the residual disinfectant concentrations of free chlorine, combined chlorine (chloramines), and/or chlorine dioxide? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 6. At automatically operated facilities, are chemical feeders electrically interconnected with the well or service pump? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 7. Is a smooth nosed sample tap provided before and after treatment? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 8. Is a chlorine residual being recorded when all compliance total coliform samples are being taken? |

| yes | no | n/a | unk | note | VOLUNTARY DISINFECTION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 9. Is a measurable free chlorine residual maintained throughout the distribution system? *(Recommended)* |
| ☐ | ☐ | ☑ | ☐ | ☐ | 10. Is the free chlorine residual being measured daily? *(Recommended)* |
| ☐ | ☐ | ☑ | ☐ | ☐ | 11. Is an automatic proportioning chlorinator being used where the rate of flow is not reasonably constant? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 12. Is the analysis for free chlorine residual being made at a frequency that is sufficient to detect variations in chlorine demand or changes in water flow? |

| yes | no | n/a | unk | note | REQUIRED DISINFECTION |
|---|---|---|---|---|---|
| ☐ | ☐ | ☑ | ☐ | ☐ | 13. Is the free chlorine residual being measured daily? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 14. Is the daily free chlorine residual being recorded and kept on file for a minimum of 1 year? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 15. Is a detectable chlorine residual maintained throughout the distribution system? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 16. Is an automatic proportioning chlorinator being used where the rate of flow is not reasonably constant? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 17. Where chlorination is required for protection of the supply, is there standby equipment of sufficient capacity available to replace the largest unit? |
| ☐ | ☐ | ☑ | ☐ | ☐ | 18. If primary disinfection is accomplished using ozone or some other chemical that does not provide a residual disinfectant, is chlorine added to provide a residual disinfectant? |

Comments:
(Please indicate the question number)

#2 - Disinfection is used only a needed.

**GAS DISINFECTION ONLY** - Fill out any time Gas Chlorination is connected to the PWS.

Comments: (Please indicate the question number)

| yes | no | n/a | unk | note | | |
|---|---|---|---|---|---|---|
| | | | | | **PROTECTIVE EQUIPMENT** | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 19. Is respiratory protection equipment, meeting the requirements of NIOSH available where chlorine gas is handled, and is it stored at a convenient location, but not inside any room where chlorine is used or stored? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 20. Does the respiratory protection equipment consist of compressed air, that has at least a 30 minute capacity, and is compatible with or exactly the same as units used by the fire department responsible for the plant? | |
| | | | | | **CHLORINE LEAK DETECTION** | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 21. Is a bottle of ammonium hydroxide (56 percent ammonia solution) available for chlorine leak detection? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 22. Where ton containers are used, is a leak repair kit approved by the Chlorine Institute provided? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 23. Is continuous chlorine leak detection equipment provided? *(Recommended)* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 24. Where a leak detector is provided, is it equipped with both an audible alarm and a warning light? | |
| | | | | | **CHLORINE ROOM** | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 25. Is a separate room provided for gas chlorination equipment? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 26. Do pressurized chlorine feed lines carry chlorine gas beyond the chlorinator room? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 27. Is the chlorine room provided with a shatter resistant inspection window installed in an interior wall? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 28. Is the chlorine room constructed in such a manner that all openings between the chlorine room and the remainder of the plant are sealed? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 29. Are the chlorine room doors equipped with panic hardware, assuring ready means of exit and opening outward only to the building exterior? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 30. Where chlorine gas is used, does each room have a ventilating fan. | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 31. Does the ventilating fan take suction near the floor and discharge away from any air inlets? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 32. Are all air inlets through louvers near the ceiling? *(Recommended)* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 33. Are there separate switches for the fan and lights located outside of the chlorine room and at the inspection window? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 34. Are outside switches protected from vandalism? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 35. Are chlorinator rooms heated to 60 °F, and protected from excessive heat? *(Recommended)* | |
| | | | | | **CHLORINE GAS CYLINDERS** | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 36. Are full and empty cylinders of chlorine gas isolated from operating areas? *(Recommended)* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 37. Are full and empty cylinders of chlorine gas restrained in position to prevent upset? *(Recommended)* | |
| ☐ | ☐ | ☐ | ☐ | ☐ | 38. Are full and empty cylinders of chlorine gas stored in rooms separate from ammonia storage? *(Recommended)* | |
| ☐ | ☐ | ☐ | ☐ | ☐ | 39. Are full and empty cylinders of chlorine gas stored in areas that are not in the direct sunlight or exposed to excessive heat? *(Recommended)* | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 40. Is a reasonably precise weight scale provided for weighing cylinders, at all plants utilizing chlorine gas? | |
| ☐ | ☐ | ☑ | ☐ | ☐ | 41. Is there an automatic switch-over of chlorine cylinders provided, where necessary, to assure continuous disinfection? | |

# State of Idaho
# Department of Environmental Quality

## Photo Log

| Name of Facility: | | Inspection Date | | PWS# |
|---|---|---|---|---|
| City of Richfield | | 2/15/2006 (mm/dd/yyyy) | | 5320005 |
| Camera Type: ☑ Digital ☐ 35mm ☐ Other _____ | Camera Brand: Olympus Stylus 410 | Camera Model: | | Camera ID#: |

