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August 21, 2015

Idaho Dept. of Environmental Quality
Pocatello Regional Office
ATTN: Tom Hepworth
444 Hospital Way #300
Pocatello, ID 83201

RE: Chubbuck, ID Water Facilities Planning Study
Submittal for Review and Approval

Dear Tom:

We are pleased to submit the attached 2015 Chubbuck Water Facilities Planning Study for your review.

The City of Chubbuck is proceeding with planning efforts for the implementation of the improvements recommended as part of this study. As you are aware, the City is planning to rehabilitate Well #2 and have submitted a Letter of Interest for funding through the SRF program. Additionally, we have been in contact with Tim Wendland on behalf of the City to investigate the possibility of expanding the scope of the loan funding to $11.5 million. This funding amount would allow the City of Chubbuck to complete all of the Priority 1 and Priority 2 recommendations within the next several years.

We look forward to receiving your comments and to discussing any questions or concerns you may have regarding this document.

Sincerely,

KELLER ASSOCIATES, INC.

Skyler Allen, P.E.
Project Manager

Enclosures: 2015 Chubbuck WFPS – hard copy & cd

Cc: Rodney Burch, Public Works Director, City of Chubbuck
James Mullen, Vice President, Keller Associates
file

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KELLER associates

Chubbuck Water Facilities Plan and Preliminary Engineering Report

August 2015

CHUBBUCK, IDAHO

WATER FACILITIES PLANNING STUDY

CITY OF CHUBBUCK, IDAHO

PROFESSIONAL ENGINEER
LICENSED
15370
8-20-2015
STATE OF IDAHO
SKYLER D. ALLEN

August, 2015

PROJECT NO. 210078

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Authorization

The City of Chubbuck, Idaho contracted with Keller Associates, Inc. to prepare a Water Facilities Planning Study for the City's potable water system (PWS No. ID6030008). This document is also intended to satisfy the requirements of a Preliminary Engineering Report for the immediate water system recommendations. Chapter 9 presents the Preliminary Engineering Report.

Chapter 1 Executive Summary

1.1 INTRODUCTION

The City of Chubbuck, Idaho contracted with Keller Associates to prepare an update to the 2004 Water System Facilities Planning Study. The purpose of this study is to provide a comprehensive evaluation of the existing system and provide recommendations to meet future demands and continue to provide quality water to all City residents. This report is also intended to satisfy the requirements of a Preliminary Engineering Report for the proposed immediate improvements to the water system. Chapter 9 presents the Preliminary Engineering Report (PER).

This report presents analysis of the current condition of the Chubbuck Water System as well as projections of population and future water needs. Based on this analysis, the Chubbuck Water System requires the implementation of improvements in the form of increased water production capacity and increased storage capacity to address both immediate and future projected deficiencies. Without these improvements the system will not continue to provide sufficient water supply for satisfactory water service. The system also has need of improvements to the Bench Booster Pump Station, replacement of sections of waterline, and implementation of water conservation measures.

1.2 EXISTING WATER SYSTEM

The City of Chubbuck water system provides potable water to approximately 4,200 metered water connections located throughout the City. Water is supplied to the distribution system from three groundwater wells located within the City. Total pumping capacity is estimated to be 7,415 gpm with firm pumping capacity of 3,915 gpm (largest well out of service). The City has water rights for 8,348 gpm year round and an additional 5,525 gpm of recently acquired irrigation rights that apply only from April to October.

The City of Chubbuck water system has three active water supply wells with total production capacity of 7,410 gallons per minute, three storage tanks totaling 1.65 MG of water storage capacity, one booster pump station with approximately 2,200 gpm of pump capacity that provides water pressure to the bench pressure zone on the east portion of the City, and over 70 miles of distribution system piping ranging in size from 4 inch to 24 inch in diameter. The water system produces approximately one billion gallons of water per year. All three producing wells and the bench booster station are equipped with standby generators for operation in power outage conditions. Each of the wells is equipped with chlorine disinfection capability.

The system is divided into two pressure zones; the main pressure zone serves the majority of the City of Chubbuck while the bench pressure zone serves the area east of Hiline Road with water pressure increased at the Bench Booster Pump Station.

1.3 PROJECTED CONDITIONS

As of the 2010 census the City of Chubbuck had a population of 13,922 people. The Bannock Transportation Planning Organization published a population projection for the City of Chubbuck produced by Intermountain Demographics which has been selected for use by the

City. This projection considers the Pocatello and Chubbuck areas through 2035. The growth rate used in this projection varies from 4.2% to 1.6%, reducing over time. The projected population in Chubbuck in 2035 is 25,048. Based upon this projected population, Chubbuck will have a peak hour demand of 16,699 gpm and average day demand of 3,566 gpm by 2035.

1.4 EXISTING FACILITY EVALUATION

The Chubbuck Water System is well maintained and operates reliably. There are several deficiencies in the current state of the system as well as projected deficiencies that should be addressed to improve and maintain the quality delivery of water for the residents of the City of Chubbuck.

The Chubbuck water system has insufficient water supply and storage capacity to satisfy the regulatory minimums and assure adequate water supply in the event of failure of any well or pump. Current water supply deficiency is approximately 1000 gpm and 20 year projected water supply deficiency is approximately 4,050 gpm. Two additional water production wells are recommended to address current and future projected deficiencies in water supply.

The storage volume of 1.65 million gallons (MG) is insufficient to satisfy the peak demand periods under a well outage scenario. The current deficiency is 750,000 gallons with a projected 20 year deficiency of 2 MG. The projected 40 year storage deficiency for providing full equalization through water storage is approximately 3 million gallons. This report considers alternatives to address the projected water storage deficiencies.

The system is fairly well interconnected for distribution efficiency. There are four major features restricting interconnection; Interstate 15, the Hiline Canal, Interstate 86, and the Union Pacific Railroad line. Each of these has crossings that are currently adequate for the distribution of water, but may require future upgrades to handle projected distribution needs. There are a few fire hydrants connected to 4-inch mains that should be upgraded to larger mainline sizes to comply with regulations. A few locations of insufficient fire protection flow capacity were identified through the hydraulic model as presented in Section 5.3.3 of this report. Improvement recommendations to address these deficiencies including pipeline replacement are presented in Chapter 7.

The transmission line connecting the distribution system to the water storage tanks at the tank farm is undersized for feeding the needed volume of water flow from the tanks to the distribution system. The existing transmission line is 16-inch diameter from the tank farm to the bench booster station. Inadequate feed side pressures at the bench booster station occur during times of high flow through the transmission line (>5,800 gpm). Under projected peak demand scenarios, the transmission line cannot pass sufficient water to satisfy the demand to the system as a whole. This deficiency is addressed in the improvement alternatives for increased water supply, storage, and distribution as well as the alternatives considered for the Bench Booster Station in Chapter 7.

The Bench Booster Pump Station operates near its operational peak capacity during high demand periods and requires improvements to alleviate intake pressure concerns and increased capacity to address projected demand increases. The bench booster pump station will require additional

capacity in the near future if population growth within the bench service area continues.

It is recommended that the City of Chubbuck implement water conservation measures and a leak detection program to help reduce the total volume of water that will be needed in the future. There were also several specific items for remedy listed on the most recent Sanitary Survey that should be fully remedied.

1.5 WATER SYSTEM IMPROVEMENTS AND PROJECT SCHEDULE

Several system improvements have been identified to help remediate the system deficiencies identified in this study. These improvements, including estimated costs, are listed in Table 1-1.

Table 1-1 – Recommendations Summary

Recommendation	Description	Priority	Est. Cost
System Improvement - Alternative 6	Well/Tank/BPS Packages & Water Conservation	Priority 1 – Immediate	$10,145,000
Bench Pressure Zone –	Further analysis + Well No. 1 Rehab/Well No. 1 Upsize/Bench BPS Upsize	Priority 1 – Immediate	$200,000 to $285,000
PSV for Bench BPS	Install a PSV in the Chubbuck Road Transmission Line	Priority 1 – Immediate	$156,000
Water Conservation	Develop Immediate Water Conservation Plan	Priority 1 – Immediate	$30,000
Fire Flow Improvements	Various Line Replacement Projects to address fire flow capacity deficiencies	Priority 2 –Intermediate Term	$665,000 (current estimate)
Future Bench Booster Station	Plan and implement a new bench booster station as bench area demands increase	Priority 2 – Intermediate	$600,000 (2015 estimate)
Distribution Network Improvements	Various Line Replacement Projects to address projected distribution network needs	Priority 2 – Intermediate	$1,053,000 (2015 estimate)
Distribution Expansion Improvements	Philbin Area Tyhee Area Rio Vista Area	Priority 3 – Long Term	~$10 Million (2015 estimate)

As shown in Table 1-1, there are several improvements that are recommended for Immediate implementation (Priority 1) and for scheduled implementation in the near future (Priority 2). The Long Term (Priority 3) improvements relate to expansion of the water service area and should be undertaken as need arises or as the City determines appropriate to provide water service availability for future development.

The Priority 1 improvements that are recommended for immediate implementation are outlined in Table 1-2 with a recommended start date for each component. These improvements are key to addressing the current water system deficiencies in water supply, storage, and distribution.

Table 1-2 – Priority 1 Improvement Schedule

Start Date	Improvement Description
2015	Evaluate capacity upgrade alternatives for the Bench Pressure Zone
2015	Rehabilitate Well No. 2
2015	Secure land for well site(s) (target 1-2 acres each)
2016	Construct Well No. 6 & 7(2x production target >2,200 gpm
2016	Construct storage tanks (2x 1.5 million gallons)
2016	Construct booster pump station (2x pumping capacity ~4,000 gpm)
2016	Install Pressure Sustaining Valve in Chubbuck Transmission Line
2016	Develop Water Conservation Program & begin implementation
2016	Begin scheduling of Fire Flow Improvements for completion on an achievable and affordable schedule
2017	Begin planning and design for Well #7, tank & BPS
2017	Begin scheduling of Distribution Network Improvements for completion within 5-10 years

Funding of the recommended improvements is discussed in Chapter 8 of this report. The Priority 1 and 2 improvements that are recommended for immediate implementation may be funded through a combination of a low interest loan from the Idaho Department of Environmental Quality and accumulated capital reserves for the water system held by the City of Chubbuck. Funding of the remaining Priority 1 and 2 improvements should be considered first from revenue funds, and second from a future loan if necessary. Priority 3 improvements are recommended to be scheduled as the need arises and funded on an annual basis from water system revenues.

The City of Chubbuck has submitted a Letter of Interest and is in the process of submitting an application for loan funding from the Idaho Department of Environmental Quality SRF program to help fund the recommended improvements projects. The analysis conducted in the preparation of this report indicates that the City will be able to implement the immediate improvements with no increase to the water user rates. As operating costs and construction cost of future improvements will increase with inflation, it is recommended that the City increase user rates and connection fees on a regular basis to avoid the erosion of the funding base for the water system.

Chapter 2 Introduction

2.1 INTRODUCTION

The City of Chubbuck, Idaho had a population of 13,922 in the 2010 census (US Census Bureau, 2010). The majority of employment in Chubbuck is in services and retail. The City provides water, sewer and sanitation services. The City's potable water supply comes from three active groundwater wells in the Portneuf Valley Aquifer. Other utilities available from non-city entities include electrical power, natural gas, cable, telephone, and high speed communications. Community profile information for the City of Chubbuck can be found in Appendix A.

This study has been performed to assess the current condition and capacity of the Chubbuck water system and to assess the system with regard to future needs. The City owns and operates its water supply, storage, and distribution system and is committed to providing all residents with quality water and fire protection. This study evaluates the current water system, identifies potential deficiencies, and makes recommendations to improve the system in order to continue delivering quality water and meet future demands. System improvement alternatives were developed with no preference or discrimination based on the ethnicity, religion, or socioeconomic status of City residents that the proposed improvements will benefit.

2.2 PURPOSE

The purpose of this Water Facilities Planning Study is to provide a comprehensive evaluation of the existing system and provide recommendations to meet current and future needs.

2.3 SCOPE

The Scope of this study includes the following:

- Existing Facilities Condition and Evaluation
  - Compilation of data concerning the age and condition of the existing water system, including but not limited to pipelines, valves, the reservoir, wells, and other facilities
  - Evaluation of the existing water system components
  - Outline of prioritized recommended improvements
- Model Existing Water Facilities
  - Compile and review in the model:
    - Study area boundaries
    - Inventory of existing facilities
    - Type and amount of water consumption and production
    - Existing and projected land use and population
  - Evaluate standards, recommendations, and design criteria for:
    - Water supply
    - Storage
    - Pressure requirements
    - Fire Protection
  - Review existing water system condition, including:
    - System pressures
    - Pressure zones

  - Facility and pipe capacities
  - Available fire protection
  - Well supply
  - Water storage
  - Transmission and delivery
- Develop alternative solutions to address potential system deficiencies

- Water Supply and Storage Analysis
  - Review current and future water supply and storage needs
  - Evaluate available water quality information and make recommendations to improve quality
- Master Planning and Capital Improvement Plan
  - Prepare Master Plan including:
    - Future facility needs
    - Replacement and pipeline extensions
  - Develop an estimated schedule for capital improvements and a summary of potential impacts on rates and/or funding sources
- Report Preparation
  - Submit to City for review and approval
  - Submit to Idaho Department of Environmental Quality for review and approval
- Public Participation, Presentations, and Meetings

2.4 ABBREVIATIONS

- ADD average day demand
- AWWA American Water Works Association
- AMCL alternate maximum contaminant level
- bgs below ground surface
- BLM Bureau of Land Management
- BPS booster pumping station
- BTPO Bannock Transportation Planning Organization
- cfs cubic feet per second
- CIP capital improvements plan
- CWA Clean Water Act
- DBP disinfection byproduct
- DEQ Idaho Department of Environmental Quality
- EDB ethylene dibromide
- EID environmental information document
- EPA United States Environmental Protection Agency
- ESRPA Eastern Snake River Plains Aquifer
- FEMA Federal Emergency Management Agency
- FIRM flood insurance rate map
- FPS Facilities Planning Study
- ft foot or feet
- fps feet per second

- gal gallons
- gpcd gallons per capita per day
- gpd gallons per day
- gpm gallons per minute
- hp horsepower
- IDAPA Idaho Administrative Procedures Act
- IDEQ Idaho Department of Environmental Quality
- IDWR Idaho Department of Water Resources
- IOC inorganic chemical
- IRPDWS Idaho Rules for Public Drinking Water Systems
- ISPWC Idaho Standards for Public Works Construction
- ISRB Idaho Surveying & Ratings Bureau
- kW kilowatt
- MCL maximum contaminant level
- MDD maximum day demand
- mg/L milligrams per liter
- MG million gallons
- MGD million gallons per day
- MMM multimedia mitigation
- MRDL maximum residual disinfectant level
- NRCS Natural Resources Conservation Service
- PCE perchloroethylene
- PER preliminary engineering report
- PERC perchloroethylene or tetrachloroethylene
- PHD peak hour demand
- POD point of diversion
- ppb parts per billion
- ppm parts per million
- psi pounds per square inch
- PSV pressure sustaining valve
- sec second
- SDWA Safe Drinking Water Act
- SCADA supervisory control and data acquisition
- SOC synthetic organic chemical
- SWPP storm water pollution prevention
- TOC total organic carbon
- UPRR Union Pacific Railroad
- US United States
- USDA United States Department of Agriculture
- USEPA United States Environmental Protection Agency
- USFS United States Forest Service
- USFWS United States Fish and Wildlife Service
- USGS United States Geologic Survey

- VOC volatile organic chemicals
- WFPS Water Facilities Planning Study

2.5 DEFINITION OF TERMS

- Average Day Demand (ADD) – the volume of water supplied to the system in a year divided by 365 days
- Consumption – refers to the volume of water customer's use. Consumption is generally measured with a water meter installed at each consumer's connection to the water system. In cases where a water system is not equipped with water meters at individual connections, consumers are charged a flat rate for water usage.
- Demand – refers to the water needed to meet residential, commercial, industrial, and public water needs over a period of time, as well as the system losses that are associated with the demand. Demands on the water system vary by the time of day and season. Due to varying consumer needs, system condition, and other factors, individual communities have unique water demand patterns. Volumetric rates (gpm or cfs), volumes (gal or MG), and per capita demand (gpcd) are often used to quantify the demand placed on a system.
- Demand Factors – also referred to as peaking factors. Demand factors define the relationships between ADD, MDD, and PHD.
- Fire Flow – flow required to supply a sufficient quantity of water to fight a fire. The *International Fire Code* establishes fire flow requirements and is the accepted code in the State of Idaho.
- Firm Pumping Capacity – the total pumping capacity that a pump system can deliver with the largest pump out of service.
- Maximum Contaminant Level (MCL) – refers to the greatest concentration of a contaminant allowed in drinking water often reported in ppm, ppb, mg/L, or µg/L.
- Maximum Day Demand (MDD) – the maximum volumetric rate or volume of water supplied to the system in one day during a year.
- Peak Hour Demand (PHD) – the maximum volumetric rate or volume of water supplied to the system in one hour during a year.
- Safe Drinking Water Act (SDWA) – United States regulation passed by Congress in 1974 to protect public health by regulating public drinking water. The Act was amended in 1986 and 1996 and is enforced by the EPA.
- Total Pumping Capacity – the total pumping capacity of all pumps within a pumping system.

Chubbuck, Idaho
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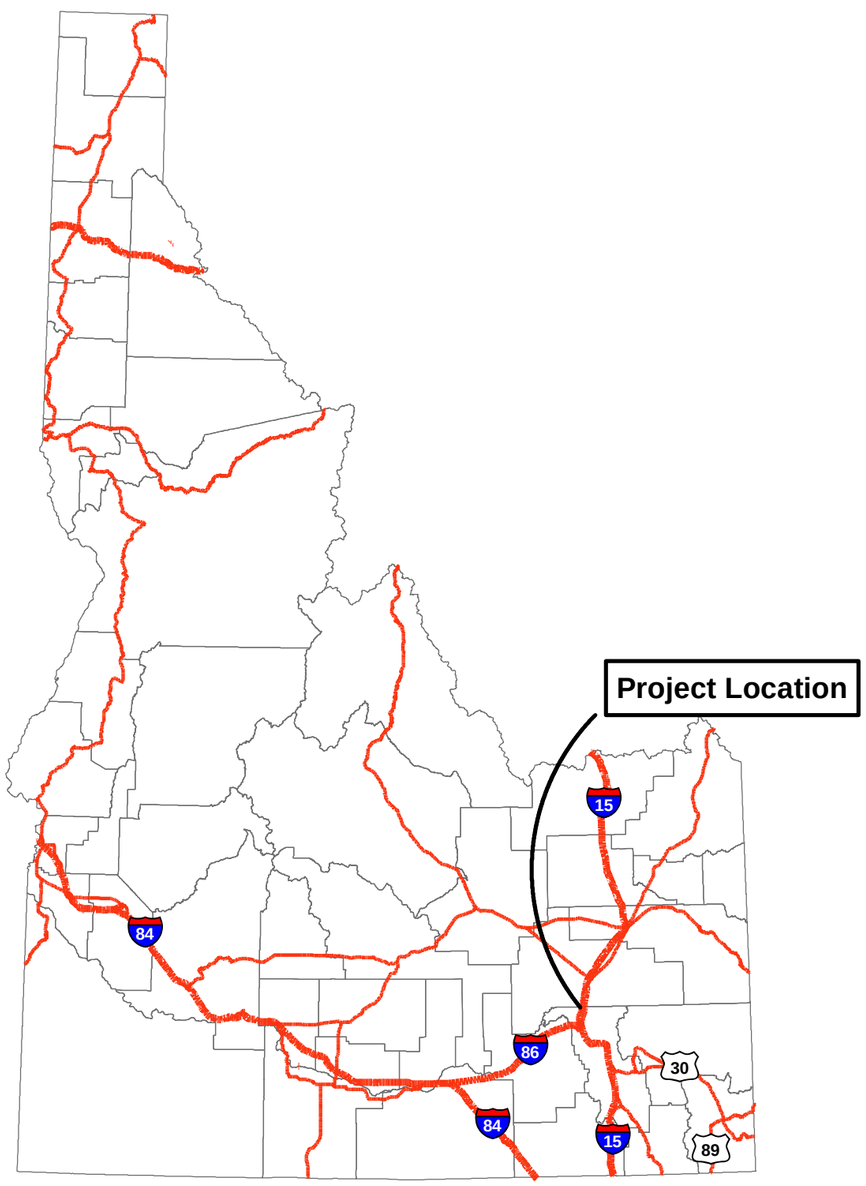

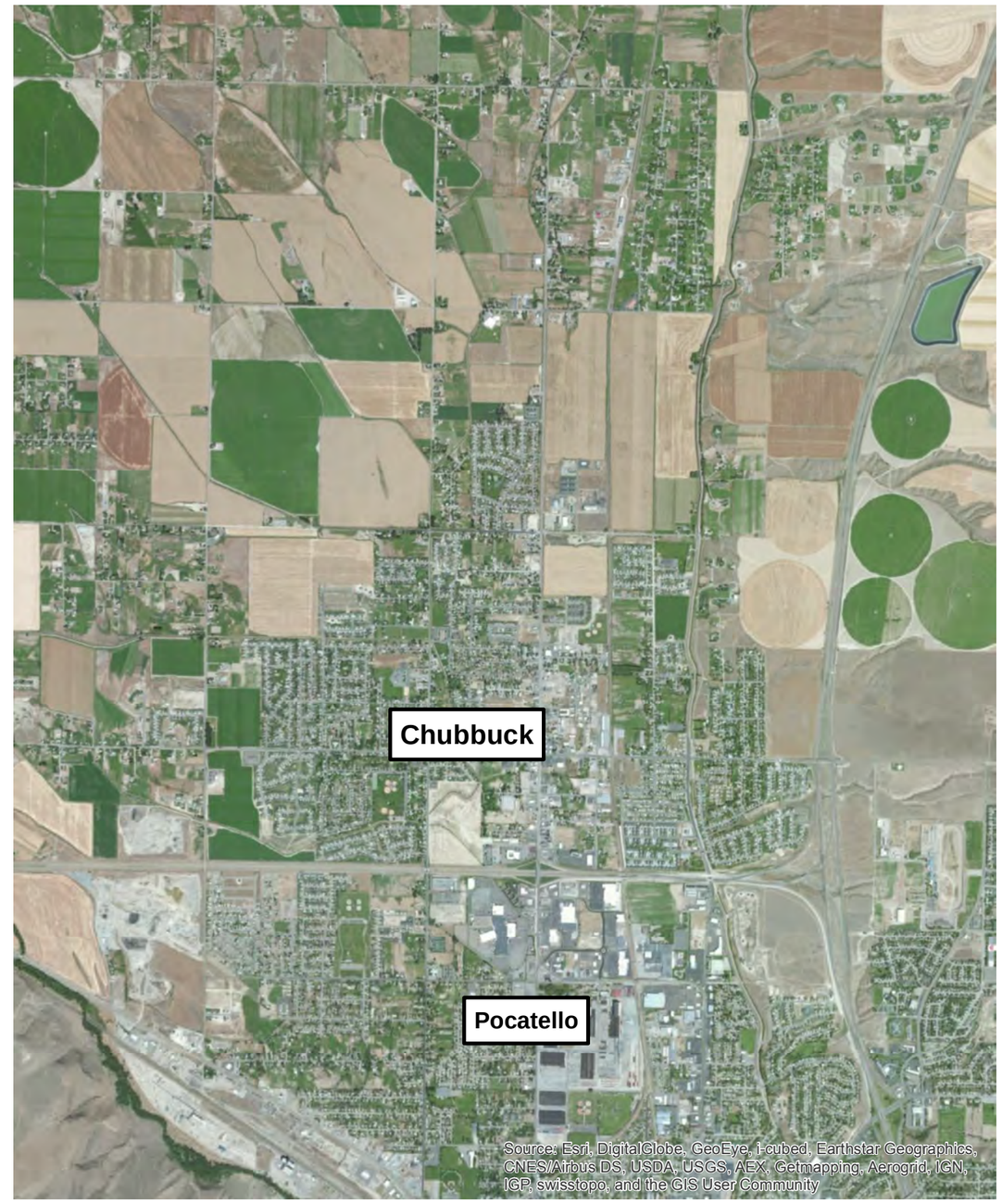

PROJECT NO. 210078

FILENAME 2.1 - Location

305 N. 3rd Avenue
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City of Chubbuck

Water Facility Planning Study

Location Map

FIGURE NO. 2.1

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Chapter 3 Design Criteria

Municipal water system improvements need to be designed with consideration for future growth and associated demands on the water system. Water system components that can be easily accessed, such as pumps, motors, flow meters, chemical feed equipment, and other mechanical items should be sized for a 10 to 25 year design period, or the assumed useful life of these components. Other improvements, such as distribution mains, underground valves, storage reservoirs, buildings, and fire hydrants, have an expected useful life in the range of 25 to 50 years (Chin, 2000). A longer design period should be considered for these facilities since the materials typically have a longer life and the components are not easily accessed for maintenance or upgrade. Water system design, for smaller communities with stable growth, is often based upon requirements for fire flow, but these systems may become undersized if the community experiences an increase in growth above its predicted growth rate over the design life of the system.