| Photo: | Date: | By: (initials) | Direction: (N,S,E,W, etc.) | File Name: | Description: |
|---|---|---|---|---|---|
| 1 | 2/15/2005 | JB | S | Richfield | Well #1 in city shop. Wellhead in background, salt spreader in forground |
| 2 | 2/15/2005 | JB | S | Richfield | City Shop, Serves for Wellhouse #1. |
| 3 | 2/15/2005 | JB | S | Richfield | City Shop, well #1 in background (separate room), potential contaminant sources |
| 4 | 2/15/2005 | JB | S | Richfield | Well #1 Wellhead |
| 5 | 2/15/2005 | JB | E | Richfield | Threaded sample tap, Well #1 |
| 6 | 2/15/2005 | JB | W | Richfield | Wellhouse, well #2 |
| 7 | 2/15/2005 | JB | S | Richfield | View across roadway from well #2 Wellhouse |
| 8 | 2/15/2005 | JB | NW | Richfield | Well vent not screened or downturned, Well #2 |
| 9 | 2/15/2005 | JB | W | Richfield | Inside wellhouse #2, pressure releace outlet not screened |
| 10 | 2/15/2005 | JB | S | Richfield | Well #3 wellhouse |
| 11 | 2/15/2005 | JB | SW | Richfield | Inside Wellhouse #3 |
| 12 | 2/15/2005 | JB | E | Richfield | Disconnected chlorinator, well #3 |
| 13 | 2/15/2005 | JB | W | Richfield | Eye wash station, well #3 |
| 14 | 2/15/2005 | JB | W | Richfield | Auxiliary power generator, located in city shop (also location of well #1) |
| 15 | 2/15/2005 | JB | S | Richfield | Battery storage in city shop (also location of well #1) |
| 16 | 2/15/2005 | JB | S | Richfield | City shop and yard, (Well #1 in shop building) |
| 17 | 2/15/2005 | JB | N | Richfield | Water tower |
| 18 | 2/15/2005 | JB | W | Richfield | Wellhouse, well #2 (center of photo) was old railroad well |

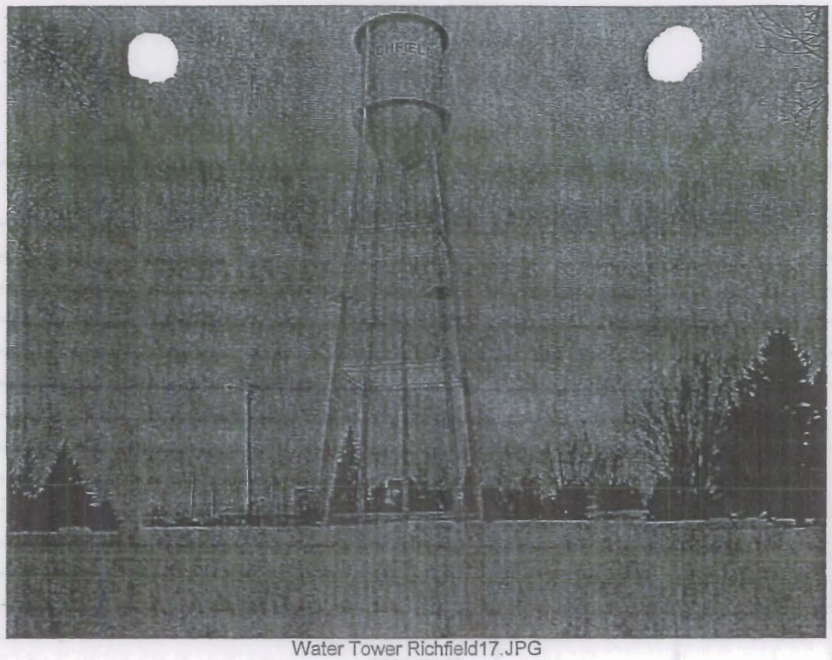
*The photographers signature below signifies that the images identified on this photo log have not been tampered with and are representative of what was seen in the field.*

Photographer(s) Signature(s): Date:

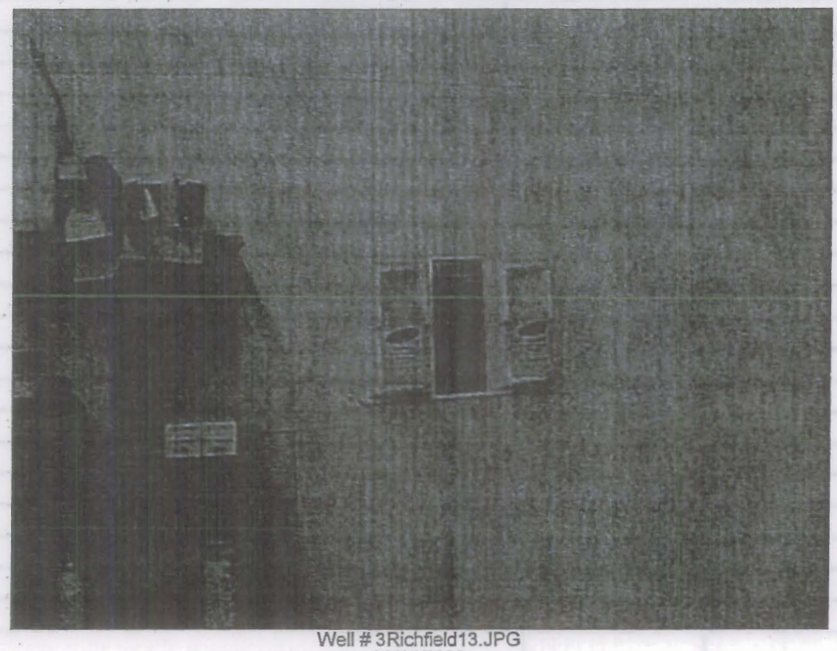
| Photo: | Date: | By: (initials) | Direction: (N,S,E,W, etc.) | File Name: | Description: |
|---|---|---|---|---|---|

*..ie photographers signature below signifies that the images identified on this photo log have not been tampered with and are representative of what was seen in the field.*