3.1 WATER SUPPLY

If a water system is substantially modified, it must have a minimum of two water sources. Under normal operating conditions, the water source(s) must be capable of meeting either the PHD or the MDD plus equalization storage with any water supply source out of service[1]. In the case where the system is substantially modified, the system must have standby power and/or storage to be capable of providing eight hours of ADD plus fire flow[2].

A water system must be capable of providing MDD plus fire flow with the largest pump out of service. The pumping requirement to meet this scenario may be reduced depending upon the systems available fire storage. The local Fire Authority, in writing, may reduce the required fire flow as deemed appropriate[3]

Booster stations have similar requirements to those previously stated. For more information on these requirements consult the Idaho Rules for Public Drinking Water Systems sections 541.04.c, 501.17, and 501.07.b.ii.

3.2 WATER STORAGE

The Idaho Rules for Public Drinking Water Systems defines the following storage components[4]:

- Dead Storage – Storage that is either not available for use in the system or can provide only substandard flows and pressures
- Effective Storage – Storage other than dead storage that is made up of operational storage and standby storage
- Operational Storage – Storage that supplies water when, under normal conditions, the sources are off. This component is the larger of:

[1] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 513
[2] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 501.07
[3] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 501.17
[4] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 003.12

  - The volume required to prevent excess pump cycling and ensure that the equalization, fire suppression, and standby storage components are full and ready for use when needed
  - The volume needed to compensate for the sensitivity of the water level sensors
- Equalization Storage – Storage of finished water in sufficient quantity to compensate for the difference between a water system's maximum pumping capacity and PHD.
- Fire Suppression Storage – The water needed to support fire flow in those systems that provide it.
- Standby Storage – Storage that provides a measure of reliability or safety factor should sources fail or when unusual conditions impose higher than anticipated demands.

Keller Associates recommends a minimum storage capacity equal to the equalization, fire suppression, and standby storage needs.

3.3 System Pressures

Water pressures at any point in the distribution system must not be below a minimum pressure of 40 psi during peak hour demand conditions excluding fire flow. Water pressure at any point in the distribution system must be maintained above 20 psi during a MDD and fire flow event[5]. If pressure in the system drops below 20 psi the system is at risk of contamination and in violation of State regulations.

3.4 Distribution and Transmission Pipelines

Pipeline design is based upon meeting peak hour demand and fire protection while maintaining required system pressures. The following design criteria should be addressed:

- Water lines where fire flow is not supplied should not be smaller than three inches in diameter[6].
- Dead end lines should be equipped with a means of flushing at a velocity of at least 2.5 ft/sec[7].
- Dead end mains should be minimized by looping the system when practical.
- Valves should be located to minimize the amount of the system exposed to contamination due to loss of pressure during repairs
- Fire hydrants should be connected to lines that are at least six inches in diameter.
- Fire hydrants should be placed 250 to 500 ft apart, depending upon the area served.
- System pipe sizing should reduce the velocity head to reduce friction losses. Typical pipeline velocities should be between 2.5 ft/sec and 5 ft/sec and should not exceed 10 ft/sec under any circumstance.
- Pipelines may be oversized to allow for flexibility in future growth.

[5] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 552.01.b.i & § 552.01.b.ii
[6] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 542.06
[7] IDAPA 58.01.08 – Idaho Rules for Public Drinking Water Systems, § 542.09

3.5 FIRE PROTECTION

The Chubbuck Fire Department relies on the City's potable water system to provide adequate water for fighting fires. Pipeline size is often based upon meeting fire protection demands. As previously discussed, the *Idaho Rules for Public Drinking Water* requires that the water system maintain residual pressure of 20 psi during a fire event to minimize the risk of contamination to the water system. The *2000 International Fire Code* should be consulted for details regarding exact fireflow requirements for different types of properties.

3.6 WATER QUALITY REGULATIONS

Water quality is based on the Safe Drinking Water Act (SDWA) which includes primary standards (legally enforceable) and secondary standards (not legally enforceable). Primary standards are defined to protect public health while secondary standards are defined for contaminants that pose no public health issue, but may cause corrosion, odor, unpleasant taste, or staining. Primary standards exist for microorganisms, IOC's, SOC's, and VOC's.

In association with the SDWA the EPA has developed rules to further address water quality. The following drinking water rules are considered priority rulemakings by the EPA. The summaries that follow contain only an overview of the associated rule and should in no way be considered authoritative. For additional information consult the EPA's Ground Water & Drinking Water page at www.epa.gov/safewater (US Environmental Protection Agency, 2006).

- **Arsenic Rule** – Long-term exposure to arsenic in drinking water has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate. Other effects of ingesting arsenic include cardiovascular, pulmonary, immunological, neurological, and endocrine effects. The Arsenic Rule was published in January 2001 and changed the MCL from 50 ppb to 10 ppb (~0.01 mg/L).
- **Ground Water Rule** – The Ground Water Rule (October 2006) addresses the risks of exposure to fecal contamination from community water systems that are supplied by ground water. Viral and bacterial pathogens are found in fecal matter which can be introduced to ground water sources from leaking septic systems, leaking sewer systems, and potentially through open flow paths in the ground. This rule addresses risk through a risk-targeting approach using four components. These components are:
    1. Periodic sanitary surveys
    2. Source water monitoring
    3. Corrective actions
    4. Compliance monitoring
- **Lead and Copper Rule** – The lead and copper rule was promulgated in June 1991 to address lead and copper concentrations in drinking water that occur due to corrosion in transmission and distribution systems. Action levels were established of 0.015 mg/L for lead and 1.3 mg/L for copper based upon the 90th percentile level in tap water samples taken in homes/buildings that are considered to be at high risk of lead/copper contamination. A corrosion control study and subsequent treatment must be instituted if action levels are exceeded.

- **Stage 1 & 2 Disinfectants and Disinfection Byproducts Rule** – Disinfectants are used to inactivate many potentially harmful microorganisms, but they may also react with natural organic and inorganic material in the source water forming disinfection byproducts (DBP's). DBP's, such as chloroform, have been shown to be carcinogenic and have been shown to cause reproductive and developmental effects in laboratory animals. The Stage 1 Disinfectants and Disinfection Byproduct Rule was promulgated in December 1998 and establishes maximum residual disinfectant levels (MRDL) and MCL's for disinfection byproducts. Additionally, this rule addresses removal of total organic carbon (TOC) to minimize the production of DBP's. Stage 2 Disinfectant and Disinfection Byproducts Rule was promulgated in December 2005 and focuses on decreasing DBP concentration peaks in the transmission and distribution system.
- **Radionuclide Rule** – The Radionuclide Rule was promulgated in December 2000 to address exposure to radionuclides found in drinking water. This rule retains preexisting MCL's for combined radium-226 and radium-228, gross alpha particle radioactivity, and beta particle and photon activity. The rule establishes a MCL for uranium. The purpose of this rule is to reduce exposure to radionuclides in drinking water due to the increased risk of cancer from exposure.
- **Radon Rule** – The radon rule has not been promulgated but has been formally proposed. The proposed rule includes two options; the first establishes a MCL for radon in drinking water. The second option establishes an alternative MCL (AMCL) that is greater than the MCL in option one. The second option requires the water system to adopt a multimedia mitigation (MMM) program that focuses on reducing indoor air exposure as well as exposure from drinking water.

Chapter 4 Existing Conditions

4.1 PLANNING AREA

The planning area of this study is defined by the established Impact Area of the City of Chubbuck. The City is bounded on the south by the City of Pocatello. The City's potential growth area is limited to the north and west by the Fort Hall Indian Reservation, to the south by the City of Pocatello, and to the east and west by designated area of impact for the City of Pocatello. The planning area encompasses approximately 11,047 acres. Figure 4-2 illustrates the extent of the proposed planning area for this study.

4.2 DEMOGRAPHICS

The population of Chubbuck from the 2010 Census was 13,922 (US Census Bureau, 2010). Dominant industries for employment in Chubbuck are educational services and health care at 24% and retail trade at 14.8%. Ten percent of the population was over the age of 65 (US Census Bureau, 2010).

In Chubbuck, the growth rate from 2000 to 2010 averaged approximately 3.7% per year. Growth in Chubbuck has significantly exceeded the growth of surrounding communities. Table 4-1summarizes growth rates for nearby communities and the State of Idaho. The Bannock Transportation Planning Organization (BTPO) reported a population projection for the City of Chubbuck as part of the Pocatello/Chubbuck Urbanized Area Metropolitan Transportation Plan. This population projection was used as a basis to develop a population projection for the City of Chubbuck. Recorded and projected populations for Chubbuck are shown in Figure 4-1.

Table 4-1 – Regional Population Growth Rates

Community	2000-2010
American Falls	0.8%
Blackfoot	1.3%
Chubbuck	3.6%
State of Idaho	1.9%

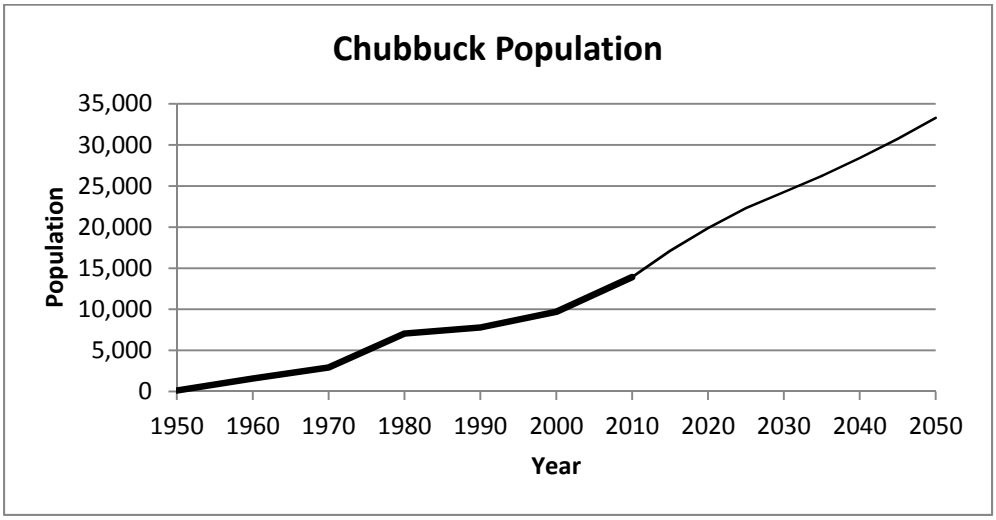

Figure 4-1 – Recorded and projected population for Chubbuck, Idaho

4.3 STUDY AREA CHARACTERISTICS

4.3.1 PHYSIOGRAPHY

Chubbuck is located directly to the north of the City of Pocatello. Most of the City lies to the north of Interstate 86 and west of Interstate 15. The immediate area is dominated by low hills rising above the Snake River Plain. The topography rises to the east into the foothills of the Portneuf Range. Chubbuck is on the edge of the Snake River Plain with the Snake River to the northwest and the Portneuf River to the southwest.

Elevations in the planning area range from 4,465 feet near the northern and western boundaries to 4,680 feet on the east side near the existing tank farm.

4.3.2 CLIMATE

The closest weather station to Chubbuck is located in Pocatello, Idaho. Climate data for Pocatello is found in Table 4-2. The coldest month of the year is typically January with an average maximum temperature of 32.5 degrees F and minimum temperature of 15.2 degrees F. The warmest month of the year occurs in July with an average maximum temperature of 88.4 degrees and a minimum average temperature of 43.2 degrees F. Precipitation averages 11.54 inches per year, which includes the snow water equivalent for the annual snowfall of 40.3 inches (Western Regional Climate Center, 2006).

Table 4-2 – Climate Data for Pocatello, Idaho[8]

Month	Average Maximum Temp, ˚F	Average Minimum Temp, ˚F	Average Precipitation, Inches	Average Total Snowfall, Inches
January	32.5	15.2	1.10	9.4
February	38.3	19.8	0.92	6.5
March	47.4	26.2	1.12	5.4
April	58.2	32.9	1.12	3.5
May	68.2	40.4	1.35	0.4
June	77.5	46.8	1.02	0.0
July	88.4	53.2	0.53	0.0
August	86.8	51.6	0.61	0.0
September	75.8	42.8	0.79	0.0
October	62.5	33.6	0.87	1.8
November	45.2	24.8	1.05	4.6
December	34.9	17.6	1.07	8.6
Annual	59.6	33.7	11.54	40.3

4.3.3 SOIL & GEOLOGY

Classification of soils in and around the planning area was completed using resources provide by the USDA Natural Resource Conservation Service. The soils in the planning area consist of primarily silt loams and cobble loams. Table 4-3 summarizes the extent of various soils in the planning area, including the soils prime farmland classification and Figure 4-3 shows the spatial extent of these soils (USDA Natural Resource Conservation Service, 2009).

Included in the Natural Resource Conservation Service soil survey is an evaluation of typical soil profiles in the area. This can help to identify the potential stability or excavation issues that can arise when building tanks or excavating for pipelines. Table 4-4 summarizes the typical soil profile summaries within the planning area (USDA Natural Resource Conservation Service, 2009).

Table 4-3 – Soils in the Planning Area

Soil	Acres	Percent of Area	Prime Farmland
Bahem Silt Loam	4521	41.0	If Irrigated
Broncho Cobbly Loam	853.6	7.8	No
Broxon Silt Loam	2896.7	26.3	If Irrigated
McDole-McDole Variant Complex	36.8	0.3	If Irrigated
Pits, gravel	52.4	0.5	No
Pocatello Silt Loam	1832.9	16.6	No
Urban land – Bahem-Broxon Complex	825.3	7.5	No

[8] (Western Regional Climate Center, 2012)

Table 4-4 – Typical soil profiles for Chubbuck, Idaho

Classification	Depth, inches	Description
Bahem	0-11	Silt Loam
	11-49	Silt Loam
	49-60	Extremely cobbly sand
Broncho	0-6	Cobbly loam
	6-13	Cobbly loam
	13-60	Extremely cobbly coarse sand
Broxon	0-8	Silt loam
	8-25	Silt loam
	25-60	Extremely stony sand
McDole	0-34	Silt loam
	34-60	Fine sandy loam
Pits	0-60	Gravel, cobbles
Pocatello	0-8	Silt loam
	8-40	Silt loam
	40-60	Silt loam
Urban	0-8	Silt loam
	8-25	Silt loam
	25-60	Extremely stony sand

4.3.4 SURFACE & GROUNDWATER HYDROLOGY

Surface water is found in the Porteuf River to the southwest of the planning area, while the Snake River is to the northwest of the planning area. The Portneuf River originates in the Porteuf Range to the east of the City. The Snake River originates in Yellowstone National Park in Wyoming and is fed by tributaries such as Henry's Fork, Buffalo, Hoback, Greys, and Salt Rivers. Neither of these surface water sources is currently utilized by the City for domestic potable use.

According to the IDWR there are approximately 390 wells within the planning area, of which approximately 358 are for domestic use. The depth to static water of groundwater wells in the surrounding area ranges from 12 to 225 ft. below ground surface with well depths ranging from 50 to 570 ft. below ground surface. (Idaho Department of Water Resources). There are 3 groundwater wells currently being utilized by the City of Chubbuck for potable domestic use located within the planning area.

4.3.5 ENVIRONMENTAL CONDITIONS

The Snake River, Portneuf River and area surrounding Chubbuck supports a wide diversity of animal and plant life. There are 16 species of migratory birds of conservation concern for which the project planning area provides habitat. There are no threatened or endangered species for the planning area. There are several locations with freshwater emergant wetland and the Portneuf River within the planning area. (U.S. Fish & Wildlife Service, 2015)

A majority of land in the planning area is either developed or used for cultivated crops, but there a few areas that contain natural vegetative communities (USDA Natural Resource Conservation Service, 2009). Land cover is shown in Figure 4-4.

4.3.6 FLOODPLAINS

A large majority of Chubbuck lies outside of the 100-year flood event flood plain. A small strip of land along the Portneuf River to the southwest and strips along 3 small drainages that terminate in the Hiline Canal including: Buffalo Creek and 2 other drainages to the north running from east to west are designated as lying within the 100-year flood plain. Base flood elevations and hazard factors have not been established for these areas (Federal Emergency Management Agency, 2015). A floodplain map can be found in Figure 4-5.

4.3.7 WETLANDS

Areas classified as wetlands in the planning area include areas along the Portneuf River, and a couple of small areas in the northwest section of the planning area. Approximately 106 acres are classified as riverine, 21 acres as freshwater forested/shrub wetlands, 3.7 acres as freshwater emergent and 0.6 acres as freshwater ponds (US Fish and Wildlife Service, 2010). Figure 4-6 shows the extent of areas classified as wetlands in the planning area.

4.3.8 WILD AND SCENIC RIVERS

The Wild & Scenic Rivers Act enacted by Congress on October 2, 1968 states that certain selected rivers of the Nation which, with their immediate environments, possess outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations (U.S. Congress, 1968).

None of the nearby rivers, including the Portneuf River, Snake River, nor any of their tributaries, are listed as Wild and Scenic Rivers (National Wild and Scenic Rivers System, 2015).

4.3.9 SOLE SOURCE AQUIFER

Chubbuck and the planning area sit on the southern extent of the Eastern Snake River Plain Aquifer (ESRPA). The Snake River Aquifer is considered a sole source aquifer. Approximately 67% of the aquifer recharge occurs from infiltration of surface water

diverted from the Snake River for irrigation. Additionally much of the precipitation that falls on the Snake River Plain quickly infiltrates due to openings in the Pliocene and basaltic rocks. Water within the aquifer flows in a southwesterly direction until it is discharged from springs on the north side of American Falls Reservoir and Thousand Springs, near Twin Falls (Whitehead, 1994).

4.3.10 Air Quality and Noise

Any pump motors within the project will meet federal and state emission standards contained in the air quality state implementation plan, and will not violate national ambient air quality standards in the attainment area. The motors for the booster station and wells will be housed inside of buildings, which help to significantly reduce the amount of noise heard by surrounding neighbors. Emergency generators will also meet the minimum standard requirements for emissions and noise. The project is located in the Portneuf Valley which is considered a non-attainment area with a maintenance designation for PM_{10}. (Idaho Department of Environmental Quality, 2011).

4.3.11 Socioeconomic Profile

Based on most recent (2010) census data, about 90.7% of Chubbuck's population 25 years old and over have graduated from high school or higher (compared to 88.5% for the State overall) (US Census Bureau, 2010). The median household income in Chubbuck was $46,570 compared to the state average of $46,890. About 12.2 % of the people were below the poverty level, lower than both Idaho at 14.3% and the US average of 14.3%. Historical and projected populations are found in Section 4.2 of this report. Based on the population growth projection, the population of the City of Chubbuck is projected to be 25,048 in 2035.

4.3.12 Public Health

If no action is taken to secure the City's future potable water supply public health will be at risk during peak demand periods due to insufficient water supply and storage to reliably meet the projected peak water demands. New wells should be located outside of existing groundwater contamination zones to reduce exposure to known contaminants and reduce cost associated with water treatment. Disinfection capabilities should be included for all new water sources developed.

4.4 Cultural Resources

There are no buildings in the planning area that are listed on the National Register of Historic Places (U.S. Department of the Interior, 2015).

4.5 Land Use Planning

Zoning in the City of Chubbuck is based upon eight classifications: Single Family Residential, Dense Residential, Limited Residential, Planned Unit Development, Limited Commercial, General Commercial, Industrial, and Agricultural. Figure 4-7 illustrates zoning in Chubbuck. A majority of the City is zoned as residential. Areas of commercial use exist primarily to the south of I-86 and along Yellowstone Avenue. Industrial portions of the City are primarily confined to areas near the railroad and to the east of I-15.

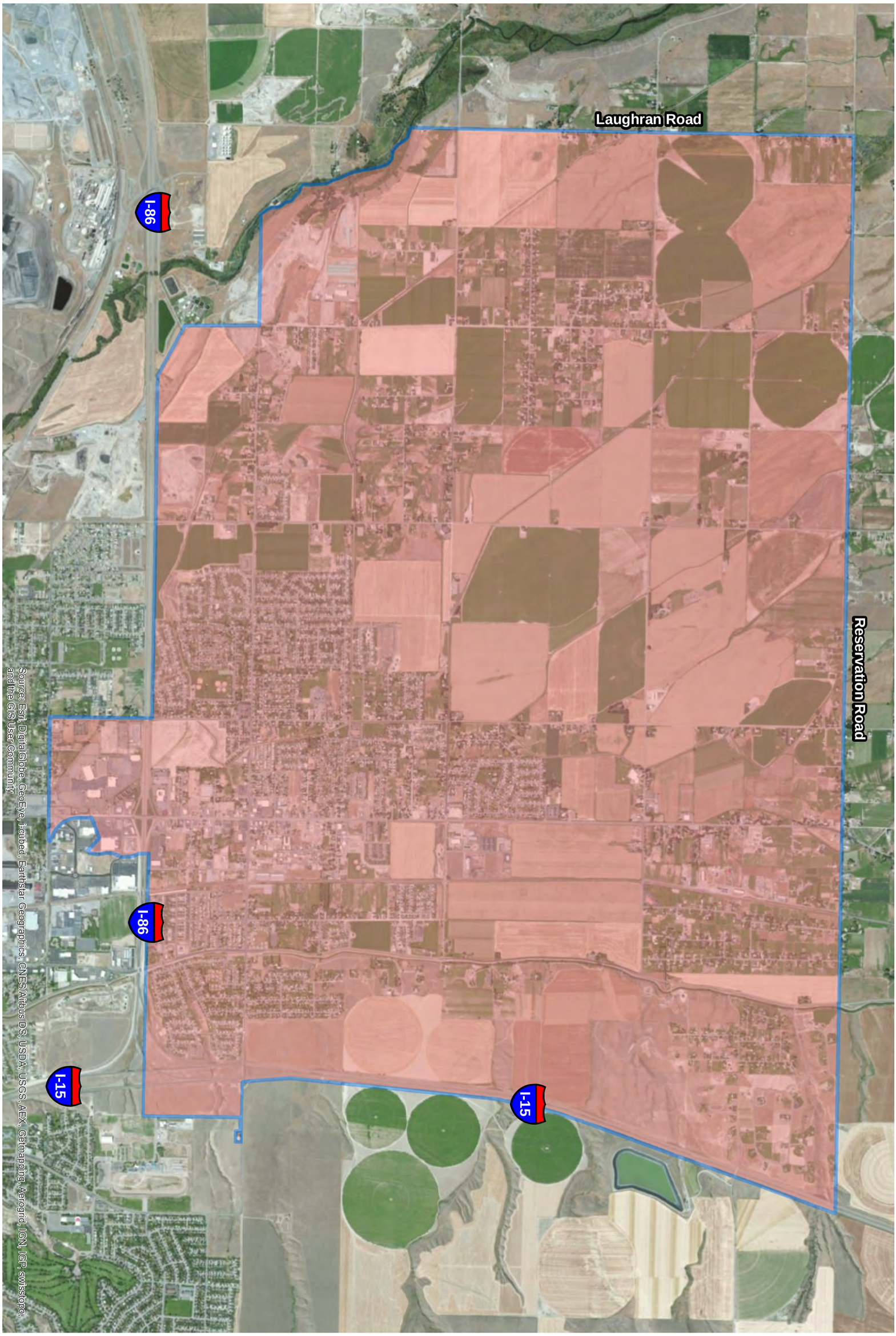

FIGURE NO. 4.2	Water Facilities Planning Study	City of Chubbuck	KELLER associates 305 N. 3rd Avenue Pocatello, ID 83201 208.238.2146 www.kellerassociates.com	PROJECT NO. 210078
	Proposed Project Planning Area			FILENAME 4.2 - PPPA.mxd