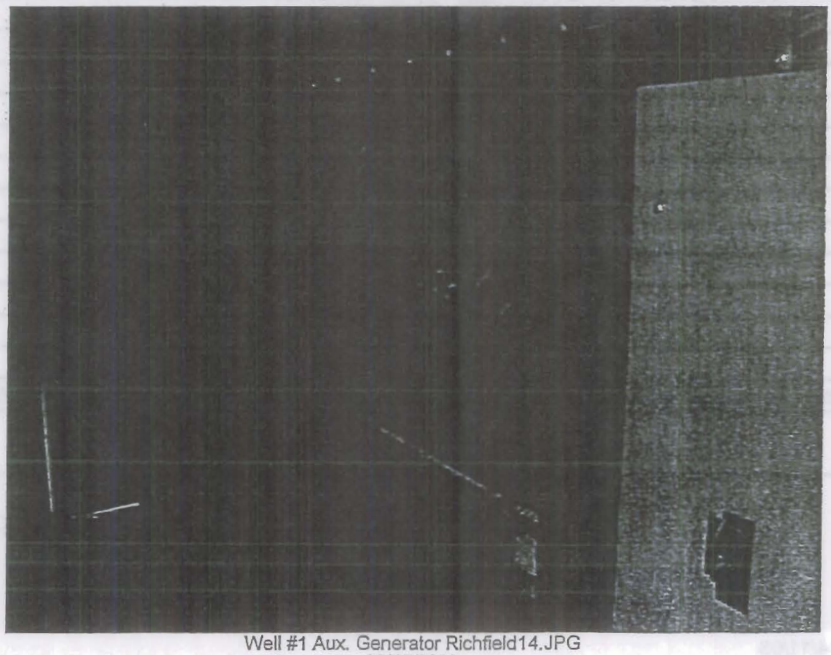
Photographer(s) Signature(s): Date:



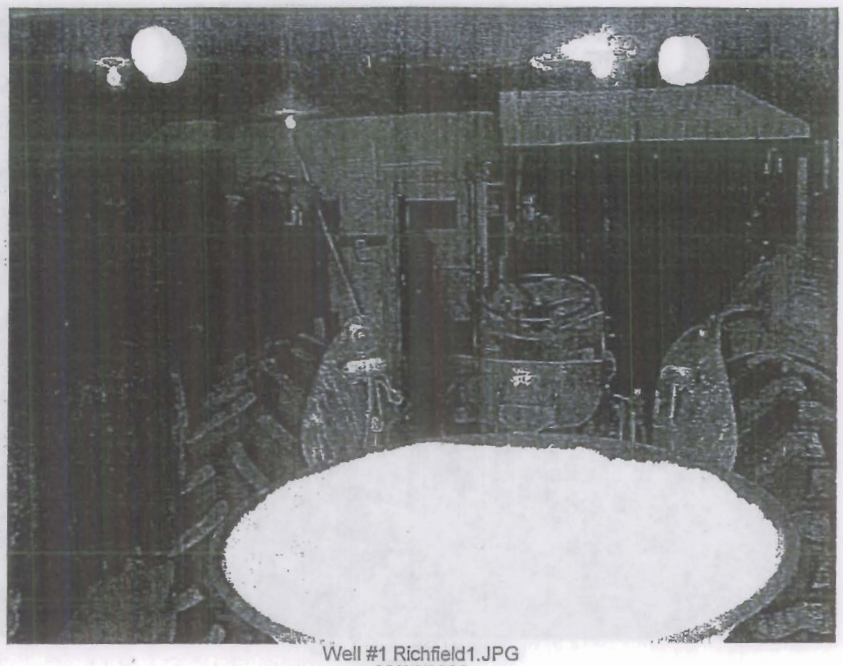
Water Tower Richfield17.JPG
02/15/2006



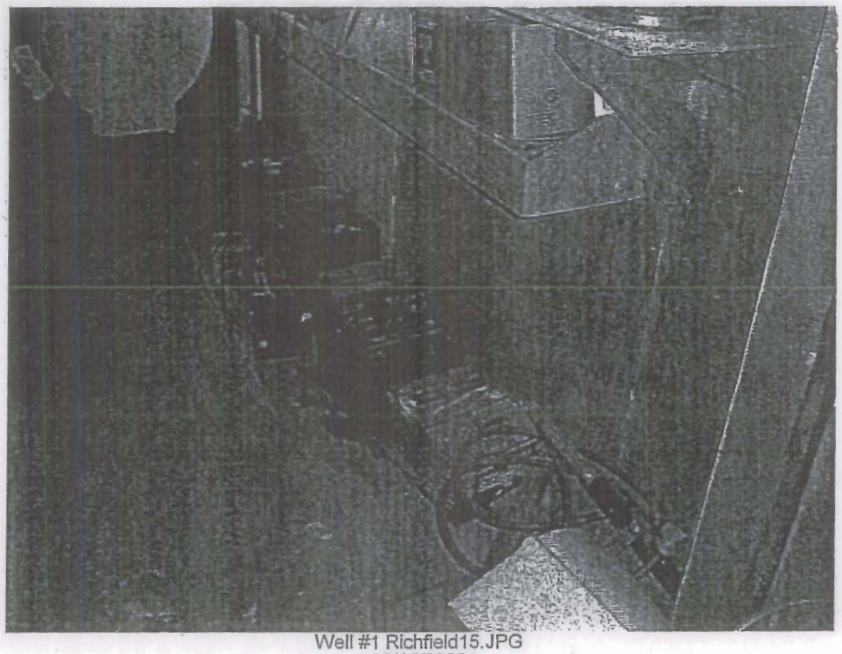
Well # 3Richfield13.JPG
02/15/2006



Well #1 Aux. Generator Richfield14.JPG



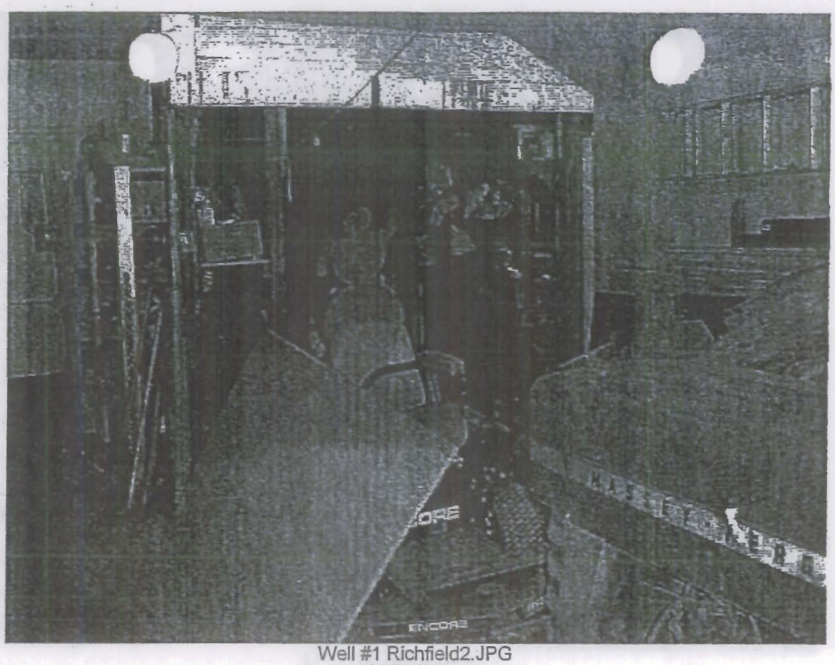
Well #1 Richfield1.JPG
02/15/2006



Well #1 Richfield15.JPG
02/15/2006



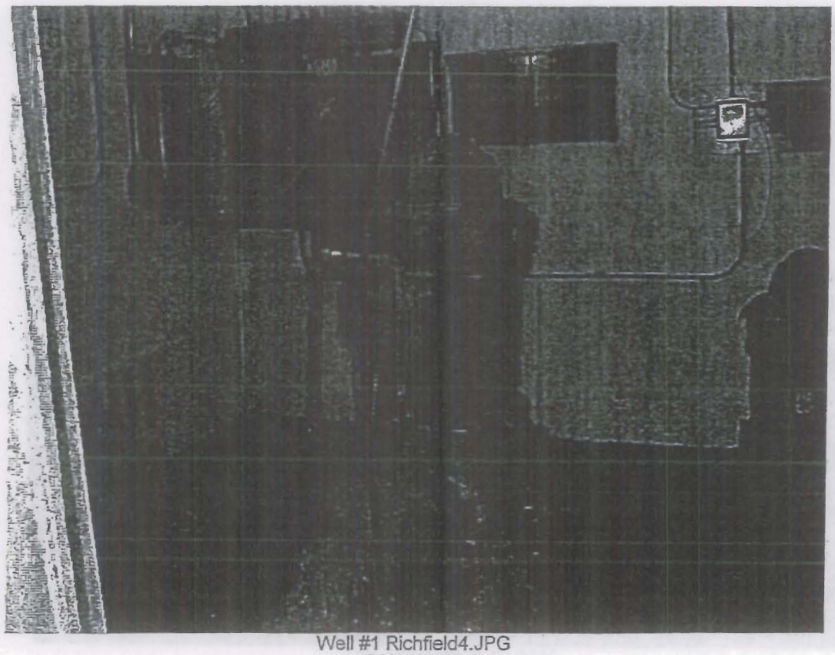
Well #1 Richfield16.JPG
02/15/2006



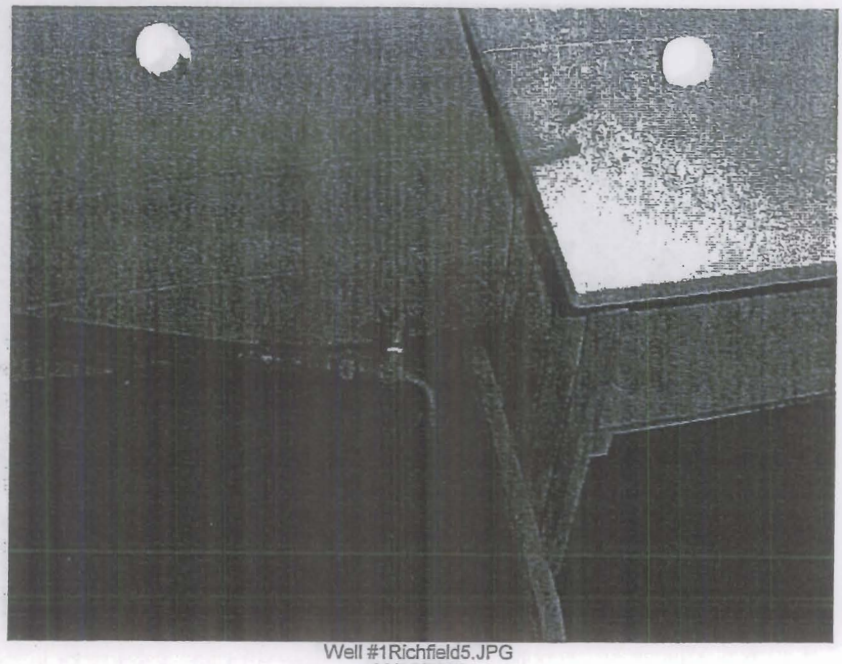
Well #1 Richfield2.JPG
02/15/2006



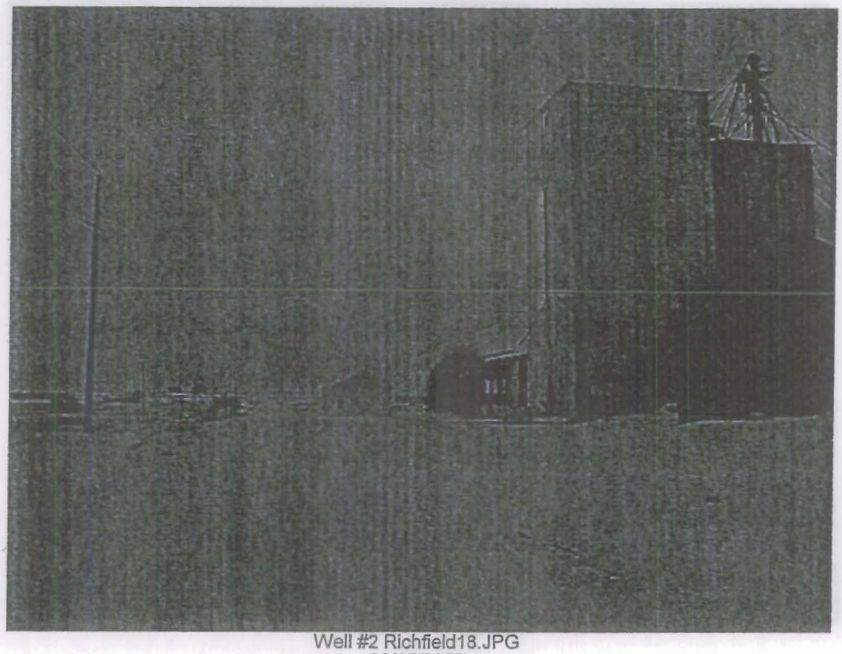
Well #1 Richfield3.JPG
02/15/2006



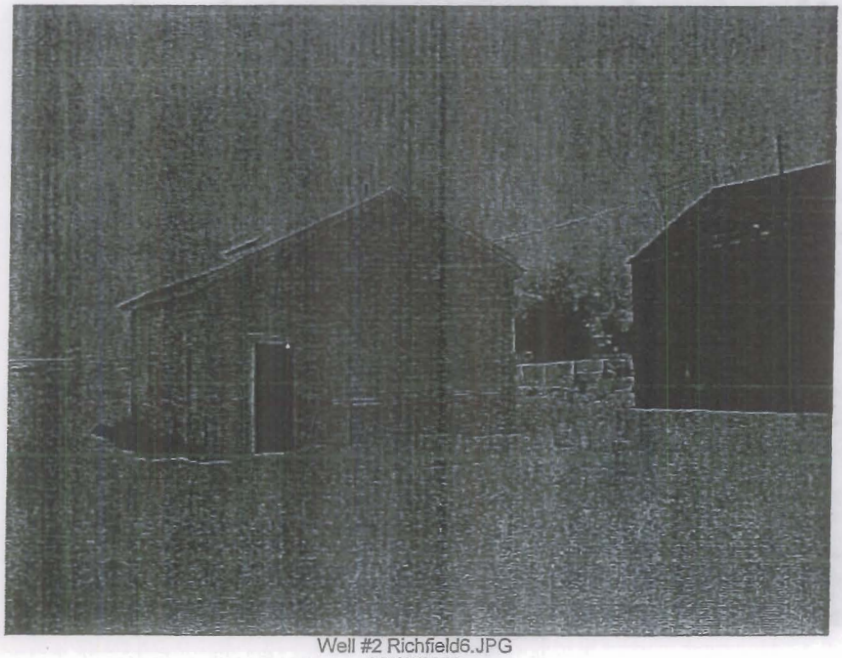
Well #1 Richfield4.JPG
02/15/2006



Well #1Richfield5.JPG
02/15/2006



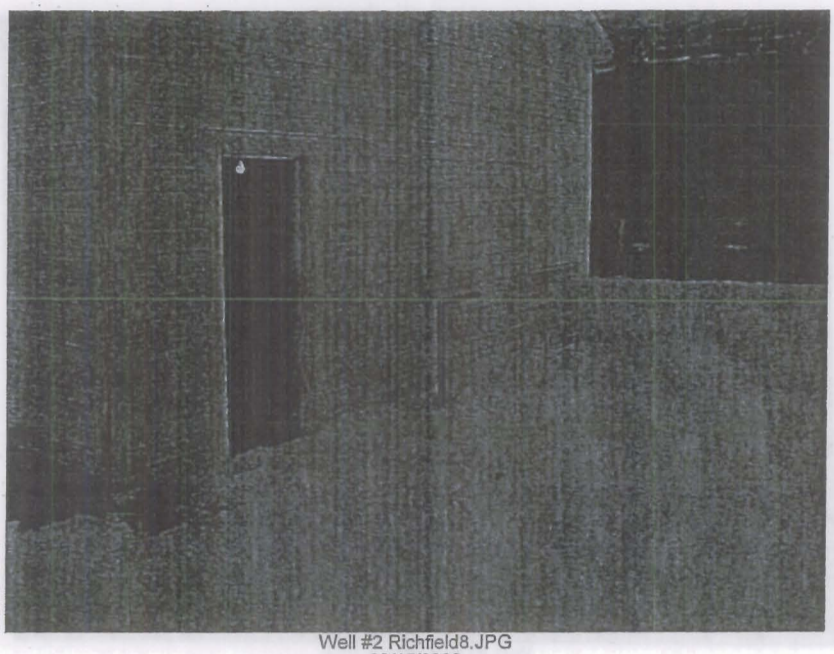
Well #2 Richfield18.JPG
02/15/2006



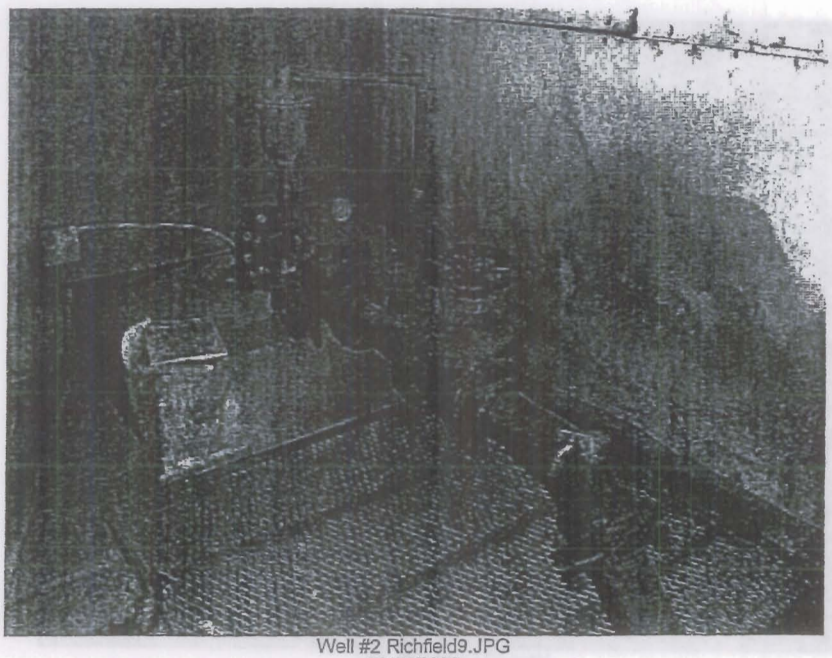
Well #2 Richfield6.JPG
02/15/2006



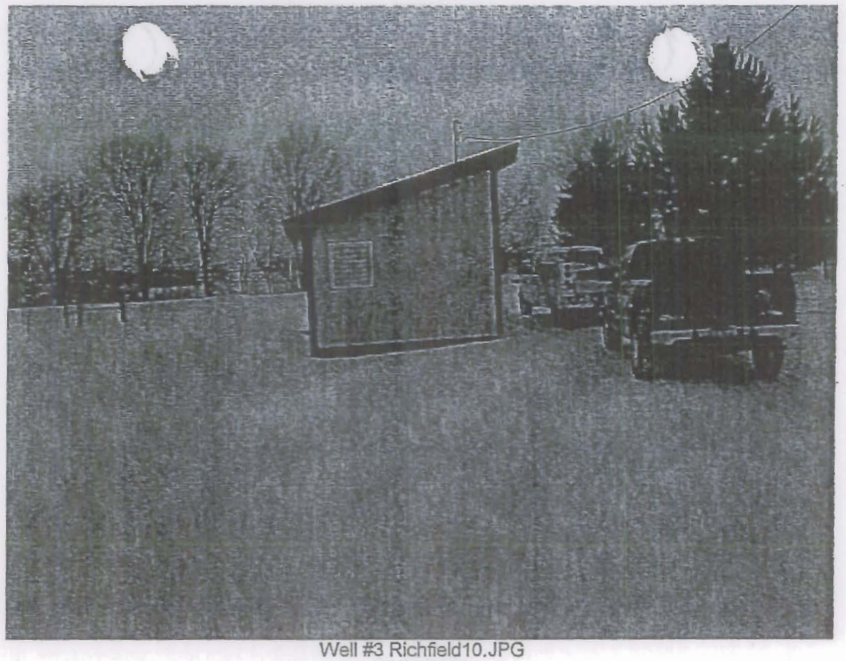
Well #2 Richfield7.JPG
02/15/2006



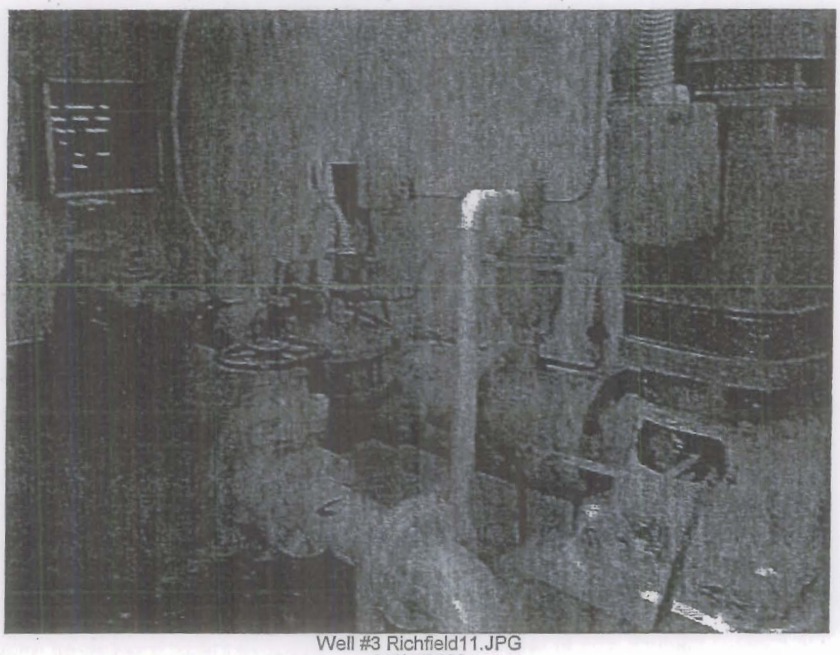
Well #2 Richfield8.JPG
02/15/2006



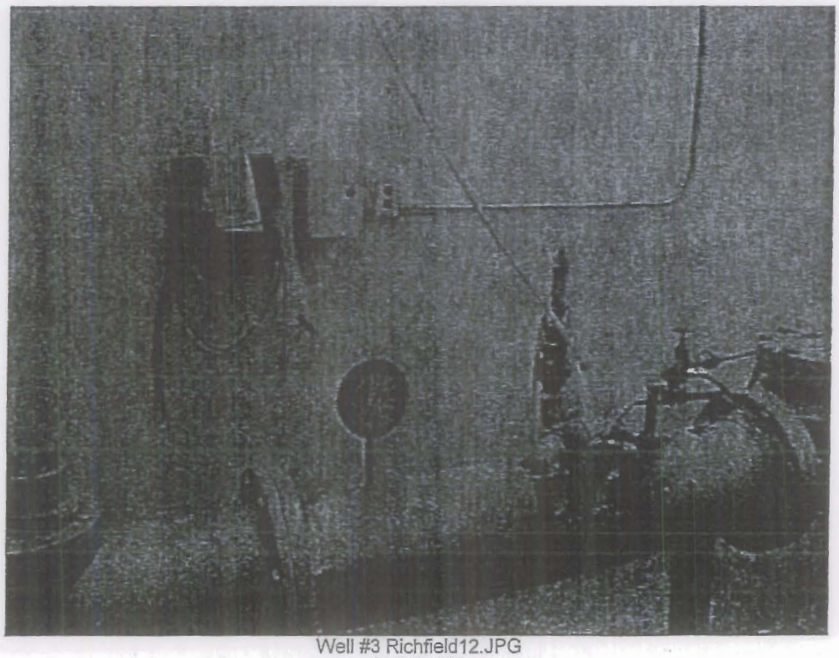
Well #2 Richfield9.JPG
02/15/2006



Well #3 Richfield10.JPG
02/15/2006



Well #3 Richfield11.JPG
02/15/2006



Well #3 Richfield12.JPG

# APPENDIX G
# COMPREHENSIVE PLAN

**RESOLUTION NO. 31**

**RESOLUTION OF THE CITY OF RICHFIELD ADOPTING THE CITY COMPREHENSIVE PLAN**

**WHEREAS**, The Richfield City Council, pursuant to Title 67, Chapter 65, of Idaho Code, has requested that the Richfield City Planning and Zoning Commission initiate a review of the existing Comprehensive Plan; and,

**WHEREAS**, a revision of the City Comprehensive Plan has been prepared by the Richfield City Planning and Zoning Commission; and,