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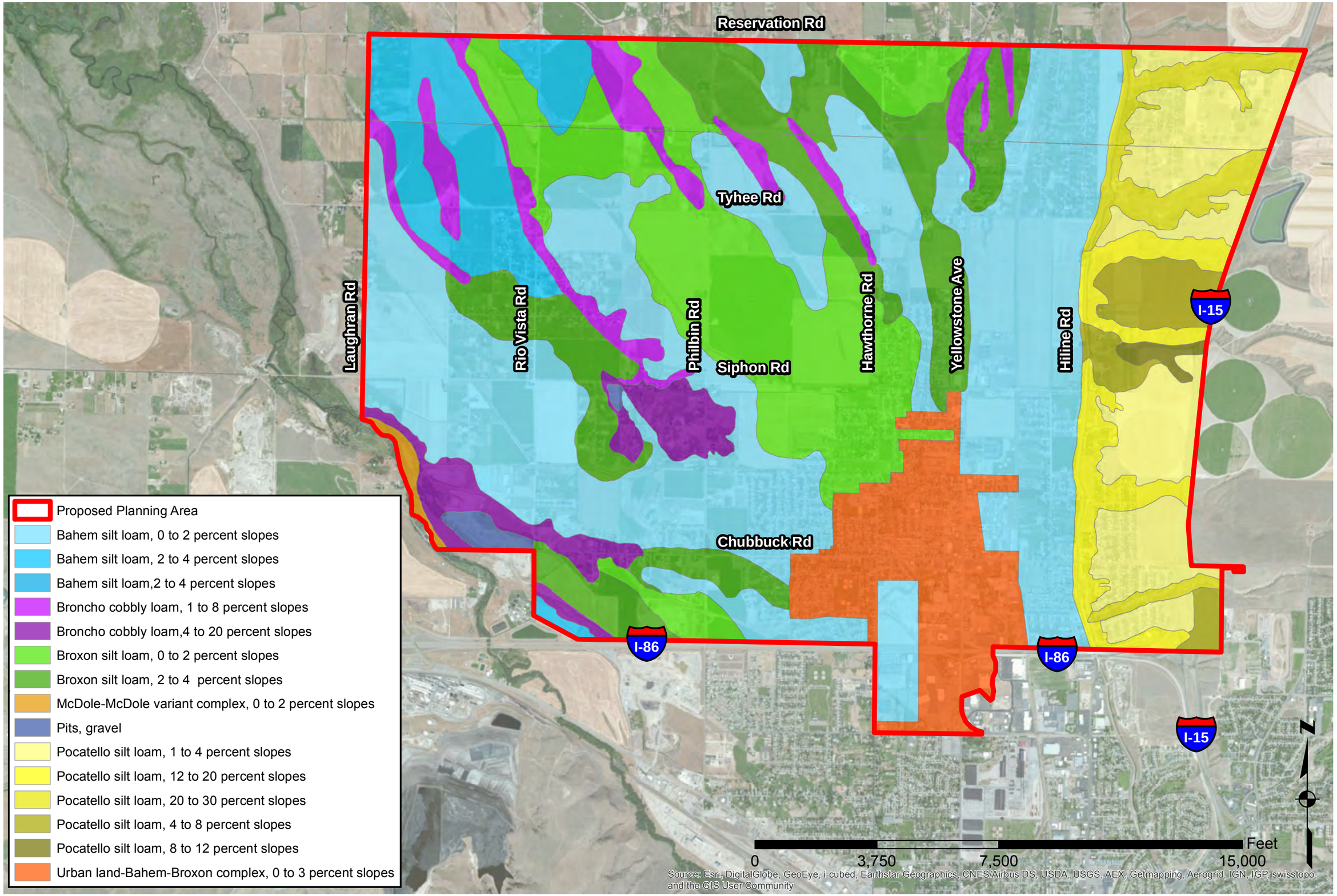

PROJECT NO. 210078

FILENAME 4.3 - Soils.mxd

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NRCS Soil Survey

FIGURE NO. 4.3

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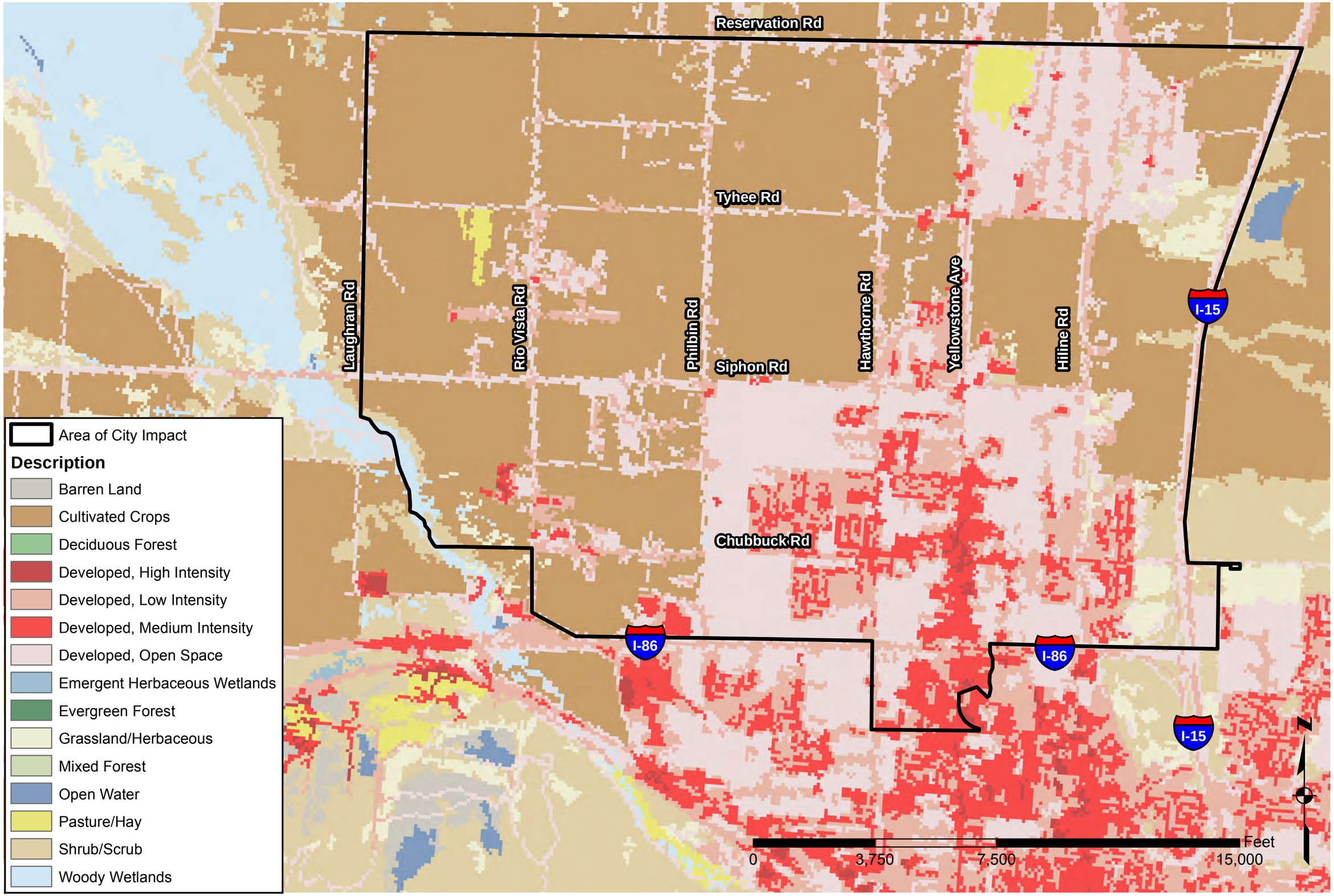

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Water Facilities Planning Study

Land Cover

FIGURE NO. 4.4

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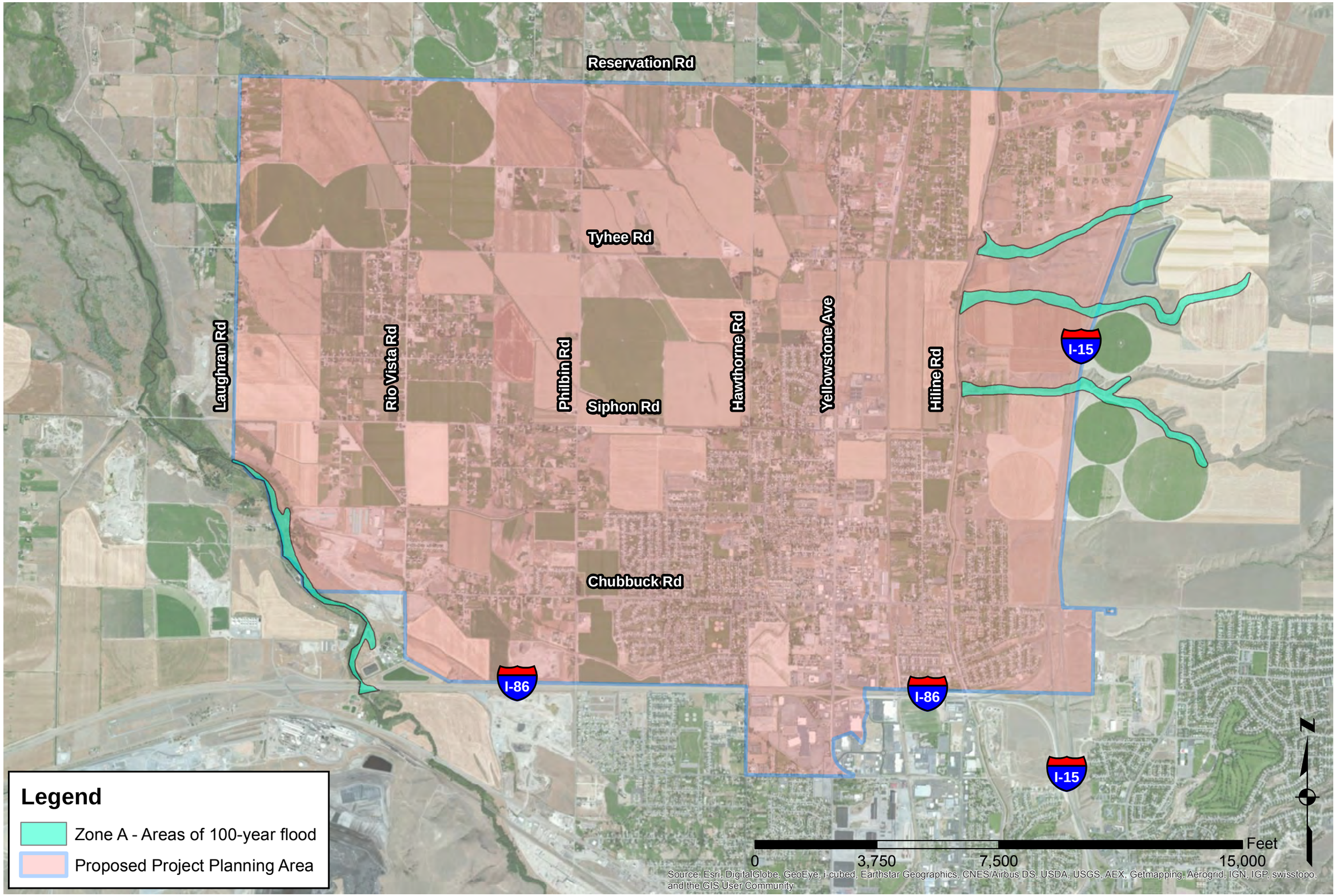

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PROJECT NO. 210078

FILENAME 4.5 - Floodplains.mxd

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Floodplains

FIGURE NO. 4.5

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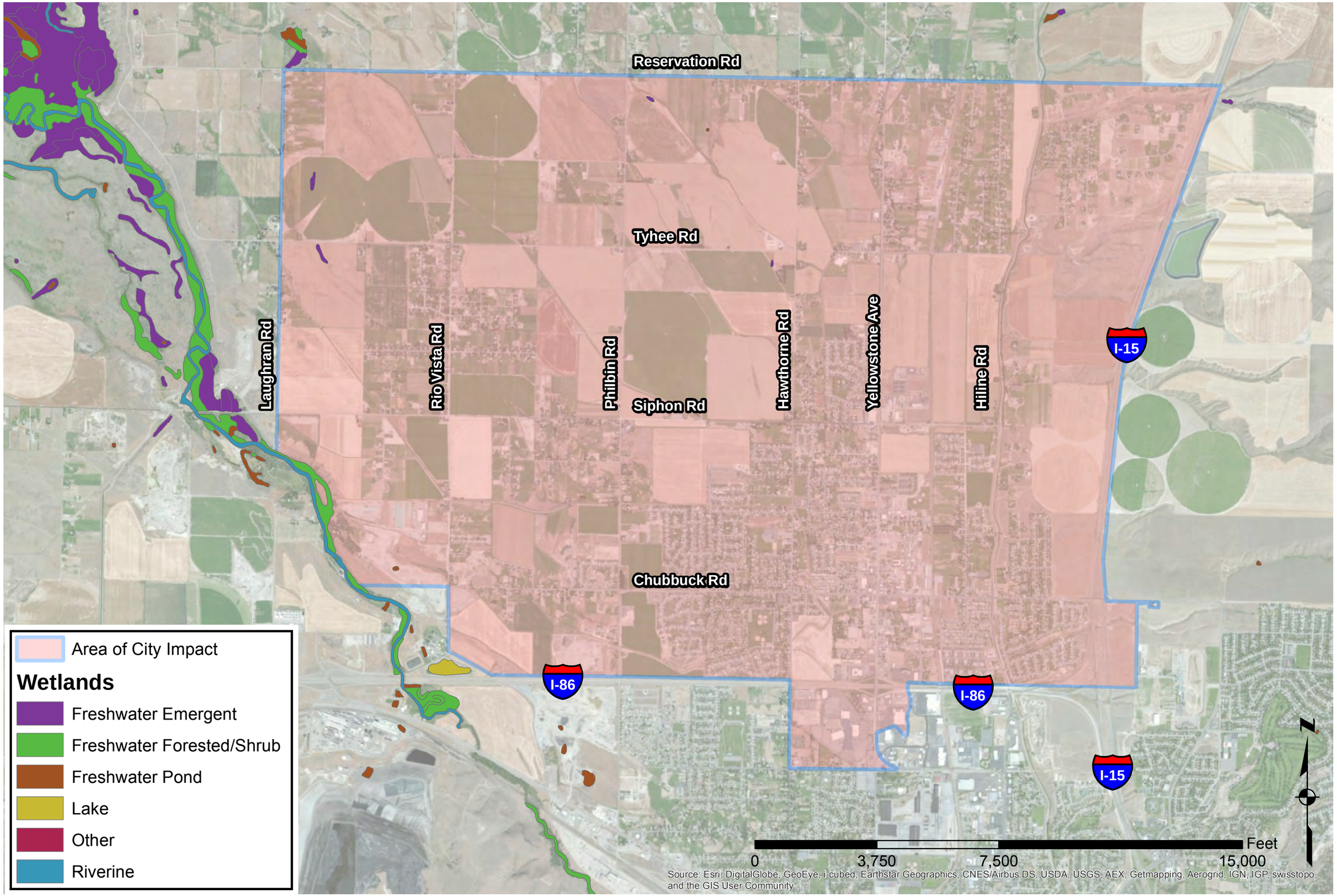

PROJECT NO. 210078

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Wetlands

FIGURE NO. 4.6

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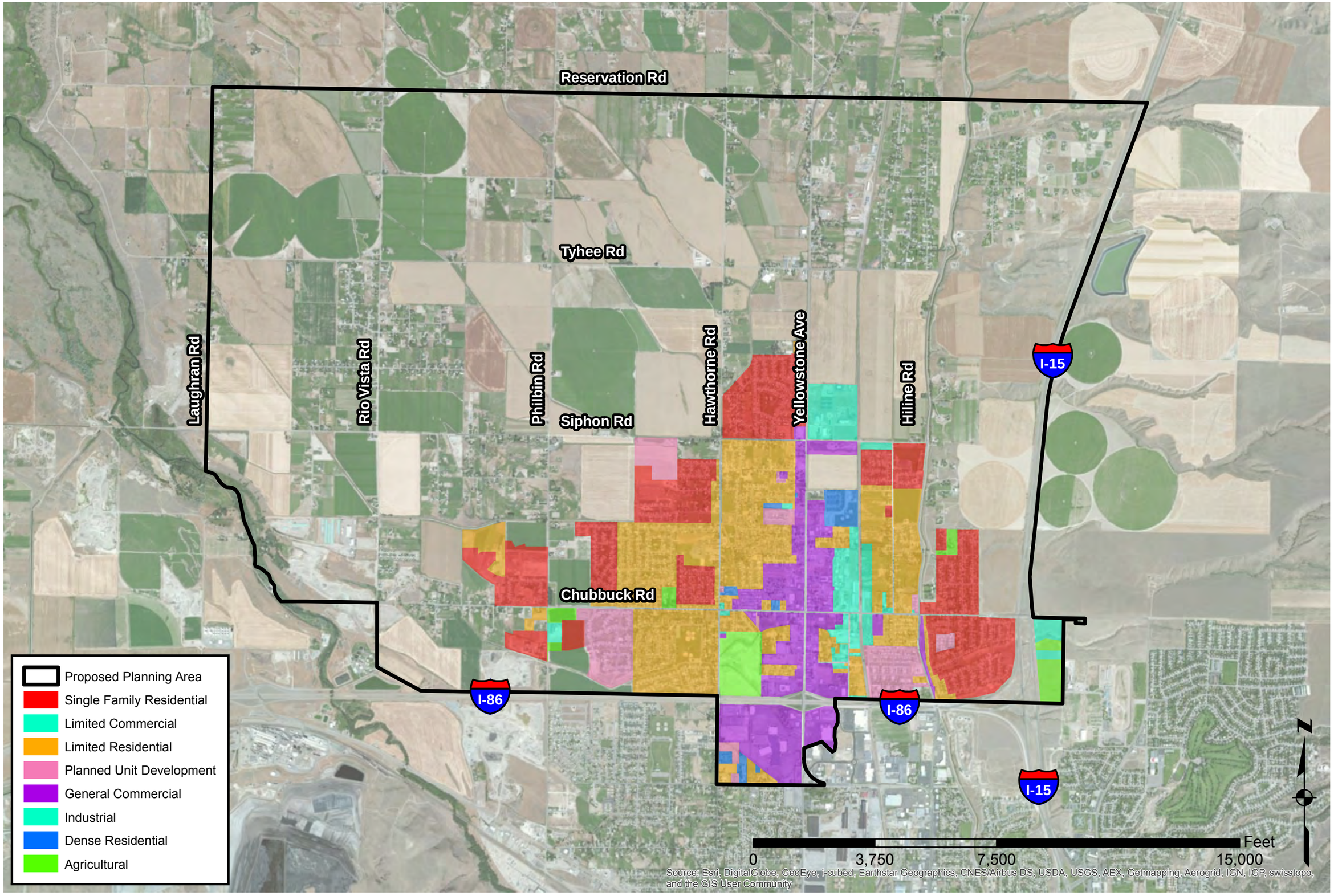

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PROJECT NO. 210078

FILENAME 4.7 - Zoning.mxd

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Zoning Map

FIGURE NO. 4.7

Chapter 5 Existing Facility Evaluation

The City of Chubbuck supplies domestic water to its residents from three active groundwater wells. Currently, there are approximately 3,972 residential, commercial, and business connections. Water connections are metered. Monthly water service rates include a minimum base charge based on meter size with up to 1-inch connections charged $20.22, a volumetric charge of $1.15 per one thousand gallons, and a billing charge of $3.78 per bill.

5.1 Water Rights

Water rights held by the City of Chubbuck are summarized in Table 5-1. Appendix B contains more information regarding these water rights.

Table 5-1 – City of Chubbuck Water Rights

Water Right	Priority	Use Dates	Rate (cfs)	Volume (AFA)
29-2385	1/11/1957	1/1 - 12/31	0.78	564.7
29-2413	6/25/1959	1/1 - 12/32	1.10	796.36
29-2469	3/1/1963	1/1 - 12/33	1.11	803.6
29-7624	12/14/1981	1/1 - 12/34	4.96	3590.88
29-8229	4/5/1999	1/1 - 12/35	1.74	1259.7
29-8188	12/16/1996	1/1 - 12/36	6.70	4850.58
29-8230	4/5/1999	1/1 - 12/37	2.21	1599.97
29-14016	1/17/1966	4/15 - 10/15	1.89	449.2
29-14012	8/19/1952	4/1 - 10/31	1.83	488.8
29-14013	8/19/1952	4/1 - 10/31	2.25	651.2
29-14054	12/31/1974	4/1 - 10/31	1.47	491.6
29-14055	6/20/1961	4/1 - 10/31	0.13	26.4
29-14056	10/26/1966	4/1 - 10/31	0.09	18.8
29-14058	8/19/1952	4/1 - 10/31	0.05	16
29-14080	12/31/1974	4/1 - 10/31	0.266	87.6
29-14081	6/20/1961	4/1 - 10/31	0.025	4.4
29-14082	11/29/1971	4/1 - 10/31	0.018	3.6
29-14096	11/29/1971	4/1 - 10/31	0.21	83.2
29-14097	11/29/1971	4/1 - 10/31	0.02	8.8
29-14099	5/2/1966	4/1 - 10/31	2.52	462
29-14106	8/18/1953	4/1 - 10/31	0.93	486.4
29-14107	12/3/1980	4/1 - 10/31	0.61	121.6
		Totals	30.909	16,565.39

The City currently holds a total of 30.909 cfs (13,873 gpm) of usable water rights for the water system. The City recently purchased 12.3 cfs (5,525 gpm) of water rights that have use dates from April to October for use during the irrigation season. Of the total water rights 18.6 cfs (8,348 gpm) are usable year round. Water right transfers have consolidated all of these rights for diversion from any of the City's five existing well locations and for point of use defined as the City's water service area.

5.2 WATER QUALITY & SUPPLY

Capacity of a water supply is a function of the characteristics of the available water source and the water rights held by the water user. Water withdrawal from the source is governed by the quantity of available water or the limits placed upon the user by the associated water right. Under Idaho water law, a water right must be put to beneficial use; if the water is not put to beneficial use, part or all of the right can be lost.

The City of Chubbuck domestic water supply comes from three actively used groundwater wells located within the City. The City owns two additional wells which are not currently used. All of the wells draw water from what appears to be the confluence of the Eastern Snake River Plain Aquifer and Lower Portneuf River Valley Aquifer. It is understood that the Eastern Snake River Plain Aquifer flows generally south through the northern edge of Portneuf River Valley Aquifer before following the terrain and heading southwest which reportedly influences the groundwater elevations in Chubbuck. The Portneuf River Valley Aquifer extends from the northern reaches of Chubbuck, south to the Portneuf Gap. This aquifer is the only identifiable water source with direct influences from the Eastern Snake River Plain Aquifer for the City of Chubbuck. The Portneuf River Valley Aquifer obtains most of its recharge from the Mink Creek and Gibson Jack Creek drainage basins, while the remainder comes from inflow through the Portneuf Gap from the Upper Portneuf Valley Aquifer. The average through-flow water of the Portneuf River Valley Aquifer is more than 5 billion gallons per year. The total pumping withdrawal is about 6.2 billion gallons per year according to the Idaho Geologic Survey. It has been estimated that a total withdrawal of 7.5 billion gallons per year could occur without affecting the long-term storage of the aquifer. Figure 5.1 shows the aquifer water balance in the Lower Portneuf Aquifer.

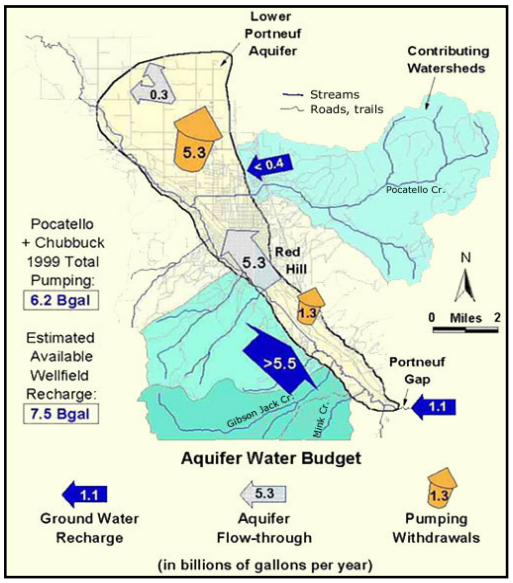


Figure 5-1 – Lower Portneuf Aquifer Water Balance

5.2.1 WELL NO. 1

Well Number 1 is located in Bistline Park east of Hiline Road on East Chubbuck Road. Drilled in March 1956, it has a total depth of 305 feet with 12-inch casing to 150 ft below ground surface followed by 10-inch casing to 234 feet below ground surface. Static water level was 90 feet in 1992. The well was originally operated by an 8-inch turbine pump with a 30-hp motor. During the rehabilitation of the pump in 1992, the pump was replaced with a 10-inch turbine pump. Well No.1 operated full time until January 2003. At that time, the introduction of the Bench Booster Pump Station took place. Because Well No.1 serves the same pressure zone as the booster pump station, the increased pressure created by the booster pump station caused Well No.1 to run continually without pumping, being unable to overcome the higher pressure. The use of Well No.1 was discontinued. It was not removed from the system, instead it has been designated as a redundant, back-up water source for that pressure zone. Well No. 1 is shown in Figure 5-2.

Figure 5-2 – Well No. 1

Arsenic was detected in Well No. 1 in 1998 and 1999 at levels of 8 ppb and 10 ppb. A Maximum Contaminant Level (MCL) of 10 ppb was established in 2006. Nitrate has also been detected in Well No. 1 with levels of 3.45 ppm in 1999 and 2.1 ppm in 2002. The MCL for nitrate is 10 ppm.

5.2.2 WELL NO. 2

Well Number 2 is located in Stuart Park along Hawthorne Road. The well has a total depth of 255 feet. In 1996 use of Well No. 2 was discontinued and the well was effectively disconnected from the water system due to tetrachloroethylene (also known as perchloroethylene, PERC) levels greater than the MCL. Recent water quality testing at this well has shown decreasing PERC levels, including samples below the MCL. This indicates that rehabilitation of the well to restore to production could be a possibility. Figure 5-3 shows Well No. 2. Treatment for PERC could be implemented at this well using an air stripping tower similar to Well No. 4 if the levels return to greater than the MCL. This alternative has been considered previously (Keller Associates, 2007) and will be

Figure 5-3 – Well No. 2

further addressed in subsequent sections.

5.2.3 WELL NO. 3

Well Number 3 is located in an older residential neighborhood on Lariat Lane off of Hawthorne Road north of Siphon Road. Drilled in December 1962, Well No. 3 is operated by a turbine pump with a 200-hp motor. The well was recently pulled and the pump rehabilitated, new impellers and a new casing installed. The peak volume pumped by Well No. 3 during a 24-hour period was 1.6 million gallons. Figure 5-4 shows Well 3.