**WHEREAS**, public meetings and hearings have been held pursuant to Title 67, Chapter 65, of Idaho Code, to review the proposed Comprehensive Plan for the City of Richfield;

**NOW, THEREFORE, BE IT RESOLVED** that The Richfield City Council adopt the Comprehensive Plan of the City of Richfield, as amended herein, to be used as a general guide for the continued orderly development of the City of Richfield, Lincoln County, Idaho.

Resolution passed and adopted on the 9th day of September, 2002.

CITY OF RICHFIELD

BY: Charles E. Buttcane
Charles E. Buttcane
Mayor

ATTEST:

LuAnn Swainston
City Clerk

Initials:

| | |
|---|---|
| Frank Johnson | FJ |
| Jeff Norman | JN |
| Ron Holland | RH |
| Tim Wilson | TW |

## INTRODUCTION

The City of Richfield, Idaho, has enjoyed a steady growth over the past several decades. In 1970, our population was 290, 1980: 357 persons, 1990: 385 persons, 1993: 390 persons and in 1995 we estimated a population of 432, in 1997 an estimate of possibly 440, and estimate for 2003 would possibly be 450.

We feel that the continued growth of our " community" depends largely on the growth and viability of the surrounding areas. We have seen over the past several years that many of our citizens commute to surrounding areas (mostly Blaine County) for employment.

The goal of the governing bodies, Richfield City Council and the Planning and Zoning Commission, is to encourage growth through private industry, diversification of existing economic interest and actively seek those who wish to expand their economic interests.

The policy of the governing body has been identified in the Comprehensive Plan. The Official Land Use Map identifies the areas for Commercial, Light Manufacturing, Agricultural, Residential, and Public Use in an effort to protect them from conflicting and inappropriate placement.

We feel that only through organized growth can the goals for continued prosperity be achieved.

# COMPREHENSIVE PLAN FOR THE CITY OF RICHFIELD

The need for an updated Comprehensive Plan for our City became evident in 1992. The economy has changed from strictly agriculture to industrial, construction and commerce, with this new-found prosperity coming from the ever-present problems of growth.

## POPULATION

GOAL:

To provide for future population growth consistent with the community lifestyle.

POLICIES:

The desire with the community is to continue to grow. Over the past several decades we have noted a steady growth of approximately 2 percent. Currently this rate is continuing.

## SCHOOLS

GOAL:

To work with the local school board to provide for the best education possible, yet retain the individual student/teacher ratio necessary to meet the students needs.

POLICIES:

Currently Richfield is an Independent School System covering Preschool through the 12th Grade. It is fully accredited with the State of Idaho and meets all State and Federal Regulations. The success of our graduates can be attributed to the ability of school board and the community to attract educators of the highest quality.

## ECONOMIC DEVELOPMENT

GOAL:

To provide our citizens with the economic opportunities that will allow them to remain here.

POLICIES:

Areas have been identified on the Official Land Use Map of the City for Residential, Commercial, Light Manufacturing and Public Use. These areas will be protected from encroachment by conflicting uses.

The City will support and actively recruit new investment in our community. We will also actively support any improvements of existing commercial endeavors. The development or light industry is welcomed by our population.

## LAND USE

GOAL:

To provide responsible and productive uses of the areas currently within the City Limits and to responsibly annex new areas when needed and prudent to the welfare of our citizens.

POLICIES:

Currently there are many open spaces in the City of Richfield. These spaces are in all areas as identified by the Land Use Map. Through the zoning process we can encourage the development of these areas with minimal regulation. By existing set-backs and buffer zones new development and present uses can co-exist.

## NATURAL RESOURCES

GOAL:

To use our natural resources to their greatest potential. This can be accomplished by the City and private business sector working together.

POLICIES:

The policy of this Commission will be to encourage development of our natural resources in a responsible and prudent manner.

## HAZARDOUS AREAS

GOAL:

To identify and take the appropriate steps to correct or minimize any hazardous areas.

POLICIES:

It will be the policy of this Commission to comply with all State and Federal Regulations pertaining to chemical storage, fuel storage, industrial waste and any other area that may be potentially hazardous to the citizens of this community. We will work closely with those agencies charged with enforcement of all existing regulations.