Figure 5-4 – Well No. 3

Testing of Well No. 3 has detected arsenic, barium, chromium, fluoride, nitrate, selenium and perchloroethylene at levels below the respective MCLs. No health hazard is currently identified for Well No. 3 from these contaminants.

5.2.4 WELL NO. 4

Well 4 is situated at the intersection of West Chubbuck Road and Independence Avenue. Drilled in June 1984, the well is operated by a turbine pump with a 125-hp motor. The peak volume pumped by Well No.4 during a 24-hour period was 3.3 million gallons which equates to an average of 2,295 gpm. The Well was modified in 1994 adding the Aeration Tower, as seen in the adjacent Figure 5-5, for treatment of perchloroethylene (PERC). Following the aeration tower the water is boosted into the distribution system with a 325-hp close coupled vertical turbine pump. The well is equipped with liquid chlorine injection for disinfection. Installation of an emergency generator was completed in early 2012.

Figure 5-5 – Well No. 4

Testing at Well No. 4 has revealed arsenic, barium, chromium, nitrate, selenium, and perchloroethylene (PERC) at levels below the respective MCLs. Treatment is occurring for PERC and levels are well below the MCL following treatment.

5.2.5 WELL NO. 5

Well Number 5 is located on Hawthorne Road north of Quinn Road on the south side of the City of Chubbuck in a newer medium to high-density residential development. Drilled in April 1996 the well is operated by a turbine pump with a 500-hp motor. The peak volume pumped by Well No. 5 during a 24-hour period was 5.0 million gallons, which equates to an average of 3,500 gpm. The well was recently equipped with an emergency generator and has a liquid chlorine disinfection system. Figure 5-6 depicts Well No. 5.

Figure 5-6 – Well No. 5

Water quality tests at Well No. 5 have detected arsenic, barium, nitrate, selenium and perchloroethylene at levels below the respective MCLs.

5.2.6 WELL SUMMARY

Well characteristics are summarized in Table 5-2 and locations are shown at the end of this chapter in Figure 5-16.

Table 5-2 – Well Summary

	Well No.1	Well No. 2	Well No.3	Well No.4	Well No.5
Average Production (gpm)	340		1,620	2,295	3,500
Surface Elevation (Elev.)	4,505		4,480	4,470	4,470
Depth of Well (Elev.)	4,210 ft		4,224 ft	4,063 ft	4,008 ft
Pump Tested (gpm)/Hours	450/Unkn.		3,000/8	4,200/36	2,200/27
Drawdown (at test pump)	8 ft		30 ft	4 ft	28 ft
Static Water Level (Elev.)	4,416 ft		4,399.5 ft	4,391 ft	4,401.5 ft
Status	Backup	Unused	Production	Production	Production

The three currently active wells in the City of Chubbuck provide a combined 7,415 gpm of water production capacity. The City currently holds water rights providing for diversion of 8,348 gpm year round. An additional 5,525 gpm of water rights are available from April to October for a total of 13,873 gpm duri`ng the summer months.

The Groundwater Source Redundancy Rule found in the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08.501.17) requires that the system be able to supply the maximum day demand with any groundwater source out of service. Therefore, when comparing the supply against the demand, the system's firm capacity is considered. Table 5.3 summarizes the reported pumping capacity of each well and the system's total firm capacity.

Table 5-3 – City of Chubbuck Water Supply

Source	Pumping Capacity (gpm)
Well 3	1,620
Well 4	2,295
Well 5	3,500
Total Pumping Capacity	*7,415*
Less Largest Source	3,500
Total Firm Supply	*3,915*

5.2.7 WATER QUALITY SUMMARY

Keller Associates prepared a Water Source Evaluation and Preliminary Design (Keller Associates, 2007) and Water Source Addendum (Keller Associates, 2008) for the City of Chubbuck. These documents were prepared to evaluate the water supply available to the City of Chubbuck to determine the best available location within the water system for the development of new water sources. In the preparation of these documents, Keller Associates consulted with Dr. Tom Wood, PhD. of Clearwater Geosciences to identify and prioritize several sites for potential well installation.

The source water assessment discusses several known contaminant plumes present in the Eastern Snake River Plain Aquifer (ESRPA) and Portneuf Valley Aquifer which have significant impact on the existing and potential water sources for the City of Chubbuck. The ESRPA flows generally south southwest mostly parallel to the Snake River. The Portneuf Valley Aquifer flows to the northwest. The City of Chubbuck lies approximately at the confluence of these two groundwater flows.

Perchloroethylene (PERC, PCE) is a dissolved industrial solvent which has been detected in Well No. 2 and Well No. 4. As discussed previously, Well No. 2 was removed from service and Well No. 4 was equipped with an aeration tower for treatment as a result of the presence of this contaminant. The PERC plume is of unknown origin.

Ethylene Dibromide (EDB) is a pesticide that was used and likely discharged on the ground surface near Fort Hall. A contaminant plume of ethylene dibromide has been detected in the groundwater flow of the ESRPA and potentially impacts the northern boundary of Chubbuck. The general area where this material has been detected is depicted in Figure 5-7 below.

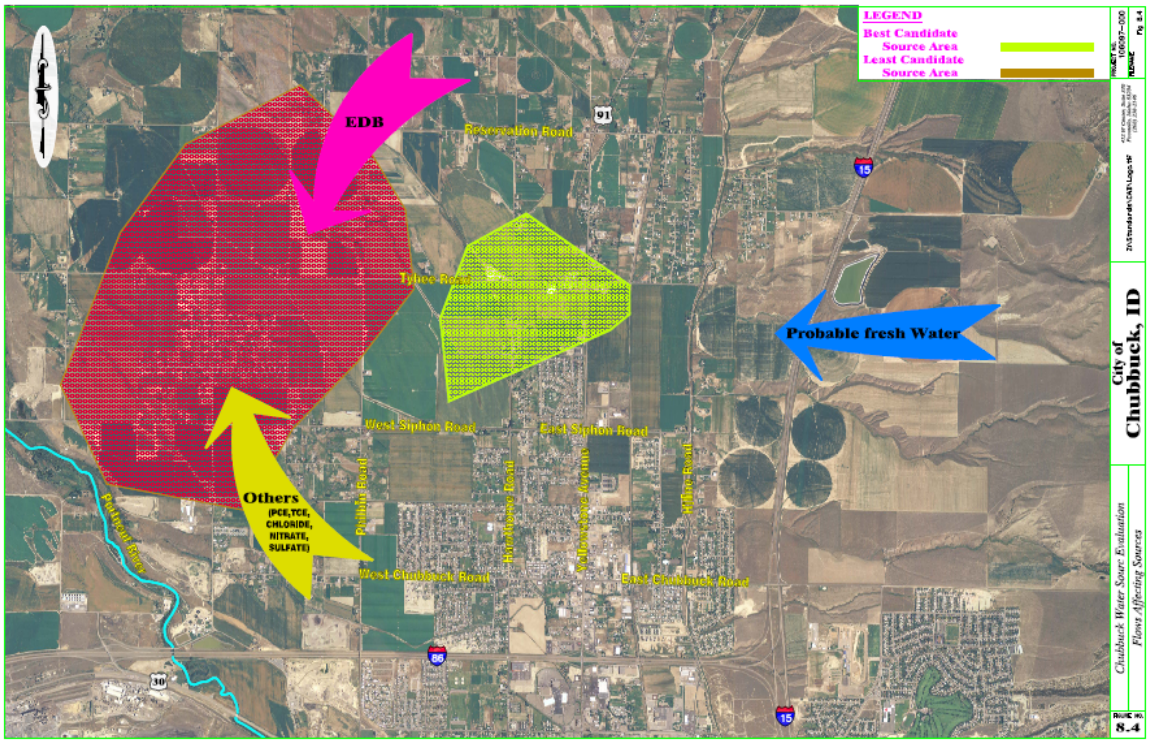


Figure 5-7 – Water Quality Map

The conclusions of the Water Source Evaluation included recommendations for potential productive locations for new well construction with minimized risk of contamination. The best choice locations include areas generally on the north side of the City of Chubbuck.

5.2.8 WATER STORAGE

Figure 5-8 – Storage Tank Field Looking East

The storage system consists of three potable water storage tanks, which can be seen in Figure 5-8. The tank field is situated east of Interstate 15 on East Chubbuck Road. Two of the storage tanks are above ground welded steel tanks and the other a partially buried concrete storage tank. Figure 5-9 shows a schematic of the interconnectivity of the storage tanks and the main distribution line into the system. The total volume of the storage tanks is 1,625,000 gallons. All three tanks are hydraulically connected to one another and to the distribution system. Isolation valves are available to remove individual tanks from the system for maintenance and repair.

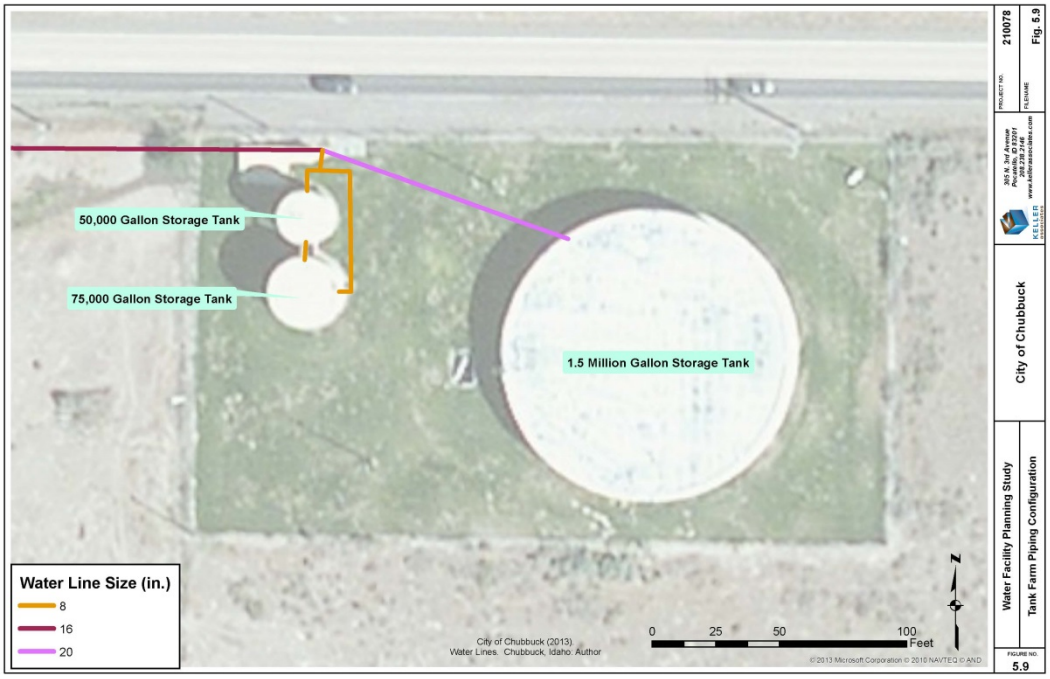


Figure 5-9 – Storage Tank Farm Configuration

The first of the welded steel tanks was constructed around 1949 and is 24 ft. high with a diameter of 20 ft., having a capacity of 50,000 gallons. The second welded steel tank was constructed around 1960 and is 24 ft. high with a diameter of 27 ft., having a capacity of 75,000 gallons. Both steel storage tanks are located on the south side of East Chubbuck Road and are in relatively good condition. These tanks can be seen in the foreground of Figure 5-8.

The concrete storage tank is a partially buried pre-stressed concrete tank that was constructed in 1977. The tank is 110 ft. in diameter and 22 ft. inside height with a capacity of 1.5 million gallons. The concrete storage tank is located just east of the above two steel tanks adjacent to East Chubbuck Road. In 2005 the City of Chubbuck undertook a rehabilitation of the concrete tank which included the installation of a concrete curb around the perimeter of the tank which allows for wall movement independent of the roof slab. The curb included drain openings to prevent water accumulation on the roof. The roof was sealed with a waterproof coating. The interior floor of the tank was sealed and the exterior surface repainted.

5.2.9 TRANSMISSION LINE

The water storage reservoirs are connected to the distribution system via a 16-inch transmission line along Chubbuck Road. The Bench Booster Station connects from a 16-inch line to a 24-inch line and extends further west along Chubbuck Road to Hiline Road where it begins to branch out into the water system.

A problematic situation occurs when the system is being fed only by gravity, i.e. reservoir level above well turn-on set point, and system demand exceeds 5,800 gpm.

This occurs when the morning demand peak rises above 5,800 gpm prior to the reservoir pool level dropping to the well turn-on set point. In this instance, inlet pressure at the Bench Booster Station can drop below 20 psi. This issue was evaluated by Keller Associates in 2003 and a Technical Memorandum was submitted to the City on August 12, 2003. Possible solutions recommended include SCADA logic adjustment to operate one well closer to the reservoir full pool elevation, SCADA logic "double confirmation" with a flow meter in the 16-inch transmission line, or installation of a new 24-inch parallel transmission line from the Bench Booster Station to the Tank Farm.

5.2.10 DISTRIBUTION SYSTEM

The potable water distribution system in the City of Chubbuck consists of two main pressure zones, the main pressure zone and the bench pressure zone. A booster station, located west of Interstate 15 and south of Chubbuck Road on Stars Road supplies the area east of Hiline Road and north of Interstate 86. The main or lower pressure zone serves the majority of the city with typical pressures from 80 to 85 psi.

The City's distribution system is fed by a main transmission line from the tank site along East Chubbuck Road into the distribution network. This main line is 16-inches in diameter with a 2,600 linear foot stretch of 24 inch main line from Interstate 15 to Hiline Road. The water is distributed in a closed loop or redundant fashion to maintain adequate water service to each area serviced. Major redundant loops generally occur on the half-mile interval west of Hiline Road from the main 16-inch line in Chubbuck Road. These loops connect at Whitaker Road, Yellowstone Avenue, and Hawthorne Road; they tend north to Siphon Road then connect into the adjacent loop west through Hawthorne Road. To the south of Chubbuck Road, major loops run along Burley Drive, Yellowstone Avenue, and Hawthorne Road and continue across the Interstate 86 into the commercial districts of the City and adjoin on Quinn Road. This redundant looping divides the City into sub-quadrants which delivers water into secondary lines and finally service lines. There are few isolated dead end lines.

The bench pressure zone is isolated from the main pressure zone and is supplied by the bench booster station located at the intersection of Stars Road and Revolution Road. The booster pump station was completed in 2003 with CMU construction and contains three pumps, one jockey pump and two larger main pumps. The station has a Caterpillar emergency generator. The station maintains a target outlet pressure of 62 psi. The booster station draws from the waterline on Chubbuck Road which connects the water tanks to the main distribution zone. Pressures in this zone are typically between 58 and 100 psi.

In 2001 the Bench Booster Station was designed with a firm pumping capacity of 2,000 gpm to accommodate peak demand periods. The station has a total capacity of 2,900 gpm, but when the station is pumping over 2,000 gpm there is no pumping redundancy and inefficiencies increase due to headloss in the piping. SCADA information from the summer of 2012 indicates that the station operates near 2,000 gpm during peak hour demands with flows and pressures fluctuating greatly at this flow rate. The SCADA information shows discharge pressures ranging from 27 to 64 psi during high demand

periods. The flows fluctuate over 800 gallons from minute to minute. This information indicates the station has likely reached its maximum pumping capacity and the booster station will need some improvements or an additional booster station in the upper pressure zone prior to additional growth.

There are two locations where the water main crosses the Union Pacific Rail Road (UPRR). The locations are on Siphon Road and Chubbuck Road between Hiline and Whittaker. Both water lines are 16-inch or a combination of the water lines to equal the flow characteristics of a 16-inch water pipe. Temporary removal of either water line from the system would not cause dramatic pressure and flow restrictions when water supply wells are operational. However, when the water supply wells are not operating, high water flow occurs in either of the open pipe lines causing pressure fluctuations at the system extremities. Installing an additional water line under the UPRR would increase system redundancy and reduce the potential for such pressure fluctuations. A summary of piping within the Chubbuck water system is shown in Table 5-4 and Figure 5.17 at the end of the chapter.

Table 5-4 – Chubbuck Water System Pipe Inventory

Pipe Diameter (in.)	Length (feet)	% of Total
Less than 4	524	0.1%
4	7,794	2.1%
6	207,199	55.1%
8	67,280	17.9%
10	25,367	6.7%
12	35,751	9.5%
14	2,743	0.7%
16	26,573	7.1%
24	2,890	0.8%
Total Length	**376,121**	**100%**

5.2.11 OPERATIONS

City government within Chubbuck consists of an elected mayor and four council members. The City Water Department is headed by Bryan Hall and is part of the Public Works Department. Rodney Burch is the Public Works Director. The water system Responsible in Charge (RIC) operator is Kurt Eldredge who holds a Water Distribution Class 3 license. Cameron Lusk is the substitute RIC who holds a Drinking Water Distribution Class 3 license.

All well pumps in the water system are operated based upon the storage reservoir level. The bench booster station operates based on local system pressure in the bench pressure zone and is set to maintain approximately 62 psi at the booster station outlet.

All of the active wells, the tank farm and the bench booster station have SCADA communication equipment which relays system information to a computer located at City Hall. Operators can view system operation and modify system set points from this location.

The City requires backflow preventers on all connections to help prevent the risk of contaminating the water system.

5.3 HYDRAULIC EVALUATION

Water demand varies by season, day, and the time of day, where the greatest water consumption occurs during the summer months, generally in the morning hours, and the lowest consumption occurs in the winter. Demand scenarios must be established to accurately estimate water system demands. Maximum Day Demand (MDD) is the greatest demand on the water system in a single day during a year and is used for system design and evaluation. Peak Hour Demand (PHD) is the highest demand hour of the maximum day and Average Day Demand (ADD) must be considered in water system design. Average Day Demand and Maximum Day Demand have been calculated from well records maintained by the City. The MDD is calculated from well production data to be 2.23 times the ADD. PHD in the summertime appears to be around 2.1 times greater than MDD based on SCADA data.

5.3.1 WATER CONSUMPTION AND PRODUCTION

The City of Chubbuck meters all water services. Water demand in the winter months is generally a function of indoor uses that are controlled by the end user. Summer demand includes indoor uses plus the outdoor uses including landscape irrigation. Water usage as calculated from well pumping data is approximate since it does not account for potential water leaks in the system.

Annual water production data for 1990 through 2012 was reviewed and is presented in Figure 5-10. Water production in 2012 totaled 1.06 billion gallons, which is more than has ever been pumped in the City. Water production records indicate that from 2000 to 2010 there was a 52% increase in water production with a population increase of 44% over the same period.

Per capita water use was 193 gpcd in 1990, 175 gpcd in 2000, and 205 gpcd in 2012. The per capita water use is significantly influenced by the climate in each individual year.

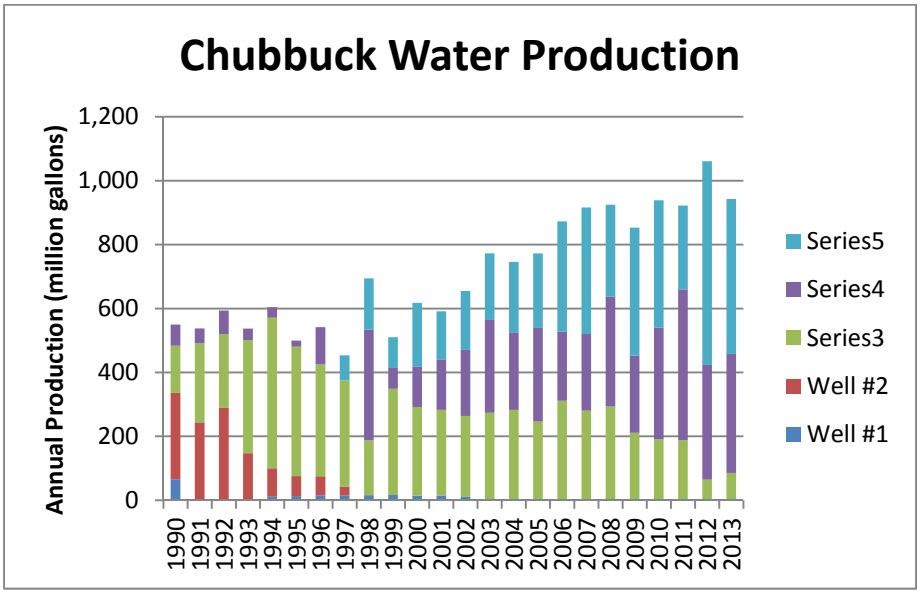


Figure 5-10 – Water Production from 1990-2013

5.3.2 CURRENT WATER DEMANDS

Maximum Day Demand occurs in July or August as exemplified in Figure 5.11 (typically during a hot and dry period). All gpcd numbers for 2012 data are based on an estimated population of 14,166. In 2012 the MDD (by well production) occurred on July 25th and was 6,472,000 gallons (428 gpcd). Average Day Demand in 2012 was approximately 2,906,000 gallons per day (205 gpcd). Average water usage in the United States is 157 gpcd and 203 gpcd in Idaho (Maupin, 2014). Bannock County average water withdrawals for domestic use are 233 gpcd ((US Geological Survey, 2015) Public water usage in Chubbuck is reasonably close to the national average and significantly lower than the State of Idaho average. The current Chubbuck average of 205 gpcd is lower than the 216 gpcd reported in the 2004 Water Facilities Planning Study (Keller Associates, 2004).

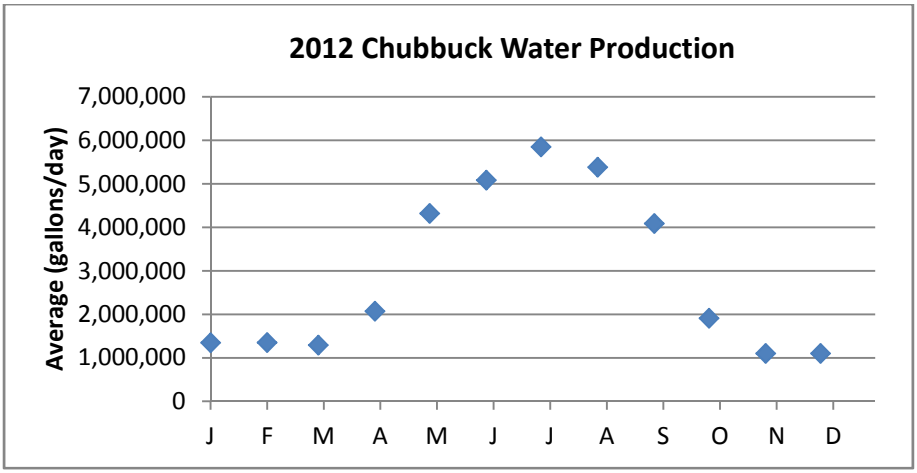


Figure 5-11 – 2012 Water Production

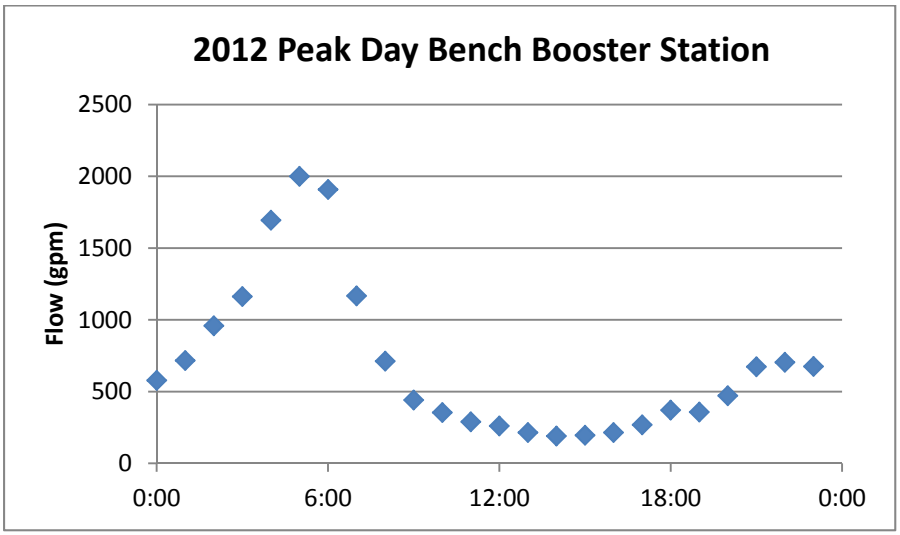


Figure 5-12 – 2012 Peak Day Demand Curve – Bench Booster Station

Figure 5.12 shows the peak day demand curve at the Bench Booster Station for August 1, 2012. Of note is the high peak occurring around 5:30 am at approximately 2,000 gpm with the average for the maximum day being 671 gpm. This curve is very similar in shape to the peak day demand curve for the entire system shown in Figure 5.13 for July 25, 2012. It should be noted that in 2011 an average maximum day demand of 4,612 gpm was recorded for July 27.

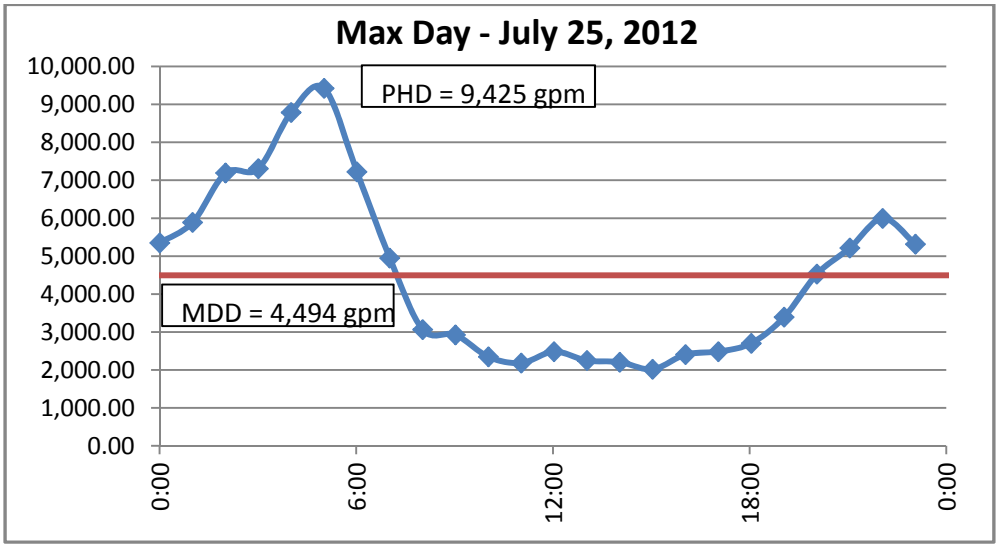


Figure 5-13 – 2012 Peak Day Demand Curve – Chubbuck Water System

Assessing winter demand is considered to be a more accurate evaluation of water usage because the variability associated with irrigation and outside uses are minimized.

Average winter day demand is generally accepted to be 100 gpcd. Chubbuck winter demand in February 2012 was approximately 98 gpcd.

Water system operators report that the peak demand seems to be highest in the mornings of Monday, Wednesday and Friday, and high but not quite as much so in the other weekday mornings. This observation is confirmed by data recorded by the SCADA system, the week of July 29, 2012 is shown in Figure 5-14. The early morning demand peaks are believed to result primarily from sprinkler systems for landscape irrigation.

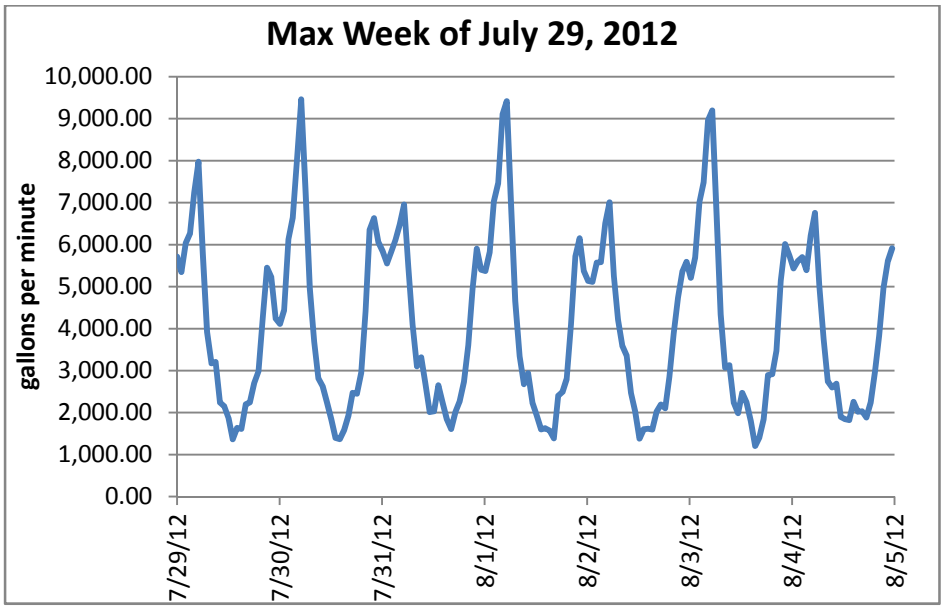


Figure 5-14 – System Demand Pattern for Week of July 29, 2012

Consideration of winter demand is useful to differentiate the component of water demand attributable to household use from outdoor uses. In Figure 5-15 below a comparison is presented of a typical winter day and the peak summer day of 2012. The average winter day demand is 948 gallons per minute with higher demand evident at 7 to 8 am, 11am to 1 pm, and 4 to 7 pm. These times correspond with typical periods of higher domestic activity. Peak summer demand is nearly five times the typical winter demand with much larger peaks as discussed previously.

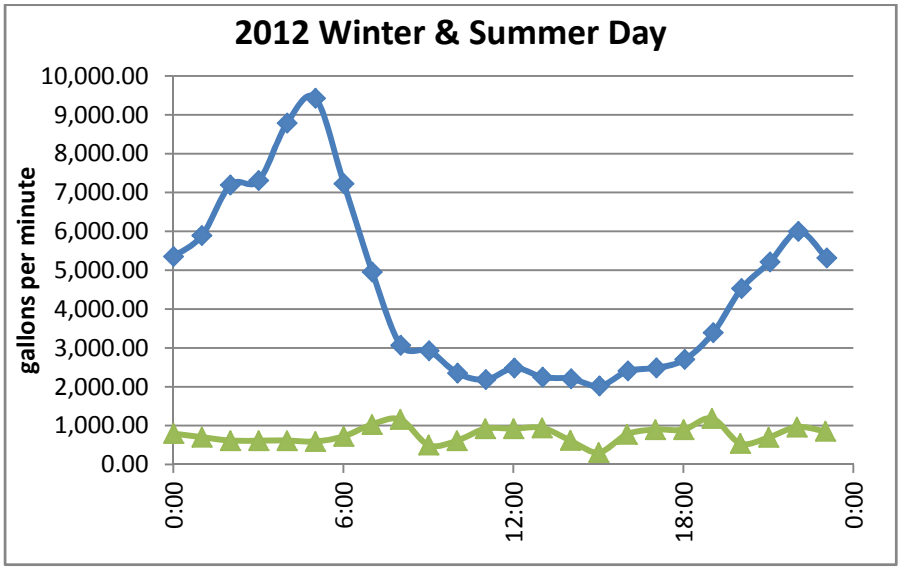


Figure 5-15 – Winter & Summer Day

5.3.3 FIRE FLOW CONDITIONS

A computer model of Chubbuck's distribution system was created in conjunction with this Facilities Planning Study. The model was created with Bentley's WaterCAD v8i to aid in the evaluation of the distribution and transmission system in its present and future states. The hydraulic model of the water system was created from the existing mapping, and field investigations.

Keller Associates collaborated with City staff in calibration efforts which included collecting data on a series of coordinated pressures and flows at strategic points throughout the City's system. The calibration points in the system are shown in Figure 1 of Appendix C and in Table 5-5. Using the field data, the computer model was calibrated to simulate field conditions. This iterative process resulted in more realistic model results used in the planning and evaluation process. Additional calibration information can be found in Appendix C .

Table 5-5 – Fire Flow Field Tests, September 2011[9]

Hydrant Location	Duration (min:sec)	Flow (gpm)	Residual Pressure (psi)	Pressure Hydrants	Static Pressure (psi)	Residual Pressure (psi)
South End – Independence Ave.	3:32	1,322	62	Chubbuck Rd. & Galena Ave.	92	87
				4583 Independence	91	80
Lariat Ln. & Sorrel St.	4:01	1,394	69	Chubbuck Rd. & Galena Ave.	92	87
				5656 Sorrel St.	87	81
Lucky Ave.	4:25	1,384	68	Chubbuck Rd. & Galena Ave.	90	87
				James Ave. & Henry Ave.	90	84
Pheasant Ridge Dr. & Eagle Dr.	5:03	1,454	75	Chubbuck Rd.	89	86
				Pheasant Ridge Dr. & Whitaker Rd.	91	84
South End – Canterbury St.	5:24	1,343	64	Chubbuck Rd.	92	92
				Taylor Rd.	91	78
Washburn St.& Leatherman St.	5:57	1,394	69	Brundage St. & Mountain Park Rd.	75	74
				Washburn St. & Teewinot St.	76	70

This calibrated computer model of the water system can continue to serve as a valuable and cost-effective system planning and management tool for the City. It is recommended that the City update the model every one to three years to reflect changes in the physical attributes and usage patterns of the water system.

5.3.4 System Evaluation and Results

With the calibrated model, the current distribution system has been evaluated for compliance with the pressure and flow standards presented in Section 3.3 of this report. The following sections summarize the analysis results.

Maximum Day Demand plus Fire Demands: The model was populated with fire flow demands for areas with specific requirements identified by the ISRB or by the local fire authority. These specific requirements can be found in Appendix C . For areas zoned commercial/industrial, a minimum fire flow of 3,500 gpm at 20 psi was used as the design criteria. For all other areas, 1,500 gpm at 20 psi was selected as the default minimum for the model evaluation. Service lines or dead end lines without hydrants or within 300 ft. of another node capable of providing fire flow were eliminated from the fire flow evaluation.

[9] Fire flow testing performed by Keller Associates, Inc.

Under maximum day demands with the largest pump offline (Well No. 5), and the fire flow requirements stated, the system was tested with the criterion of pressures not dropping below 25 psi at nodes of concern. The lower limit of 25 psi was used in the model to account for small variations between the model and physical system. The water model evaluates each node individually under maximum day demands with the specific fire flow requirement for that node, while considering pressures at other nodes in the same zone. The analysis is steady state and assumes adequate fire storage is provided to support the design durations. Figure 7-9 in Chapter 7 highlights the modeled nodes in the water system that do not meet Maximum Day Demand plus fire flow requirements. Appendix D contains the detailed model results report for this and all other model evaluations discussed in this section. Section 7.6.1 discusses potential capital improvements to improve fire flow in these areas.

Peak Hour Demand: The system was also modeled under peak hour demands to check for pressures in the system dropping below 40 psi. Model results indicate that with all 3 wells and the tank online that all of the distribution system nodes are above 80 psi.

Maximum System Pressures: Because potable demands decrease during the winter season, the low demand scenario was evaluated to check for high distribution system pressures. Pressure in excess of 100 psi can cause damage to residential homes if they are not properly equipped to handle high pressures.

Model results vary depending on various wells being active during low demand periods. If water for the system is being supplied only by the tank, then the highest system pressure is approximately 98 psi near the Brookstone Subdivision. If one of the system wells is on during low demand periods, the pressures near the wells are shown to be 110-115 psi.

5.3.5 STORAGE EVALUATION

Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08) require that a system has sufficient capacity for equalization storage (difference between the maximum pumping capacity of a system and peak hour demand), fire suppression storage, operational storage and standby storage. The operational storage is typically around 15% of total tank volume and is stored to prevent excess pump cycling and compensate for the sensitivity of the water level sensors. The equalization storage required is determined by modeling the peak hour demand system curve vs. a continuous pumping capacity of 4,650 gpm. Standby storage is not required for the system, because all of the wells currently in operation and the Bench Booster Pump Station have standby power. Table 5-6 summarizes the existing storage needs for the City of Chubbuck.

Table 5-6 – 2012 Storage Needs Evaluation

Operating Storage (MG)	Equalization Storage (MG)	Fire Storage (MG)	Standby Storage (MG)	Storage Required (MG)
0.33	1.21	0.63	0	2.17

5.4 FINANCIAL STATUS

The City of Chubbuck rate structure for water usage is divided into categories based on meter size and a volumetric charge per 1,000 gallons. Residential connections (meter size under 1") are charged a service rate of $20.22 per month and a volumetric charge of $1.15 per one thousand gallons in addition to a $3.78 billing charge. Base charge for meter sizes larger than 1.5-inches can be found in Appendix E . The connection fee per equivalent single family dwelling is typically $2,250. Average monthly revenue generated from water sales in 2012 was approximately $214,000, while monthly operating expenses were approximately $117,300. The City maintains a reserve fund to which revenue above operating and other expenses is contributed. At the end of 2013 the unrestricted capital for the water fund totaled approximately $5 million. These reserve funds are available to utilize in the completion of the recommended improvement projects.

The wastewater collection facilities operate on a budget that is distinct from the water and sanitation systems. At the end of the 2013 fiscal year, the City of Chubbuck had long term water debt in the form of water revenue bonds equating to approximately $1,706,000 and a water IDEQ loan of $234,832.

5.5 WASTEWATER COLLECTION AND TREATMENT SYSTEM

The City of Chubbuck operates a municipal sewer collection system as shown in Figure 5-18. The collection system consists of PVC and concrete pipe ranging in size from 8 to 42 inches. The collection system has recently been upgraded in anticipation of the City's future population growth. The wastewater is treated at the Pocatello Wastewater Treatment Plant located on the west side of the valley near I-86.

There are currently five sanitary sewer lift stations in the City of Chubbuck. Lift stations are located within the City and to the northwest and include Paradise, Rio Vista, Sorrel, Ellis, and Valenty lift stations. The lift station locations are shown in Figure 5-18.

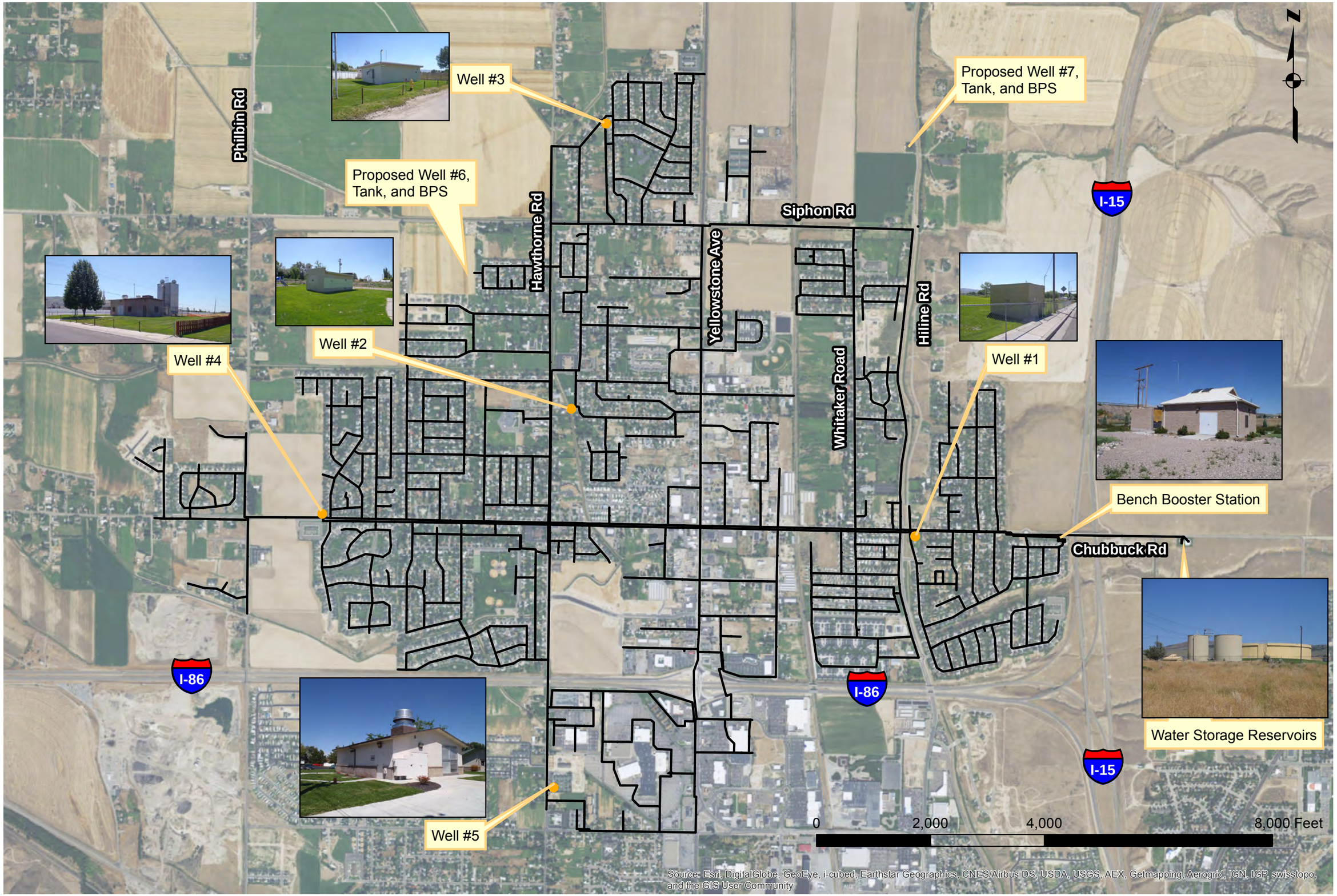
5.6 SUMMARY OF CURRENT ISSUES

Several issues have been identified in regards to the current condition and operation of the Chubbuck water system. Many of these issues are violations of the Safe Drinking Water Act or violate current IRPDWS. Where current issues violate SDWA or IRPDWS, the specific rule violated is listed. These issues and remedial action taken or advised are summarized below:

- Well No. 1 could be rehabilitated and connected to the water system. This issue is addressed in Section 7.4.3.
- Water from Well No. 2 has exceeded the MCL's in the past and has been disconnected from the system, but it has been recently reported that MCL's in the area have decreased. It is possible to reconnect this well if the water is properly treated prior to entering the system. It is recommended the City continue to monitor levels at the well site for a possible future connection if contaminant levels allow. An approach has been outlined in Section 7.6.1.
- The City can't meet MDD plus fire flow demand when the largest well is offline. The City's firm source capacity is 3,915 gpm, while the 2012 MDD is 4,497 gpm (IDAPA

58.01.08.501.18). This issue is explained in further detail in Section 6.1 and addressed in Section 7.4.

- Approximately 7 of the City's fire hydrants are connected to 4 inch water mains. IDAPA 58.01.08.542.06 requires that fire hydrants be connected to water mains no smaller than 6 inches. This issue is addressed in Distribution Improvements in Section 7.6.
- The Bench Booster Station is at its capacity during peak demand periods. Immediate improvements are needed to alleviate the current water pumping deficiency to the bench pressure zone. As the population in the service area for the booster station increases, additional upgrades will need to be made. This issue is addressed in Bench Booster Station Improvements, in Section 7.7 and in the Bench Pressure Zone Alternative Development & Evaluation in Section 7.10.
- Fire flow test results indicate that sections of the City are unable to meet fire flow requirements (IDAPA 58.01.08.552.01). This is addressed in Distribution Improvements in Section 7.6.



PROJECT NO. 210078

FILENAME 5.16 Wells.mxd

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208.238.2146
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KELLER associates

City of Chubbuck

Water Facility Planning Study

Location of Municipal Groundwater Wells

FIGURE NO. 5.16

Print Date: 6/3/2015
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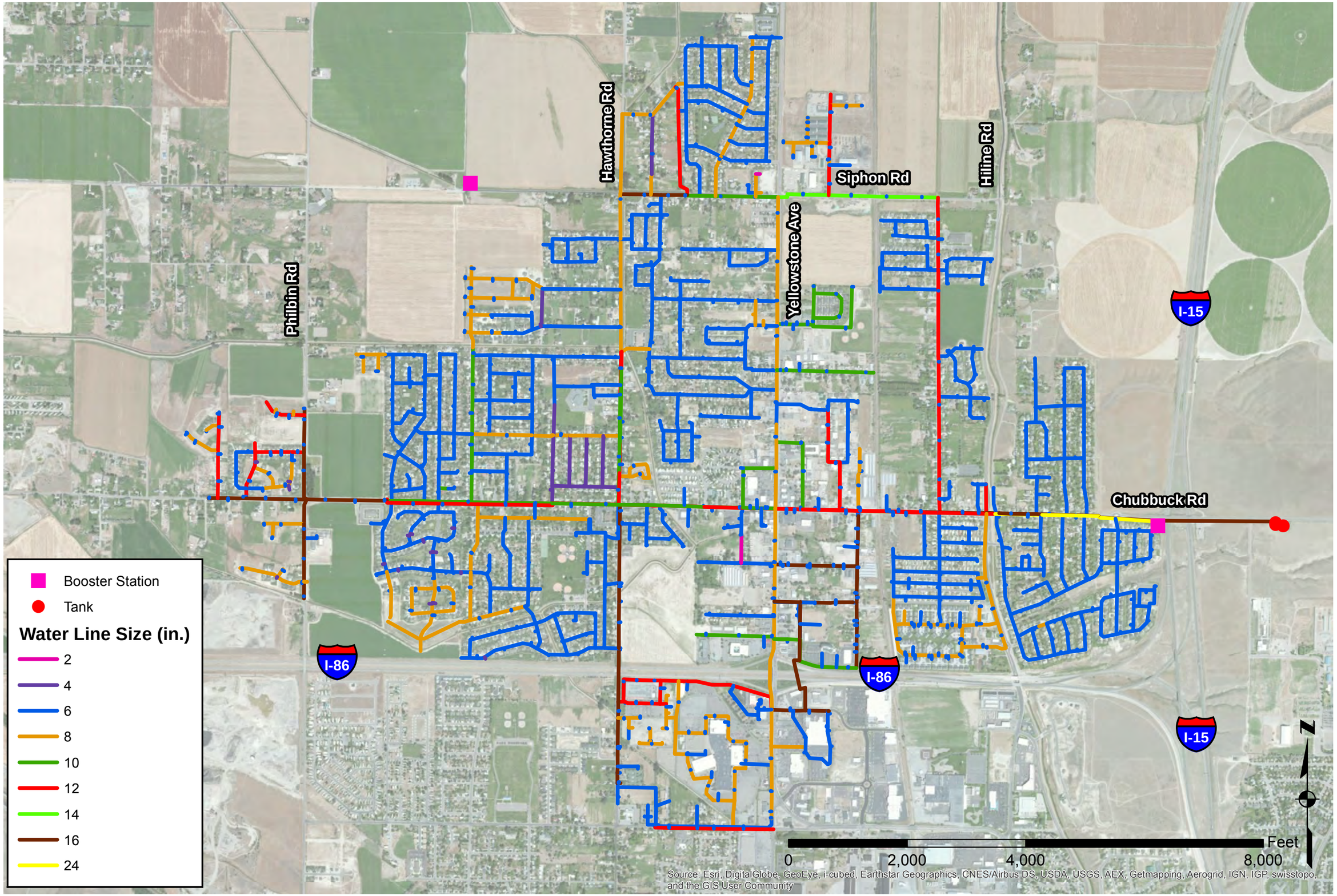
Print Date: 2/13/2015



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PROJECT NO. 210078

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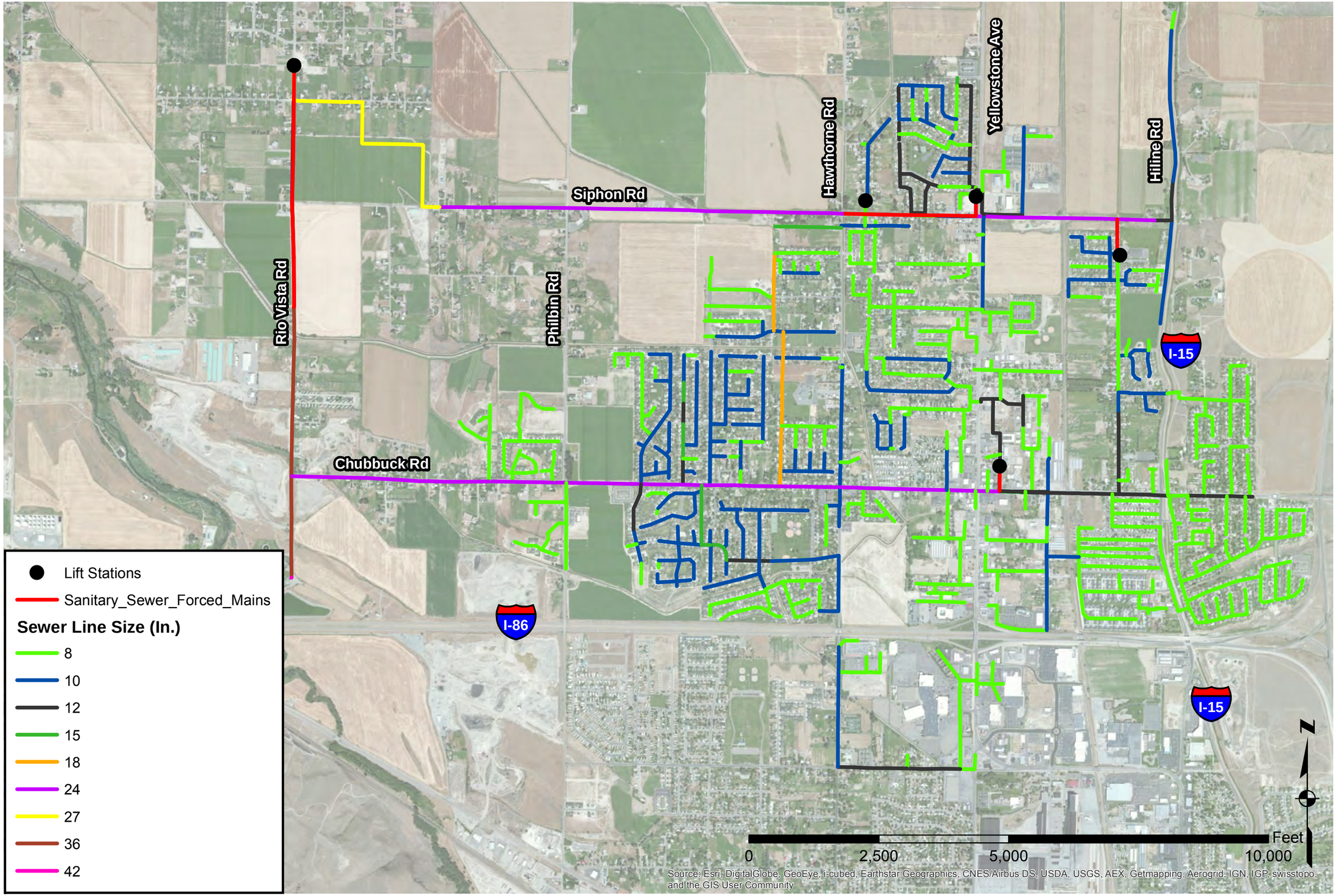
City of Chubbuck

Water Facilities Planning Study

Existing Water System

FIGURE NO. 5.17

Print Date: 2/13/2015



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PROJECT NO. 210078

FILENAME 5.18 - Sanitary Sewer.mxd

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City of Chubbuck

Water Facilities Planning Study

Sanitary Sewer System

FIGURE NO. 5.18

Chapter 6 Future Conditions

Population projections presented in Section 4.2 have been used to estimate demand scenarios. If water use in Chubbuck remains consistent with recorded use (average day demand (ADD) = 205 gpcd) the ADD would increase from 2,017 gpm in 2012 to 3,566 gpm by 2035. Maximum day demand (MDD) will increase from 4,497 gpm to 7,952 gpm. Peak hour demand (PHD) will increase from 9,425 gpm to 16,699 gpm. It is estimated that average day demands will increase to 4,821 gpm in 2055 when population reaches approximately 32,800.