## PUBLIC SERVICES

GOAL:

To provide our citizens with the public services that are expected and required.

POLICIES:

This City currently has adequate water supply and the sewer system meets the present needs. In the anticipation of further growth, an addition to the sewer system may have to recognized in the near future.

Police protection is currently provided by Lincoln County. A joint effort of Lincoln County and The City of Richfield received a Federal COPS Grant. The grant was received two (2) years ago with an additional 1 year left on the grant. The City will continue the officer for an additional year after the grant expires. They will decide at that time on whether to keep a deputy in the city.

Emergency Medical Services are provided by the local volunteer Quick Response Unit. These persons are trained Basic EMT's and are active in continuing education. They are in radio contact with the County Ambulance Service and County Sheriff. The City and surrounding rural areas are serviced by SIRCOMM for dispatching the fire district, EMT's or police department.

The Richfield Fire Protection District provides fire protection for both the City as well as the surrounding rural community. The department is made up of volunteers with two (2) fire engines, one (1) brush truck and one (1) tanker truck. It is the policy of the district to keep one (1) fire engine within the City Limits at all times for municipal protection. The fire district has signed mutual aid agreements with Bureau of Land Management, Dietrich and in the process of signing with Shoshone.

Currently the solid waste from our community has been collected by private business or by personal hauling. The solid waste district has provided a recycling bin for use to the public, which is located on Lemhi Avenue. Every spring and fall the City of Richfield brings in a 30 yard dumpster to promote clean up of property within the city.

## TRANSPORTATION

GOAL:

To provide safe access to and within the City.

POLICIES:

Because the primary mode of transportation of persons is the private automobile, our policy will be to provide safe access to all areas of our community. We will do this by maintaining all existing streets to the highest standard possible with the resources available. The city implemented a franchise fee from Idaho Power and with the money brought in has been designated for oiling of streets, eventually all streets within the city will be paved.

## RECREATION

GOAL:

To develop the recreational areas and opportunities for our citizens and visitors.

POLICIES:

To ensure the availability of open areas for recreational use. Promote those activities which have become an annual event such as Outlaw Day and Silver Creek Racing. To assist in the development and promotion of any other community events which could become annual and attract visitors to our area.

## HOUSING

GOAL:

Provide adequate housing for present and future Richfield residents.

POLICIES:

Residential areas will be protected from encroachment of incompatible uses through Zoning Ordinance Regulations. Policies affecting city services will be such as to minimize housing costs and promote a variety of housing choices. Manufactured/modular homes placed within the city limits shall meet the city standards adopted by the city council. Compliance of this to be determined by the cities building inspector.

Senior Citizen Housing is filling a need in our community and will continue to do so.

Mobile Home Parks are adequate at this time, but as the need arises development in future will be recognized.

## AREA OF IMPACT

GOAL:

To establish an area of impact or transition to ensure orderly transition from municipal to rural land use.

POLICIES:

The governing bodies of the City of Richfield realize that the land uses surrounding the City have a large effect on the City. Administration will be governed by the Lincoln County Commissioners, the City of Richfield will only be able to comment during the public hearings concerning any issues with in the area of impact of the City of Richfield.

## IMPLEMENTATION

GOAL:

Adopt and implement the Comprehensive Plan for the City of Richfield and to provide policy guidelines to assist in the future development of the City.

POLICIES:

The present Zoning, Sub-Division and related ordinances and regulations of the City will be reviewed and revised as necessary to ensure compatibility with the adopted Comprehensive Plan. The present Zoning Ordinance of the City is being reviewed and revised in conjunction with this Comprehensive Plan.

The plan can be updated to meet these needs as new data becomes available. The following criteria will be used in considering amendments to the Comprehensive Plan:

1. The change is in conformance with the goals and policies of the Comprehensive Plan.

2. There is a community need for the change and that need is best served by making the requested changes.

3. A community need will be met by plan change when other available property in the area becomes available.

4. The potential impact upon the area and community resulting from the change has been considered.

Individuals applying for such an amendment will be required to satisfactorily address each of these criterias. The more significant the request, the greater the demonstration of need for the change that must be shown.

The city will solicit public participation in the decision making process by publishing newspaper notices, by actively soliciting input from citizens commissions and by providing technical assistance to city commissions as necessary and by responding to citizens requesting justification for decisions made.

The planning programs recommended in the Implementation section of the plan will be undertaken by the City to further the comprehensive program for Richfield.

The appropriate notices, public meetings and hearings will be held as requited by the provisions of Chapter 65, Title 67, Idaho Code to review the proposed Comprehensive Plan for the City of Richfield.

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

## CHAPTER 1: INTRODUCTION

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 2: EXISTING CONDITIONS AND FACILITIES

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 3: EVALUATION OF EXISTING FACILITIES

# CITY OF RICHFIELD

# 2008 WATER SYSTEM MASTER PLAN

# CHAPTER 4: FUTURE CONDITIONS

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 5: EVALUATION OF EXISTING FACILITIES AT FUTURE CONDITIONS

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 6: DEVELOPMENT AND SCREENING OF ALTERNATIVES

CITY OF RICHFIELD

2008 WATER SYSTEM MASTER PLAN

# CHAPTER 7: SELECTED PLAN DESCRIPTION AND IMPLEMENTATION

# CITY OF RICHFIELD

# WATER SYSTEM WATER MASTER PLAN

November 2008

Prepared by

J-U-B ENGINEERS, Inc.
115 Northstar Ave.
Twin Falls, ID 83301

Project No. 60-05-041

# CITY OF RICHFIELD

# WATER SYSTEM MASTER PLAN

November 2008




Prepared by

J-U-B ENGINEERS, Inc.
115 Northstar Ave.
Twin Falls, ID 83301