Analysis of winter use is also valuable due to the more consistent water use during the winter. ADD during the winter, assuming future use is consistent with current use (98 gpcd (gallons per capita per day)), would increase from 964 gpm (2012) to 1,705 gpm in 2035. Chubbuck winter water demand is currently very close to the U.S. average winter demand of 100 gpcd. Table 6-1 summarizes projected water demands. It should be noted that the future demands are based on the 2012 demands per capita.

Table 6-1 – Current and Projected Water Needs in Chubbuck

	2012	2035 (Projected)	2045 (Projected)	2055 (Projected)
ADD	2,017 gpm	3,566 gpm	4,179 gpm	4,821 gpm
MDD	4,497 gpm	7,952 gpm	9,320 gpm	10,751 gpm
PHD	9,425 gpm	16,699 gpm	19,572 gpm	22,578 gpm

6.1 Water Source Capacity

The total pumping capacity from the groundwater wells is 7,415 gpm. IDEQ requires redundancy in that a water system must be able to meet peak demands with the largest water source taken out of service. The Chubbuck system is unable to meet the MDD (4,497 gpm) if the largest water source (Well No. 5 -3500 gpm) is taken out of service. For planning purposes the firm water supply should be equal to or greater than the projected MDD. Table 6.2 compares the existing and projected future system demands with the current redundant supply.

Table 6-2 – City of Chubbuck Potable Water Supply vs. Demand

Estimated Year	Estimated Population	Max Day Demand (gpm)	Firm Supply (gpm)	Reserve Supply (gpm)
2012	14,166	4,497	3,915	-582
2015	15,593	4,950	3,915	-1,035
2020	18,111	5,750	3,915	-1,835
2035	25,048	7,952	3,915	-4,037
2055	33,866	10,751	3,915	-6,836

As illustrated in Table 6.2, the City's maximum day demand increasingly exceeds the firm supply capacity. Additional water sources are needed to meet current and projected water demands.

6.2 WATER STORAGE

The City of Chubbuck has 1.625 MG of effective storage volume in 3 separate tanks as discussed in Section 5.2.8. Table 6-3 summarizes the required storage volumes for 2012, 2035, and 2055 system scenarios. The required storage volumes are based on the storage component requirements presented in Section 3.2 of this report. The storage components volumes presented here are effective storage volumes, and as such, exclude the unusable or 'dead' storage.

Table 6-3 – Existing and Future Storage Components

Storage Component	2012	2035	2055
Operating Storage[1] (MG)	0.35	0.55	0.70
Equalization Storage[2] (MG)	1.39	2.48	3.35
Fire Storage[3] (MG)	0.63	0.63	0.63
Standby Storage[4] (MG)	0	0	0
Total Storage Required (MG)	*2.37*	*3.66*	*4.68*
Total Effective Storage Available (MG)	1.625	1.625	1.625
Storage Surplus (MG)	-0.745	-2.04	-3.055

Notes:
1. Operating storage recommendation is ~15% of total required tank volume.
2. Using a PHD factor of 2.1 based on hourly data from 2012. Also assumes firm water source capacity equal to the MDD.
3. Existing and future fire flow volume is based on 3,500 gpm for 3 hours.
4. Standby emergency power generators at Wells 3, 4 & 5 and the booster pump station currently meet this need. Future wells will need to be equipped with standby power.

The storage requirements shown in Table 6-3 are based on the firm source capacity being equal to the projected MDD for that year. Increasing the firm source capacity beyond the MDD requirements can help reduce the amount of storage that is required in the future. Construction of new water storage capacity or installation of additional water source capacity is needed immediately and for the long term to meet the Peak Hour Demands.

6.3 BENCH BOOSTER STATION

A limiting factor that the City will likely have to address is the capacity of the Bench Booster Station that services the upper pressure zone. As growth continues to occur in this zone the demand on the booster station will also grow. The booster pump was designed with 3 pumps (1-1800 gpm, 1-1800 gpm redundant, and 1-400 gpm jockey pump) to accommodate a firm capacity of 2,200 gpm and a total capacity of 2,900 gpm. As shown in Figure 5.12 the MDD in 2012 exceeded 2,000 gpm and in the SCADA data it appeared the BPS had a difficult time maintaining pressure and flow during peak summertime demands. Some of the variations in flow could potentially be addressed by adjusting SCADA set points and operation of the pumps. Table 6-4 shows the projected BPS demand based on 2012 data and the population and water demand in the bench pressure zone growing proportionally to the rest of the City. The bench

pressure zone exhibits a higher peak hour demand factor than the water system as a whole. The PH factor for the bench pressure zone is 2.7. This indicates that efforts for water conservation and reducing the peak hour demand could be most effective in the bench pressure zone.

Table 6-4 – Existing and Future Bench BPS Demand

	2012	2017 (Projected)	2025 (Projected)	2035 (Projected)
ADD	317 gpm	349 gpm	476 gpm	560 gpm
MDD	706 gpm	777 gpm	1,062 gpm	1,248 gpm
PHD	1,906 gpm	2,228 gpm	2,868 gpm	3,371 gpm

Based on this projection, the bench pressure zone will reach a peak hour demand of 2,228 gpm around 2017. At this demand point, the bench booster station will have exceeded its maximum pumping capacity and be unable to satisfy the peak hour demand. The MDD + Fire flow requirement is also unsatisfied at MDD greater than 700 gpm, which was reached in 2012. The addition of distribution capacity in the bench pressure zone is necessary. Alternatives to address this need are discussed in Section 7.7.

6.4 Summary of Projected System Deficiencies

The Chubbuck Water System has a number of current and projected deficiencies in water supply, storage, and distribution that will need to be addressed to satisfy the rules for drinking water systems (IDAPA) and assure a safe and reliable water supply for the residents of the City of Chubbuck. The following summarizes these deficiencies:

- Current Deficiencies
  - Redundant water supply capacity is 582 gpm less than the Maximum Day Demand – requires the addition of new water supply capacity.
  - Water storage is insufficient to provide peaking storage for the water system – additional water storage or additional pumping capacity is needed.
  - Bench pressure zone PHD is very near the bench booster station capacity – additional distribution capacity is needed in the bench pressure zone.
- Projected Deficiencies
  - Redundant water supply capacity less than projected MDD – additional water sources needed.

Chapter 7 Improvement Evaluation

The City of Chubbuck is in need of several upgrades to their water system to improve the operation of the system, increase reliability, protect water quality, reach compliance with State and Federal standards, and meet the future demands of the end user. In order to do this, a discussion of potential solutions, evaluation of improvement alternatives, estimates of cost, discussion of available funding, and recommendations for implementation are presented in this Chapter.

Specific compliance issues should be addressed to bring the water system into compliance with State and Federal requirements. Recommendations found in this study have been developed to help bring the water system into compliance with current regulatory requirements and to provide necessary maintenance to system components to avoid future non-compliance issues.

A water supply, storage and distribution system must be designed to meet the peak hour demand (PHD) or the maximum day demand (MDD) with fire flow requirements, whichever is greater. The entire water volume can be delivered to the system directly from the source during peak demand or it can be delivered from a combination of supply sources and storage. In the case where the system is being supplied by the source and storage, PHD can be supplied from storage and the capacity of the sources can be reduced to MDD. This supply scenario reduces the demand capacity of the source due to the availability of water in storage. The City of Chubbuck currently operates their water system in this manner.

The improvement needs for the City of Chubbuck water system include source water supply, water storage, water delivery capacity, improvements for fire flow capacity in distribution lines, pipeline replacement for future distribution capacity, and distribution area expansion. Each of these items is considered in subsequent sections and alternatives are developed and evaluated. Estimated capital costs are presented as concept level cost estimates which are used to provide enough accuracy for planning purposes. These estimates include costs associated with engineering services, construction cost including contractor overhead and profit, legal fees, funding fees, and contingency. Detailed cost estimates can be found in Appendix G .

7.1 SANITARY SURVEY

A copy of the sanitary survey can be found in Appendix F . There are no current facility deficiencies identified by the 2014 Sanitary Survey.

The IDEQ sanitary survey had the following recommendations for the City of Chubbuck:

1. A leak detection program be put in place and utilized.
2. Incorporate a water conservation program.
3. The water system operator should obtain training in cross connection control.
4. All storage tanks should be cleaned every five years in accordance with IDEQ regulations.
5. All confined space entry requirements should be considered in accordance with IDAPA.

7.2 REGIONALIZATION

Regionalization of the Chubbuck water system has been considered in the past with the City of Pocatello. The Cities have agreed that it is in their best interests not to regionalize their potable water systems as neither City has an excess water supply.

7.3 NO ACTION ALTERNATIVE

Each of the options discussed and compared as alternatives include a No Action Alternative, that is if the City were to choose to continue operating the water system as it is without addressing the current or projected deficiencies. The maximum day demand (4,497 gpm in 2012) exceeds the firm source capacity by 582 gpm. A short fall in the water supply during peak demand periods could cause extremely low system pressures, system contamination, water outages, degraded water quality, and unhappy City residents. Also, taking no action may cause IDEQ to take enforcement actions up to and including civil enforcement. Such actions would involve prohibiting further connections until the deficiencies are corrected.

Because of the significant hazards presented by not acting, it is not prudent for the City to accept the No Action Alternative for source water supply, water storage, water delivery capacity, or fire flow capacity. When considering future distribution system capacity and distribution area expansion the No Action Alternative may be a viable choice. The No Action Alternative is addressed in each case.

7.4 SOURCE WATER SUPPLY

Based upon the analysis shown in Chapter 6, additional water sources are currently needed based on MDD and firm source capacity. If the current per capita average day demand (ADD) remains unchanged (205 gpcd) and the population grows as projected, the ADD will increase from 2,017 gpm in 2012 to 3,566 gpm in 2035. The MDD will increase from 4,497 gpm in 2012 to 7,952 gpm, which will be 4,037 gpm greater than the existing firm pumping capacity (3,915 gpm).

Additional water sources are needed to satisfy the IRPDWS requirements for ADD, MDD, PHD and fire flow. If additional water storage is constructed to provide additional equalization storage (see Section 7.5) then the projected deficiency in water sources is the difference between the projected MDD and the current firm pumping capacity of 3,915 gpm. Without additional water storage, additional water supply and delivery capacity would need to come directly from new water sources. The projected deficiency in water sources with no additional storage constructed is the difference between the PHD and the current firm pumping capacity and the amount of water that can be delivered from the current equalization storage.

Table 7-1 – Projected Water Source Needs (gpm)

	MDD	PHD	Source Need (w/ Equalization)	Source Need (no equalization)
2012	4,497	9,444	582	1,635
2035	7,952	16,699	4,037	7,700
2045	9,320	19,572	5,405	10,130
2055	10,751	22,578	6,836	12,670

As depicted in Table 7-1 the projected water source need with no additional equalization storage is significantly greater than the projected water source need with additional equalization storage. The total amount of new source water needed to satisfy the projected 2035 PHD demands with additional storage equal to the equalization needs is 4,037 gpm in 2035 and 5,405 gpm in 2045 while the total amount of new sources needed to satisfy the projected PHD demands without additional storage and delivery capacity is 7,700 gpm in 2035 and 10,130 gpm in 2045.

7.4.1 General Water Conservation

As one method to address projected source water needs, a water conservation program could be implemented to help reduce the rate of increase in water demand and the need for future additional water supplies. A water conservation program could include conducting a public education program aimed at educating the public on efficient landscape irrigation and water conservation practices. It is reported that installing water saving devices, such as low flow shower heads and toilets, can reduce household demand by up to 16% (Cornwell & Davis, 1998). Additionally, establishing a leak detection program will identify repairs that will decrease system losses and provides more water at the tap. As the population of Chubbuck continues to grow the water system will be at an increased risk if additional water sources are not developed and a well failure occurs during the summer months.

It is recommended that the City consider policy, public outreach, and capital improvement efforts to promote water conservation. A water conservation plan can typically be developed by City personnel or by a consultant. Promoting conservation efforts has the potential to extend the time before additional water supply sources, storage, distribution capacity, and water rights are needed. This alternative is not considered as a stand-alone option, but is recommended to aid in reducing future capital expenditures for water infrastructure.

- Consider newspaper, websites, monthly newsletters, or radio advertisement to promote water conservation topics.
- Involve schools and students in promoting awareness such as video contests, radio ads, and other campaigns.
- Educate the general public regarding the net effect of small actions with specific examples of water conservation and water wastefulness. For example, quantify how much water is actually wasted through small household leaks over the course of a year, or the habit of running tap water to let it get cold as opposed to refrigerating drinking water.
- Host lawn care and landscaping classes identifying optimum water usage and highlighting consumption rate limits for typical lawns, gardens and shrubs. More water is not necessarily better when it comes to irrigating lawns.
- Establish a means for strictly regulating irrigation (citations for infractions).
- Provide both positive and negative incentives for water conservation to all customers focusing on % reduction.
- Require water saving fixtures on all new residential construction. Consider a retrofit water saving fixture program. Pipe insulation provides faster hot water and eliminates the need to run water to prevent pipes from freezing.

Implementing a water conservation program to reduce the total water demand, and specifically reducing the water demand peak hour, would reduce the infrastructure need as part of the improvement alternatives considered in this report. If a program were implemented with an average reduction in per capita water demand of 0.5%, this would result in a total reduction in water demand of approximately 18% over 40 years. The reduced water projected water demands are shown in Table 7-2 below.

Table 7-2 – Per capita water consumption with 0.5% annual reduction

Year	gpcd	ADD	MDD	PHD
2015	205	2,220	4,950	10,395
2025	195	2,885	6,434	13,512
2035	185	3,226	7,193	15,106
2045	176	3,596	8,019	16,839
2055	168	3,945	8,798	18,476

With water conservation, the reductions in infrastructure needed to alleviate the projected water deficiencies are significant and would reduce the total project cost. This results in a reduction in the water supply deficiency of 1,953 gpm, water storage deficiency would be reduced by 0.6 MG, and equalization distribution need would be reduced as well. Improvement alternatives outlined to include a water conservation program achieving this reduction target are presented as alternatives 4-6 in later sections.

The water conservation program would need to be continually evaluated and tailored to achieve this target. Additional conservation above the stated target could result in further reduction in capital investment required.

7.4.2 New Well Construction

The City of Chubbuck does not have any easily accessible surface water sources. The best available water source to the City is groundwater pumping. All current water sources are groundwater wells. Constructing additional groundwater wells to provide the needed source water supply is part of several considered alternatives.

The City's three groundwater wells that are in use have capacities of 1,620 gpm, 2,295 gpm, and 3,500 gpm. A reasonable expectation for water production capacity of a new well is proposed to be 2,200 gpm. If greater production capacity can be achieved from a well, it may be advisable to construct pumping facilities to utilize that capacity.

New wells are required to be equipped with standby power. It is recommended a new well have disinfection capability. The current sources have sodium hypochlorite injection systems. The same is preferred by the City for new well construction.

The following are some of the factors that should be considered when determining new well sites: water quality, elevation to water, effective yield, cost, and future growth areas. For Chubbuck, the primary area for the new wells would generally be to the north of the

City as shown in Figure 5-7 – Water Quality Map and discussed in Chapter 5.

A new well concept was developed including property acquisition, drilling and installation of a 2,200 gpm capacity well, well building, standby generator, chlorine feed system, and appurtenant electrical and control components. The estimated cost for this new well is $1,127,000.

7.4.3 REHABILITATE WELL NO. 1

Chubbuck Well No. 1 is not currently being used by the City because of pumping inadequacies. Well No. 1 is in the same pressure zone as the Bench Booster Pump Station and is unable to pump under the head conditions created by the booster station. The well has not been in service for several years and would likely require some minor improvements to become functional once again. In 1998 and 1999, Well No. 1 had measurable levels of arsenic and nitrate, but both were within their Maximum Contaminant Level (MCL) as reported by city staff.

As Well No. 1 is currently connected to the bench pressure zone, the impact of restoring its 340 gpm of capacity has a greater impact on satisfying the water source needs than it may have if it were to produce into the overall water system. Records for the well indicate that the production capacity of the well hole is greater than the previous pump capacity. Greater production capacity would be a possibility that could be considered. Rehabilitation of Well No. 1 is addressed specifically as part of the Bench Pressure Zone alternatives, but would also serve to increase the water supply under the whole system analysis.

Rehabilitating Well No. 1 would require some rehabilitation to the well building, installing a chlorine feed system, construction of a standby power generator, refurbishing or replacing the pump and motor, and assessment and possible replacement of electrical equipment. It is estimated that the cost to rehabilitate Well No. 1 and restore it to service in the Bench Pressure Zone is approximately **$200,000**.

7.4.4 REHABILITATE WELL NO. 2

Production at Well No. 2 was discontinued in 1996 and the well was disconnected from the water system due to perchloroethylene (PERC) levels greater than the MCL. Well No. 2 has a pumping capacity of approximately 1,000 to 1,200 gpm and could be put back into service with rehabilitation of the well components. The City has been monitoring water quality at Well No. 2 and has discovered that the contaminant levels in the area have been receding over the last several years. If the contaminant concentrations continue to recede to a level safe for consumption, the well could be placed back into service without further treatment. The timing of this approach is uncertain and does not guarantee the PERC would not exceed MCL's in the future.

If the concentration of PERC at Well No. 2 is found to be consistently below the MCL, Well No. 2 could be reconnected to the distribution system without treatment equipment

and production resumed. As the well has been offline for nearly 20 years, it would be necessary, at a minimum, to refurbish the well pump and motor, replace dated and worn out electrical components and repair or replace the well house structure. Additionally, the installation of standby power and chlorine feed would be necessary. Because PERC concentrations could potentially increase at any time, a close monitoring schedule is recommended after reconnection. During rehabilitation of the well, future installation of PERC treatment technologies should be considered and provisions made for their addition.

A planning level cost for the replacement of the Well No. 2 building, mechanical piping, electrical equipment, construction of a standby generator, installation of chlorine feed equipment, and other appurtenant items is approximately **$325,000.**

7.4.5 SEPARATE IRRIGATION SYSTEM

Constructing a separate irrigation system would significantly reduce the City's potable water consumption; however it would require the acquisition of new water rights or dedication of existing groundwater rights. Currently, the only surface water reasonably accessible to the City of Chubbuck is the seasonal water in the Hiline Canal. This waterway generally lies above the lower pressure zone of the City, but not sufficiently to supply irrigation pressures and would require pumping. If groundwater sources were to be used to supply irrigation water then no advantage would be gained by installing a second distribution system as the current system is generally adequate to supply groundwater to the system water users.

Secondary irrigation is typically not feasible for installation in all existing private homes as the amount of necessary infrastructure is quite extensive. A raw water irrigation system would require investment by private homeowners to convert and install new irrigation connections. With the required private modifications the City would also require installation of RPZ type backflow protection for any connection deemed to present a potential cross-connection.

As a measure to ensure the long-term viability of the City, any surface water rights that are associated with future annexations should be used by the development for a secondary irrigation system. In addition, new irrigation facilities for future subdivisions should be constructed to allow for connections to adjacent future developments. The City of Chubbuck has already adopted these measures and requires new subdivisions to be equipped with secondary water system where surface water is available.

Extending a secondary irrigation system to already developed areas of Chubbuck is not considered to be a viable alternative at this time, but further implementation of secondary irrigation in new development is likely to result in reduction to projected water demand. The amount of real reduction in water demand resulting from secondary irrigation systems is not quantified by this report. No reduction in the per capita water demand as a result of secondary irrigation systems was incorporated into the demand projections presented as part of this report.

7.4.6 SUMMARY OF WATER SUPPLY ALTERNATIVES

Although projected source water deficiencies can be reduced through water conservation (Section 7.4.1) and secondary irrigation in new development areas (Section 7.4.5) these options are not included in the improvement alternatives since the quantity of water demand reduction is uncertain. These recommendations should be implemented and the effectiveness revisited in future assessments.

Rehabilitation of Well No. 1, Well No. 2 or both would reduce the overall water supply deficiency, but must be coupled with new well sources to satisfy the current and projected water supply deficiencies. The alternatives considered in Section 7.4 include these options.

7.5 WATER STORAGE

Water storage is used to supply additional water at peak demand periods such as fire suppression flow and peak hour demand. Equalization storage or peaking storage is the water volume maintained to service the peaking demands (demand greater than the firm water source capacity). Water is drawn from the storage tanks at periods when the system demand exceeds the well pumping capability, then is restored when demand reduces below the well pumping capability. The City of Chubbuck utilizes their current 1.65 MG of storage to achieve these ends. As discussed in Section 5.3.5, the current storage deficiency to provide full equalization storage is 0.75 MG. The storage deficiency to provide full equalization and fire storage is projected to be 2.04 MG is 2035 and 3.06 MG in 2055 as shown in Figure 7-1.

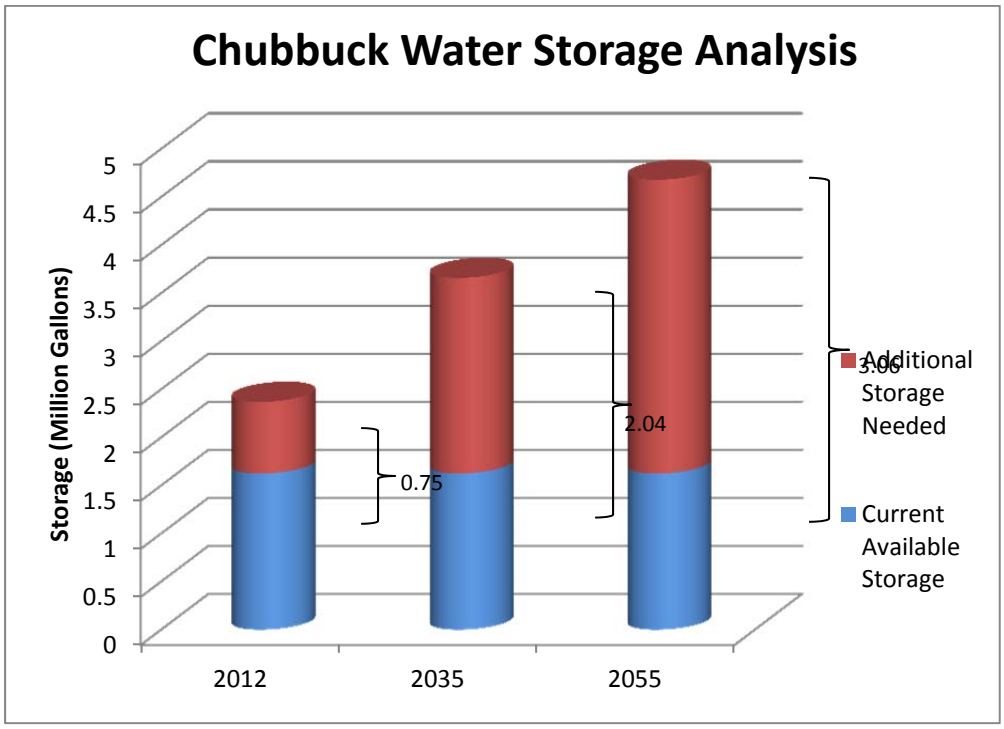


Figure 7-1 – Water Storage Requirements

Needed water storage to meet equalization is reduced when firm water source capacity exceeds the maximum day demand (MDD). To meet the requirements of IDAPA for peak hour demand (PHD) and fire protection as previously discussed, the City can pursue one of the following options:

1. New water storage with volume adequate to service the peaking demands (equalization) and fire suppression (fire) = 2.04 MG in 2035.

2. Develop new water sources to maintain the firm water source capacity greater than the MDD, reducing the needed equalization storage volume and construct new water storage to satisfy the resulting equalization needs.

3. Develop new water sources to provide the full PHD directly from new wells.

Each of these options results in a different total volume of water storage needed to address current and projected deficiencies. The combination of storage volume and new water sources needed define the major distinctions between the alternatives presented in Section 7.7.9.

To deliver stored water into the distribution system at pressure it is necessary that water storage either be placed at an elevation sufficient to flow by gravity (as the current Tank Farm does) or provide booster pumping capacity. The following storage scenarios have been considered to address water storage needs.

7.5.1 NEW TANK AT ELEVATION

This alternative evaluates placing a new ground level tank at approximately the same elevation as the City's existing tank farm to maintain system pressures and hydraulic balance. Placing a new storage reservoir at or near the current tank farm would be possible, however, the current transmission line from the tank farm down Chubbuck Road is 16-inch diameter and already experiences inadequate pressures when delivering peak hour demand to the existing system. Placing additional storage at the tank farm would require increasing the transmission line capability along Chubbuck Road from the tank farm to the Bench Booster Station.

Other possible locations are limited to the east bench to achieve similar ground elevation with the tank farm. Purchasing property at the correct elevation and construction of new transmission lines crossing I-15 and the Hiline Canal to connect into the existing distribution network would be needed for this option. If located at the tank farm, then this line could end at the Bench Booster Station. The cost of installing a 24-inch transmission line on Chubbuck Road from the tank farm to just west of I-15, near the bench booster station, is estimated to be approximately $1,000,000. If the tank were located further north, the transmission line would need to extend to Hiline Road, crossing the Hiline Canal, and tie in adequately to the major distribution lines. The cost for a North Tank Transmission Line including crossing I-15 and Hiline Canal is $1,850,000.

Two tank sizes were evaluated as part of the consideration of alternatives: 1.25 MG and 3

MG. The estimated cost for construction of each of these tank options is as follows:

- 1.25 MG $1,990,000
- 3 MG $4,400,000

- Transmission from Tank Farm $1,000,000
- Transmission from North Site $1,850,000

7.5.2 ELEVATED TANK

This option would include the construction of a storage tank constructed within the distribution area of the water system and elevated with concrete or steel structural supports. Due to the cost associated with the support structure, this is more common with tank volumes significantly smaller than those contemplated for the Chubbuck water system. After discussion with the City, this option was discarded in favor of the others considered here.

7.5.3 NEW TANK AND BOOSTER PUMP STATION

This option would include the construction of a ground level or partially buried storage tank located within the distribution area and paired with a booster pump station. Co-locating a tank with one of the new water source wells would enable the tank to be filled directly from the well, reducing the pumping energy needed for tank filling. The booster pump station would be sized to satisfy the peaking flow component to be covered by the new storage tank.

A new storage tank and booster station would ideally be located in fairly close proximity to major distribution trunk lines; distribution lines of 16-inch or larger that interconnect at multiple locations with other major distribution lines. These type of lines are found on Chubbuck Road, Siphon Road, and Hawthorne Road. Additionally, locating the storage reservoir on different distribution lines from the Tank Farm (east Chubbuck Road) would improve distribution capability. Locating the booster station near existing wells that pump directly into the distribution system could create hydraulic limitations that would necessitate installing larger distribution piping.

Tank volumes and cost are the same as those presented in Section 7.5.1. Transmission line length required would be dependent on the site selected and the proximity to existing main trunk lines. The cost to install transmission line to connect to the distribution system is estimated to be approximately $143,000 per thousand feet for 16-inch and $190,000 per thousand feet for 24-inch. Two sizes of initial Booster Pump Station (BPS) construction were estimated (~6,000 gpm and ~4,000 gpm) as well as a ~2,000 gpm Booster Station Expansion.

- ~6,000 gpm BPS $1,625,000
- ~4,000 gpm BPS $1,215,000
- ~2,000 gpm BPS Expansion $190,000

7.6 DISTRIBUTION/TRANSMISSION SYSTEM

As discussed in 0, the design life of distribution and transmission pipelines is 25 to 50 years. A majority of the existing water system is in relatively good condition. The City will continue to replace water lines as problems present themselves. There are several lines around the City that are buried at shallow depths and are prone to freezing. As these lines reach the end of their useful lives they should be buried to a proper depth to prevent freezing issues in the future. Future developments within the City will need to incorporate appropriate looping and interconnectivity to prevent problems associated with dead end lines.

In addition to the transmission and distribution system reaching the end of its usable life, many of the water lines utilized by the City are undersized and do not support required fire flows or future growth. According to the *Idaho Rules for Drinking Water Systems (IDAPA 58.01.08)* fire hydrants must be connected to a minimum pipeline diameter of 6 inches. There are 7 known fire hydrants located in Chubbuck that are connected to 4 inch lines and are not capable of supplying the fire flows required by the International Fire Code as discussed in Section 5.3.3. These undersized hydrants are located on the following streets: Scott (1), Easy (1), Joy (2), Sheppard (2), Spraker (1) and Sorrel (1). These issues are addressed in Section 7.6.1.

7.6.1 FIRE FLOW IMPROVEMENTS

A MDD plus fire flow water model was run for the City of Chubbuck to determine areas within the City not meeting fire flow requirements. Table 7-3 shows possible improvements identified in the model that could be made to the water system to improve fire flows in the deficient areas. Appendix D shows available fire flow results before and after the improvements. Figure 7-9 shows the location of the deficient fire hydrants and the associated proposed fire flow improvement piping. The commercial/industrial flow requirements were modeled at 3,500 gpm while the residential requirement was 1,500 gpm. The improvements shown below improved a large majority of the deficient areas except for a few service lines as shown in Appendix D . The water model should be updated as development within the City occurs.

Table 7-3 – Fire Flow Improvements

Residential Fire Flow 1,500 gpm				
Street	Available Fire Flow (gpm)	Min. Pipe Diameter (in)	Approx. Length (ft.)	Probable Cost
Sorrel Street	1250	8	1,000	$116,000
Rose Street	1150-1350	8	600	$70,000
Teton Street	500-700	8	1,300	$150,000
Yellowstone to Mall Loop	2,800-3,300	12	600	$80,000
Burley Dr. to Laurel Ln.	8	8	900	$104,000
Yellowstone N. of Siphon to Southside Way	12	12	1,100	$145,000
				$665,000

The total estimated cost associated with the Fire Flow Improvements listed above in Table 7-3 is $665,000. These improvements are not listed in priority, but should be addressed in a step-wise fashion as funding allows. Priority for implementing these improvements should be determined by the City. It is recommended that the improvements that provide the greatest benefit to fire flow capacity be addressed first, namely those that address several fire hydrant locations, high risk locations, or by other criteria identified by the City. Fire Flow Improvements are listed as Priority 2 in the assessment of improvement priorities as they are important, but less critical than the current supply and delivery deficiencies.

7.6.2 DISTRIBUTION NETWORK IMPROVEMENTS

The City's existing waterlines are in relatively good condition, but lines should be replaced every year to keep up with aging infrastructure. The waterlines identified in this discussion will need to be replaced with larger pipe sizes to facilitate the networking of the distribution system. Waterline replacement should be coordinated with planned roadway improvements to minimize costs and differential base settlement. An annual replacement program should be developed to schedule the replacement of these and other aging water lines. This scheduling should incorporate consideration of road and other infrastructure improvements. Figure 7-10 shows the locations and diameters of the waterline improvements recommended to be included in this replacement program. Other improvements should be added to the replacement priorities as the City identifies leaks and other problem areas. Table 7-4 summarizes the suggested distribution network improvements within Chubbuck. These improvements will improve overall distribution networking and enable the system to have the necessary interconnection to distribute the projected peak hour demands.

Table 7-4 – Distribution Network Improvements

Distribution Network Improvements				
Street	**New Pipe Diameter (in)**	**Approx. Length (ft.)**	**Location**	**Probable Cost**
Hawthorne Rd.	12	4,000	James Ave. to Lariat Ln.	$528,000
Siphon Rd.	16	3,180	Eve St. to Railroad Crossing	$455,000
RR Crossing on Siphon			Siphon Rd.	$70,000
				$1,053,000

The total estimated cost associated with the Distribution Network Improvements listed above in Table 7-4 is $1,053,000. These improvements are not listed in priority. Each of these improvements provides a direct benefit to the network connectivity. As a group, the distribution network improvements listed are Priority 3. These improvements are not immediately necessary, but should be completed in the 10-15 year time horizon to maintain the distribution system networking required to satisfy the projected peak hour demands.

7.7 BENCH BOOSTER STATION IMPROVEMENTS

Data collected at the bench booster station by Keller Associates shows that actual flow rates are below the design flow rates for a given motor speed for all three pumps. Suction pressures for the pumps ranges from 33 to 43 psi. It is expected that the low suction pressures are the cause of the low discharge put out by each pump. Additionally, the low suction pressures are approaching the minimum 20 psi rating as prescribed by IDAPA 58.01.08.

It is expected that the low intake pressures at the booster station are attributable to the 16-inch water line that connects the system to the tank farm and booster pump station. In this line, water flows from the tank farm down to the city. The intake for the booster pump station ties into this line with a tee.

In order to provide enough water to meet demand, the water velocity in the 16-inch line is high. The high water velocity (and the resultant high momentum) makes it difficult for the water traveling from the tank farm to make the 90° turn to the booster pump station diversion. The momentum of the water tends to carry the water right past the diversion thus creating the low suction head. This phenomena is also expected to contribute to the pump cycling that occurs as described in Section 5.2.9.

Alternatives B1-B4 ("B" for Bench Pressure Zone) are considered to address the pressure issue for the intake of the booster pump station and Bench Pressure Zone water supply and compared as alternatives in the following sections.

7.7.1 NEW TANK FARM TRANSMISSION LINE

In the past it has been noted there are low intake pressures at the booster station at high flow as discussed in Section 6.3. There is currently only one bi-directional 16" line that runs from the Bench Booster Station to the tanks. This option would include construction of a new 12-inch transmission line from the Bench Booster Station to the Tank Farm with a directional bore crossing under I-15. This transmission line would be installed to serve the Bench Booster Station alone. The existing 16-inch transmission line would be dedicated to connecting the tank farm with the lower pressure zone. Location of this transmission line is depicted in Figure 7-11. Estimated cost for construction of a new 12-inch transmission line from the Tank Farm to the Bench Booster Station is $700,000.

If an alternative including additional water storage at the Tank Farm were selected, it would be accompanied by construction of a new 24-inch transmission line from the tank farm to the bench booster station location. In this event, the existing 16-inch line could be allocated to serving the bench booster station. Costs associated with 24-inch transmission line construction are presented in Section 7.5.1.

7.7.2 PRESSURE SUSTAINING VALVE

This option includes installation of a pressure sustaining valve (PSV) in the transmission line in front of the Bench Booster Station to maintain the needed intake pressures for the Bench Booster Station pumps. The pressure sustaining valve would need to be bi-directional or equipped with other valves to allow for tank fill during low demand periods. This option would only be viable if storage and equalization flow delivery were

available from other portions of the system, not only the Tank Farm, as the PSV would act to prioritize serving the Bench Pressure Zone above feeding water to the Main Pressure Zone. Estimated cost of installing a PSV in the transmission line on Chubbuck Road is $156,000.

7.7.3 REHABILITATE WELL NO. 1

Rehabilitation of Well No. 1 is discussed in detail in Section 7.4.3. This option would introduce an additional 340 gpm or more of water supply. This would provide some relief to the immediate deficiencies in water supply that are faced in the Bench Pressure Zone. Estimated cost of rehabilitating well No. 1 is $200,000.

7.7.4 BENCH BOOSTER STATION UPGRADES

This option includes upgrading the pumps and controls at the Bench Booster Station to accommodate the peak hour demands in the upper pressure zone. Upgrades to the existing booster station would likely include 1 or 2 new pump(s) and associated motors, VFD's, electrical control panels, wiring, pump pad modifications, reprogramming and rewiring of the generator control panel/ATS (pending motor size), and potentially replacing some suction and discharge piping to and from the pumps. Estimated cost of these improvements is $280,000.

7.7.5 ADDITIONAL BENCH BOOSTER STATION

This option would include construction of an additional bench booster station to serve a portion of the Bench Pressure Zone. As the area between Hiline and I-15 continues to develop to the north of Chubbuck Road, the existing booster station and associated distribution piping will be inadequate to provide the needed water supply. An additional booster station could be constructed and connected into the existing upper pressure zone or developed as an independent zone. One advantage of connecting into the existing zone would be additional redundancy for the existing station. As with the existing booster station, the intake water supply for a new station may be a concern.

A new booster station could be located north of Chubbuck Road near the existing Bench Booster Station with its intake tied into the Chubbuck Road transmission line. The same intake pressure problems at high water flow rates in the transmission line would likely affect a station at this location as well. Another possible location would be near the intersection of Hiline and Siphon Roads. This intersection contains two major distribution network lines for good water supply. This is also near one of the considered well sites evaluated in Section 9 of this report. A booster station at this location would require transmission piping crossing Hiline Canal and extending to the current distribution network in the Bench Pressure Zone. Using this location as an example, approximately 5,000 feet of transmission pipeline would be needed to connect into the north end of the existing Bench Pressure Zone.

Estimated cost of construction for a new bench booster station is $885,000. The 5,000 feet of 12-inch transmission line discussed in the paragraph above for the example location near the intersection of Siphon and Hiline Roads is estimated to cost

approximately $660,000.

7.8 FUTURE SYSTEM IMPROVEMENTS

It is recommended that as the City of Chubbuck expands to the north and west that adequately sized transmission lines and secondary lines are installed. It is recommended that 16-inch lines be placed on a 1 mile grid with intermediate 12-inch lines and a minimum residential line size of 8-inches. A potential future water system grid based on these principals is shown in Figure 7-12 – Future Transmission Lines. Along with good interconnectivity it is also important that future potable water wells are adequately spaced to maximize their flow potential and efficiencies.

In the consideration of distribution improvements to serve new service area, three groups of water lines were established for easier evaluation:

Table 7-5 – New Service Area Breakdown

Tyhee
Hiline (16" from Siphon to Tyhee)
Tyhee (24" from Hiline to Hawthorne)
Hawthorne (16" from Siphon to Tyhee)
Philbin
Siphon (16" from Hawthorne to Philbin)
Tyhee (24" from Hawthorne to Philbin)
Philbin (16" from W. Chubbuck to Tyhee
Rio Vista
Tyhee (24" from Philbin to Rio Vista)
Siphon (16" from Philbin to Rio Vista)
W. Chubbuck (16" from Philbin to Rio Vista)
N. Rio Vista (16" W. Chubbuck to Rio Vista)

The main water distribution network to future service areas, as shown Figure 7-12, would provide the skeleton for a water system that can extend water service west and north of the existing service boundary. This network was outlined to approximately match the area currently served by the sewer system.

Water service is a necessity for development to occur. Implementing the distribution system expansion projects would help promote residential as well as commercial and industrial development. There are several small water systems within the considered future service area that are currently experiencing challenges to providing water service. The option to connect to the Chubbuck Water System could be a great benefit to the residents of those communities.

7.9 System Alternative Development & Evaluation

Alternatives were developed to address the water production capacity, storage, and distribution delivery deficiencies identified in previous sections. These alternatives are listed in

Table 7-6, are presented as Alternatives 1 through 6 and are evaluated in comparison in this section. Alternatives to address the Bench Pressure Zone distribution delivery deficiencies are presented as Alternatives B1 through B4. These alternatives may overlap Alternatives 1 through 6 in some aspects. Several additional recommendations that are distinct from these alternatives have been discussed previously and are summarized in the following sections.

Table 7-6 – Alternative Listing

Alternative1	Wells Only
Alternative 2	40 year Equalization Storage
Alternative 3	Well/Tank/Booster Station Packages
Alternative 4	Wells Only – With Conservation
Alternative 5	40 year Equalization Storage w/ Conservation
Alternative 6	Well/Tank/BPS Packages w/ Conservation

Because alternatives 2 and 5 consider implementing a storage and booster station solution that will satisfy the projected 40 year storage and equalization flow, a 40 year basis is used for comparison of the main system alternatives. The alternatives for the bench booster station are evaluated on a 20 year basis in Section 7.10.

7.9.1 Alternative 1 – Wells Only

Alternative 1 includes the development of new water sources in the form of wells. No additional storage is included, therefore the equalization flow is required to come from the existing water storage and directly from groundwater pumping. The total firm pumping capacity must be greater than the maximum day demand (MDD) and the total firm pumping capacity plus the equalization flow from existing storage must exceed the peak hour demand (PHD) to satisfy the IRPDWS under this improvement alternative. In this alternative, standby water requirements are met by having standby power generation at each well source. Fire storage and some equalization storage (755,000 gal) are provided from the existing storage at the Tank Farm.

This alternative requires the development of a total of approximately 16,400 gpm of additional well production capacity over the 40 year period considered. Nearly 6,000 gpm of additional water rights above what is currently held by the City would be needed under this alternative.

This alternative includes the following improvements:

Table 7-7 – Alternative 1 Improvements

Improvement	Year
Rehab Well No. 2	2016
Well No. 6	2017
Well No. 7	2017
Well No. 8	2022
Well No. 9	2029
Well No. 10	2036
Additional Water Rights	2036
Well No. 11	2044
Well No. 12	2051

Figure 7-2 below presents the projected water system demands compared with the supply provided with the improvements Alternative 1. In viewing this figure, the following are required to satisfy the water system requirements of IRPDWS:

- Firm Source Capacity must be greater than the Maximum Day Demand (MDD)
- Firm Distribution Capacity must be greater than the Peak Hour Demand (PHD)

The wells approach is flexible in implementation timing, but also requires that construction of new wells be completed on a fairly regular basis as population growth continues. If new wells are not constructed ahead of population growth, the deficiencies in water supply, storage and equalization distribution will quickly return.

Siting seven additional wells, within the limited geographical area which groundwater quality is considered to be optimal, would be a significant challenge associated with this alternative. Approximately 6,000 gpm of additional water rights would be required to provide pumping rights for the new well sources.

This alternative has the lowest immediate capital investment requirement, however, it is the highest cost on a 40 year present value basis. This is largely a result of the cost associated with procuring water rights for Wells No. 9-12.

Alternative 1 has an estimated present value cost of $22.9 Million. Approximately 40% of this cost is for additional water rights.

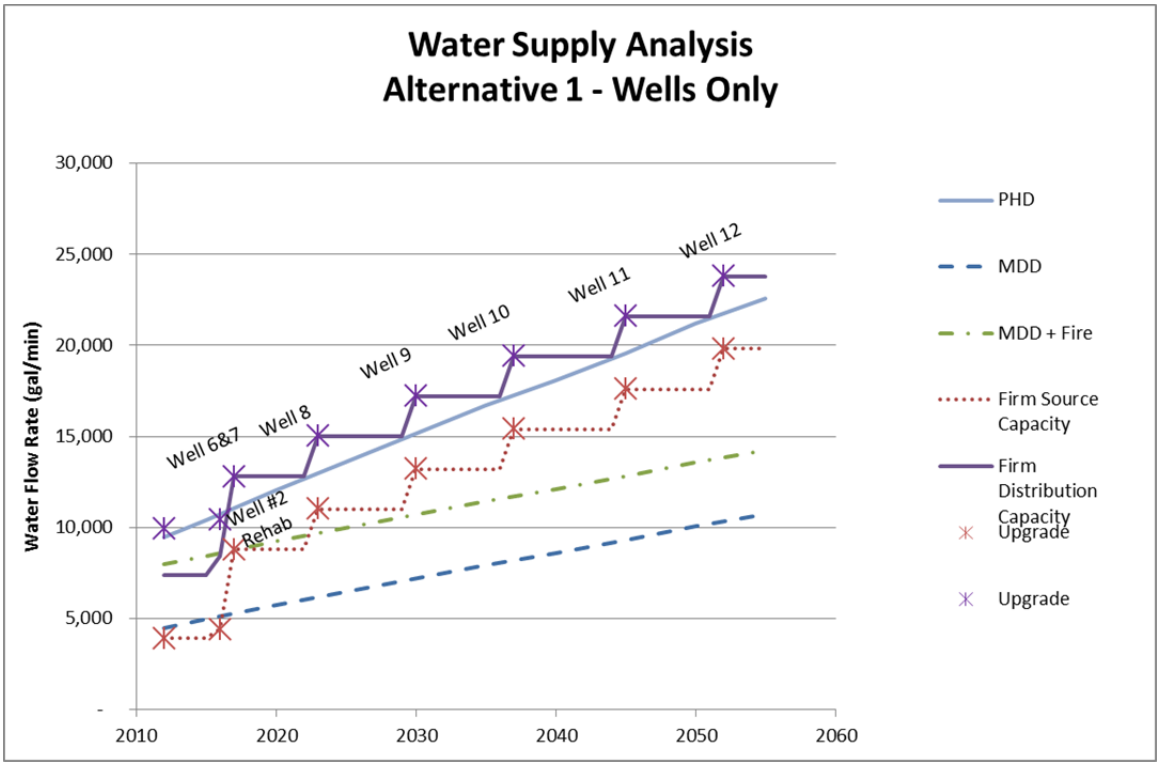


Figure 7-2 – Alternative 1 – Water Supply Analysis

7.9.2 ALTERNATIVE 2 – 40 YEAR EQUALIZATION

Alternative 2 includes the development of new water sources, water storage at a single storage tank to meet the 40 year equalization storage need, and a booster pump station to deliver equalization flow. The 40 year water supply deficiency is 6,836 gpm (as discussed in Section 6.1). The projected water storage deficiency is 3 million gallons (Section 6.2). Improvements included under Alternative 2 are listed below in Table 7-8.

Table 7-8 – Alternative 2 Improvements

Improvement	Year
Rehab Well No. 2	2016
Well No. 6	2017
3 MG Storage Tank	2017
Booster Station	2017
Transmission Line Improvements	2017
Major Distribution Line Imp.	2020
Well No. 7	2023
Well No. 8	2039
Expand Booster Station	2048

As part of this alternative, water supply deficiency is met through rehabilitation of Well No. 2, construction of Well No. 6 (immediate), construction of Well No. 7 (~2023), and

construction of Well No. 8 (~2039). Well No. 6 would be developed in conjunction with the 3 MG storage tank and booster station with a capacity of ~8,000 gpm. Wells No. 7 and No. 8 would be developed independent of the storage tank and booster station and would feed directly into the distribution system.

The booster station could be constructed with less than the full needed pumping capacity and additional pumping capacity added in future system upgrades. The booster station should be constructed for easy addition of this additional capacity by reserving space for the pumps and connection points to the mechanical piping and electrical systems. Alternately, the BPS could be built for the full 8,000 gpm of capacity need. This alternative considers initial construction of a BPS with 6,000 gpm capacity and expandable to 8,000 in the future: ~3,000 gpm in 2031 and ~2,000 gpm in 2048. Figure 7-2 below shows the projected water system demands compared with the supply provided under improvements Alternative 2.

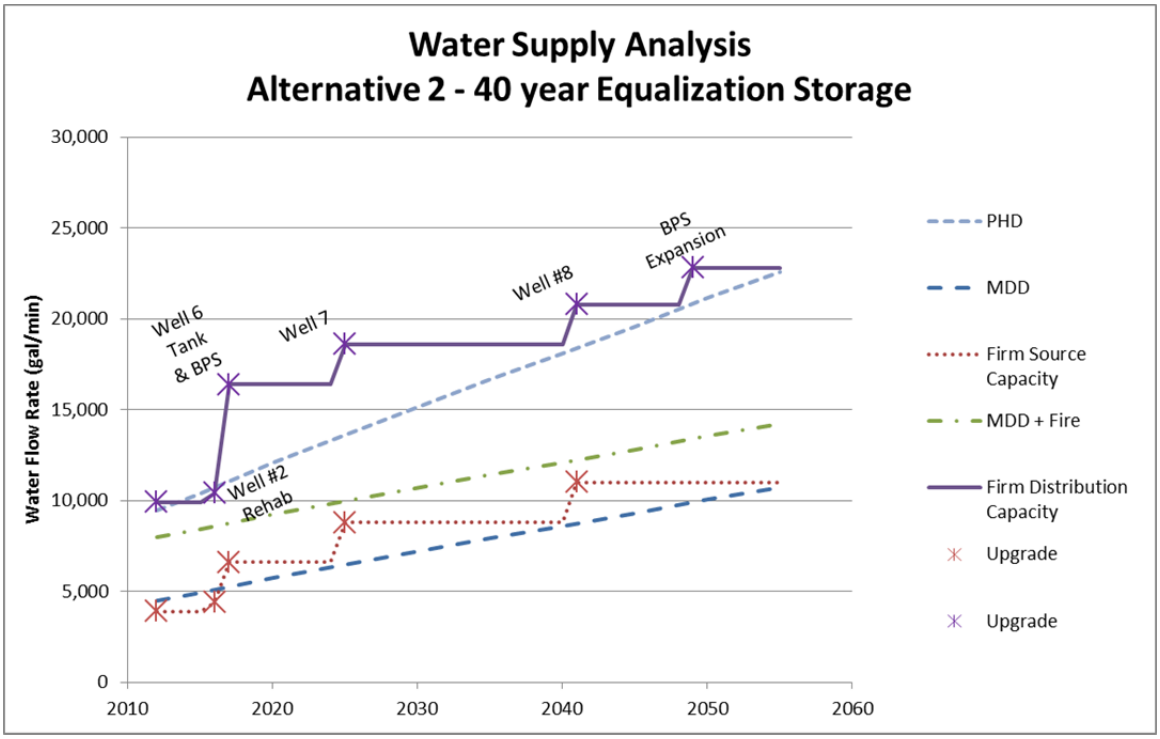


Figure 7-3 – Alternative 2 – Water Supply Analysis

This alternative capitalizes on economies of scale in construction of water storage in that a larger storage tank can be constructed at a lower cost per stored gallon than smaller tanks. No additional water rights are projected to be needed under this alternative. Additionally, as construction costs are anticipated to increase at a rate greater than inflation, constructing the needed capacity now would result in less total cost than delaying these improvements. This comparison is provided in the analysis of alternatives presented in Section 7.9.7.

The disadvantages of this alternative are higher initial capital cost, maintaining infrastructure that will not be fully utilized until the projected growth is achieved, and limiting the redundancy of supply locations. This final disadvantage of limiting redundancy would result in a need for larger transmission and distribution piping to be able to transmit the higher flow volumes into the distribution network.

The total estimated present value cost of Alternative 2 is $15.44 million.

7.9.3 ALTERNATIVE 3 – WELL/TANK/BPS PACKAGES

This alternative approaches the water source, storage, and equalization distribution deficiencies through the development of three sites, each containing a new well, 1 MG storage tank, and 3,000 gpm booster station. The first of these would be constructed immediately, the second and third would be needed in 2025 and 2041. It is recommended that planning and design begin approximately 2 years prior to the projected need to have the needed infrastructure online when needed.

The 40 year water supply deficiency is 6,836 gpm (as discussed in Section 6.1). The projected water storage deficiency is 3 million gallons (Section 6.2). Improvements included under Alternative 3 are listed below in Table 7-9.

Table 7-9 – Alternative 3 Improvements

Improvement	Year
Rehab Well No. 2	2016
Well No. 6	2017
1 MG Storage Tank	2017
Booster Station	2017
Well No. 7	2023
1 MG Storage Tank	2023
Booster Station	2023
Well No. 8	2039
1 MG Storage Tank	2039
Booster Station	2039

As part of this alternative, water supply deficiency is met through rehabilitation of Well No. 2; construction of Well No. 6 (immediate) of approximately 2,200 gpm capacity with a 1 MG storage tank and booster pump station capable of delivering approximately 4,000 gpm into the distribution system; and construction of additional well/tank/BPS packages

of similar size in 2023 and 2039. Figure 7-4 below shows the projected water system demands compared with the supply provided under improvements Alternative 3.

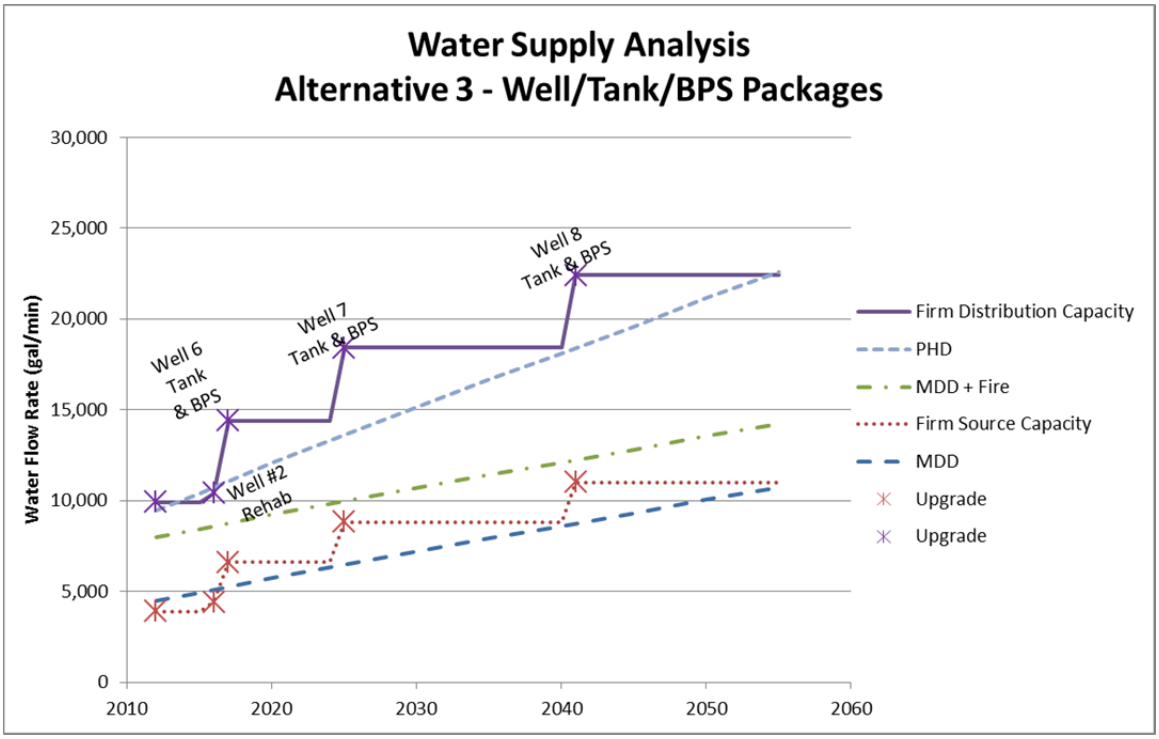


Figure 7-4 – Alternative 3 – Water Supply Analysis

This alternative provides opportunity to introduce significant storage and equalization distribution redundancy by locating the well/tank/BPS packages at separated locations within the water system. This alternative does not require additional water rights within the 40 year period assessed. Additionally, this alternative provides a step-wise project implementation to avoid having excess water supply, storage and equalization distribution capacity unused for an extended period of time. This also would allow adjustment of the implementation timeline if growth within the City of Chubbuck varies from the projected growth pattern.

Alternative 3 is the second greatest total cost on the basis of present value. The total estimated present value cost of Alternative 3 is $17.64 million.

7.9.4 ALTERNATIVE 4 – WELLS ONLY WITH CONSERVATION

This alternative mirrors the approach of Alternative 1 (Section 7.9.1) with an adjustment for water conservation as presented in Section 7.4.1. The projection of water system demands and deficiencies under this alternative relies on a 0.5% annual reduction of per capita water use. Implementing a strong water conservation program would be necessary to achieve this reduction in water consumption, but it is well within the expected range of water conservation achieved with implementation of water conservation efforts in other instances. The 40 year projected per capita water consumption after this reduction would

be 168 gallons per person per day (gpcd).

With a 0.5% annual reduction of per capita water use, the system is projected to have 2055 deficiencies of 4,883 gpm of water supply, and 10,561 gpm of delivery to meet peak demand. The water supply analysis for this alternative is illustrated in Figure 7-5. In this figure the firm distribution capacity must be greater than the PHD. This is the controlling constraint for this alternative.

This alternative addresses the projected deficiencies in water supply and peak hour delivery through rehabilitation of Well No. 2 and construction of five new well sources of approximately 2,200 gpm each over a 40 year period. A portion of the peaking storage is considered to be delivered from the existing storage tank farm facilities. The timing of well construction recommended is shown in Table 7-10 below. These times include approximately one year of lead from when the system need is projected to occur.

Table 7-10 – Alternative 4 Improvements

Improvement	Year
Rehab Well No. 2	2016
Well No. 6	2017
Well No. 7	2017
Well No. 8	2022
Well No. 9	2034
Well No. 10	2046

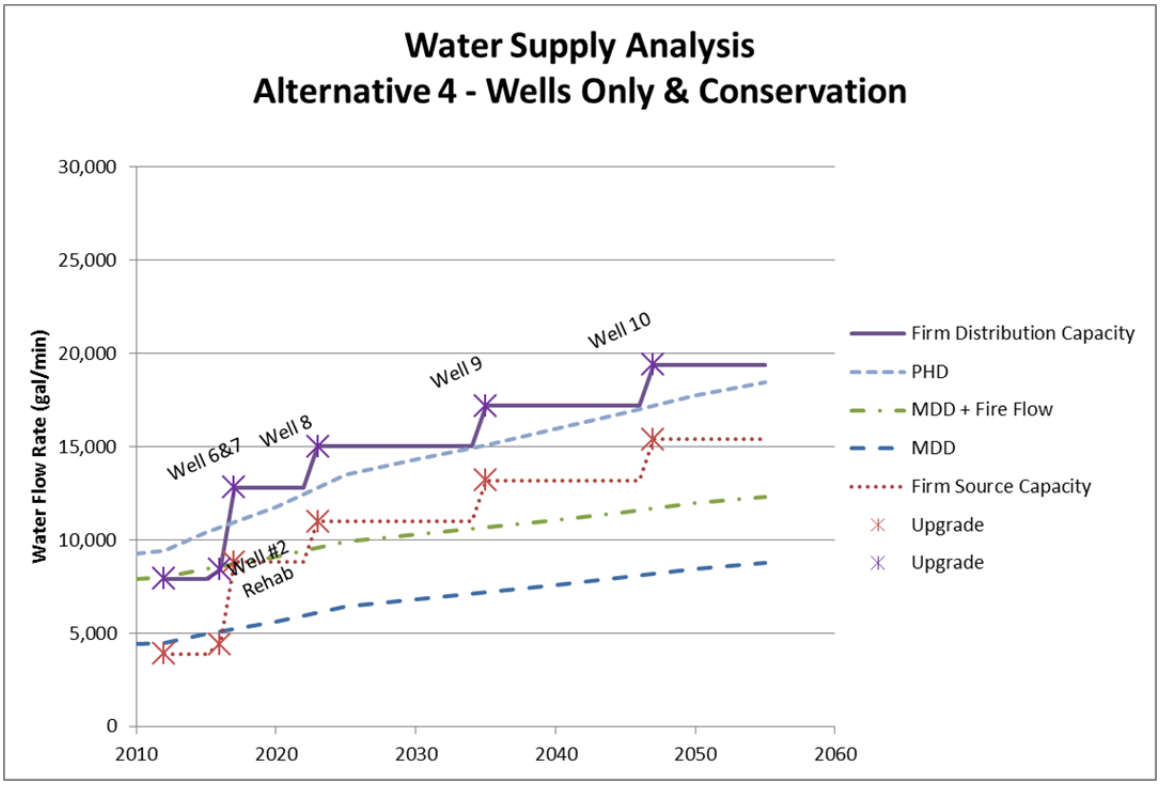


Figure 7-5 – Alternative 4 – Water Supply Analysis

This alternative provides incentive to reduce water consumption and thereby reduce capital expenditures required for system improvements, provides a significant level of redundancy in source and distribution delivery locations if wells are placed strategically, and is amenable to adjustment in implementation time if growth rates or water consumption reduction vary from the projections used. This alternative is the second lowest total cost on the basis of the present value analysis.

This alternative provides no additional equalization storage and would require the purchase of approximately 1,500 gpm of additional water rights. Siting five additional wells, within the limited geographical area which groundwater quality is considered to be optimal, would be a significant challenge associated with this alternative.

Alternative 4 has a present value estimated cost of $13.75 million.

7.9.5 ALTERNATIVE 5 – 40 YEAR EQUALIZATION WITH CONSERVATION

Alternative 5 includes the development of new water sources, water storage at a single storage tank to meet the 40 year equalization storage need, and a booster pump station to deliver equalization flow, as was considered in Alternative 2. This alternative considers these improvements with adjustment for reduction in water consumption through conservation of 0.5% per year as discussed in Section 7.4.1. With water conservation at this level, the 40 year water supply deficiency is 4,883 gpm, projected water storage deficiency is 2.43 million gallons, delivery deficiency is 8,561 gpm. Improvements included under Alternative 5 are listed below in Table 7-8. The water supply analysis is

illustrated in Figure 7-6. In viewing this figure, the following are required to satisfy the water system requirements of IRPDWS:

- Firm Source Capacity must be greater than the Maximum Day Demand (MDD)
- Firm Distribution Capacity must be greater than the Peak Hour Demand (PHD)

Table 7-11 – Alternative 5 Improvements

Improvement	Year
Rehab Well No. 2	2016
Well No. 6	2017
2.5 MG Storage Tank	2017
Booster Station	2017
Transmission Line Improvements	2017
Major Distribution Line Imp.	2020
Well No. 7	2024

As part of this alternative, water supply deficiency is met through rehabilitation of Well No. 2, construction of Well No. 6 (immediate), and construction of Well No. 7 (~2024). Well No. 6 would be developed in conjunction with the storage tank and booster station with a capacity of ~8,000 gpm. Well No. 7 would be developed independent of the storage tank and booster station and would feed directly into the distribution system. The storage tank volume could be reduced slightly, to about 2.5 MG.

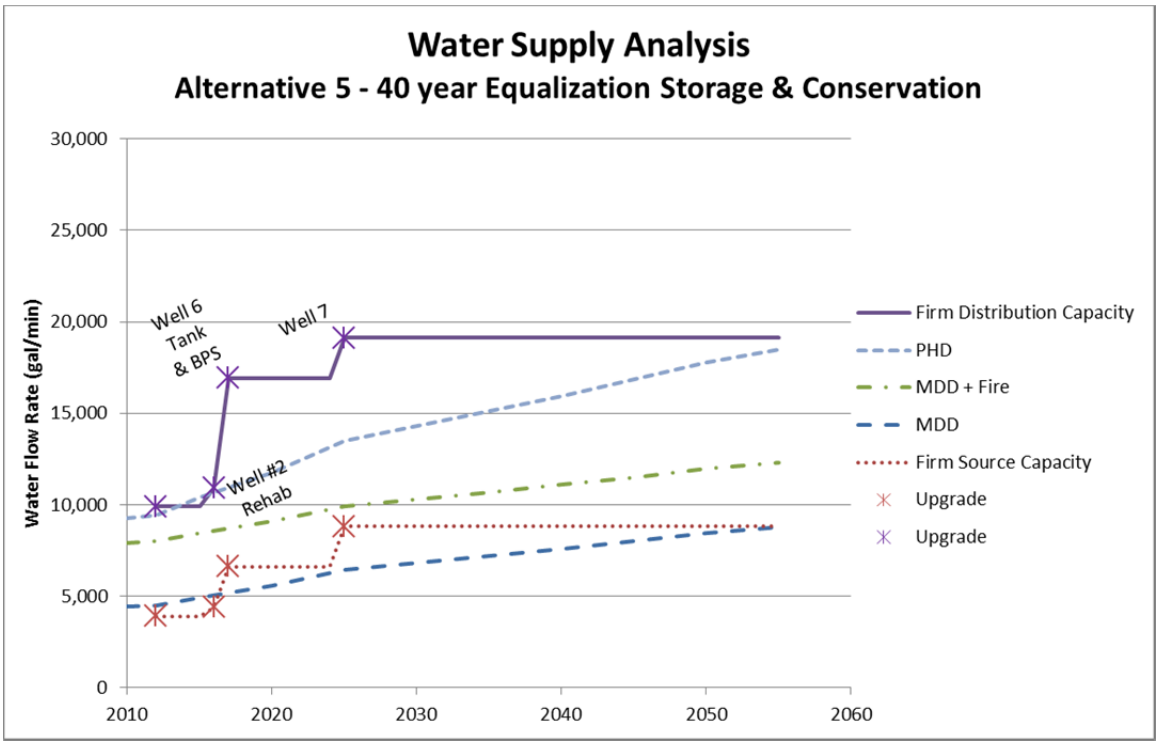


Figure 7-6 – Alternative 5 – Water Supply Analysis

The advantages of this alternative are similar to those of Alternative 2; namely economies of scale in constructing a larger tank volume, no additional water rights needed, and lower present construction cost at the present than will be realized in the future. Additionally, this alternative has a reduced tank volume and booster station capacity required and eliminates the development of one well as compared to Alternative 2.

The disadvantages of this alternative are also similar to Alternative 2; namely higher initial capital cost, maintaining infrastructure that will not be fully utilized until the projected growth is achieved, limited redundancy of supply locations, and need for larger transmission and distribution network piping.

The total estimated present value cost of Alternative 5 is $12.74 million.

7.9.6 ALTERNATIVE 6 – WELL/TANK/BPS PACKAGES WITH CONSERVATION

This alternative uses the same approach as alternative 3 in addressing water source, storage, and equalization distribution deficiencies through the development of sites containing a new well, storage tank, and booster station. This alternative evaluates these improvements paired with the water demand reduction from conservation of 0.5% per year as discussed in Section 7.4.1.

Under alternative 6, the 40 year water supply deficiency is 4,883 gpm, water storage deficiency of 2.43 MG, and water equalization delivery deficiency of 8,561 gpm. With the reduction in projected water system deficiencies resulting from the water conservation component, this alternative requires one less well/tank/BPS package as compared with Alternative 3. The total water storage deficiency under alternative 6 is 2.5 MG.

Under this alternative, water deficiencies are met through rehabilitation of Well No. 2, construction of Well No. 6 with a 1.5 MG storage reservoir and 4,000 gpm booster station (immediate) and construction of Well No. 7 with a 1.0 MG storage reservoir and 4,000 gpm booster station (~2023). Alternately, the storage tanks could each be sized at 1.25 MG. Improvements included under Alternative 6 are listed below in Table 7-12.

Table 7-12 – Alternative 6 Improvements

Improvement	Year
Rehab Well No. 2	2016
Well No. 6	2017
1.5 MG Storage Tank	2017
Booster Station	2017
Well No. 7	2023
1 MG Storage Tank	2023
Booster Station	2023

Figure 7-7 below illustrates the water supply analysis for Alternative 6.

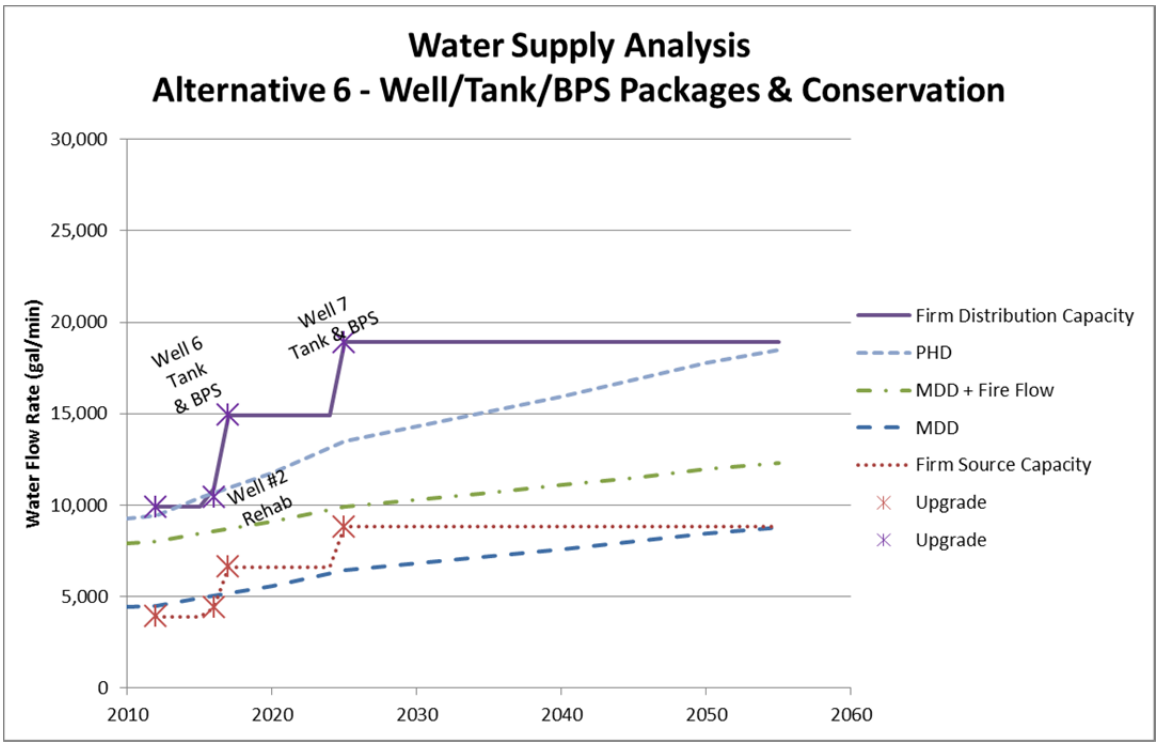


Figure 7-7 – Alternative 6 – Water Supply Analysis

This alternative has the same advantages provided by Alternative 3, namely; storage and equalization distribution redundancy, no additional water rights required, implementation timeline flexibility, and limited excess capacity above needs. Additionally, this alternative provides significant incentive for and benefit from implementing water conservation measures.

This alternative is the least cost alternative on a present value cost basis. The total estimated present value cost of Alternative 6 is $10.15 million.

7.9.7 System Alternative Evaluation

The six alternatives considered for the water system are compared here on the basis of the following:

- Capital cost – estimated present value cost of constructing
- O&M cost – relative level of O&M parts, material and labor for operation
- Reliability – relative reliability of the improvements to satisfy the current and future projected water deficiencies
- Flexibility – amenability to adjustment of time of implementation and potential for reduction in cost from related efforts (i.e. water conservation)
- Distribution redundancy – degree to which the alternative provides redundancy by placing production, storage, and delivery water assets across the system
- Future development – degree to which the improvements would aid in serving

projected future development areas

- Environmental Impact – relative impact to the environment

For each of these criteria an importance factor of 1 to 5 (5= highest importance) was applied to indicate the relative priority with which these criteria are viewed by the City of Chubbuck. Each alternative was rated on its relative effectiveness at satisfying the criteria on a scale of 1 to 5 (5= greatest effectiveness). The final score for each alternative is the sum of each criteria weight x score. This analysis is presented in Table 7-14 below.

In reviewing the analysis presented in able 7-13 it is seen that Alternative 6 yields the highest score followed by Alternative 4. The success of Alternative 6 is dependent on water conservation efforts being successful to reduce the total capital expenditure required for improvements. It provides good distribution redundancy in establishing new water sources and booster stations at different locations, provides good flexibility in adjusting the timing of capital investment, and is well suited to address the water demands that are projected to arise from new development within the service area.

Alternative 6 is the recommended Water System Improvement Alternative for this Study. This alternative is discussed further in the subsequent sections, including planning for implementation and related system improvements recommendations.

Table 7-13 – System Alternative Weighted Criteria Table

Parameter	Importance Factor 1-5 (least to greatest)	Alternative 1 - Wells Only		Alternative 2 - 40 yr. Equalization		Alternative 3 - Well/Tank/BPS Packages		Alternative 4 - Wells+ Conservation		Alternative 5 - 40 yr. + Conservation		Alternative 6 - Packages+ Conservation	
Capital Cost	5	1	5	3	15	2	10	4	20	4	20	5	25
O&M Cost	3	2	6	3	9	3	9	4	12	5	15	5	15
Reliability	5	4	20	2	10	3	15	4	20	2	10	5	25
Distribution Redundancy	4	5	20	1	4	4	16	5	20	1	4	4	16
Future Development	4	4	16	2	8	3	12	4	16	2	8	4	16
Environmental Impact	2	1	2	2	4	3	6	2	4	3	6	4	8
Total Rating			69		50		68		92		63		105

7.10 Bench Pressure Zone Alternative Development & Evaluation

Alternatives were developed to address the water distribution delivery deficiencies for the Bench Pressure Zone outlined in Section 6.3. These alternatives are listed in Table 7-14, are presented as Alternatives B1 through B4 and are evaluated in comparison in the following sections. Several additional recommendations applying in general and that specifically impact the Bench Pressure Zone and that are distinct from these alternatives have been discussed previously. The

alternatives for the bench booster station are evaluated on a 20 year basis.

Table 7-14 – Bench Pressure Zone Alternative Listing

Alternative B1	Rehabilitate Well No. 1
Alternative B2	Upsize Well No. 1
Alternative B3	New Pump in Bench BPS
Alternative B4	New Bench BPS

As discussed in Sections 5.2.9 and 6.3, the Bench Booster Station is not currently operating at its design capacity due to intake pressure limitations at high demand periods. Options to address the intake pressure are introduced in Section 7.7 and include construction of a new transmission line from the tank farm or installing a pressure sustaining valve in the transmission line. Either of these would work to resolve the intake pressure problem experienced at the Bench Booster Station. The pressure sustaining valve option is the least cost, but cannot be implemented absent a new storage tank and booster station in the lower pressure zone.

Alternatives B1 through B4 are each considered to address the projected bench pressure zone water demands for a 20 year period. These alternatives are discussed in relation to projected full demand as well as with conservation of 0.5% per year (as discussed in Section 7.4.1 and in Alternatives 4-6 for the overall system). In analyzing the water demands in the bench pressure zone, it was determined that the peaking factor in the bench pressure zone exceeds that of the overall water system (2.7 v. 2.1). This indicates that there is greater water use reduction potential in this portion of the system. If overall water use can be reduced, or even if the peaking factor for peak hour demand can be reduced, the water delivery deficiencies in the bench pressure zone would be decreased.

7.10.1 Alternative B1 – Rehabilitate Well No. 1 & Bench BPS

Alternatives addressing the bench booster pressure zone are considered on a 20 year planning period. The bench pressure zone has an estimated current deficiency in firm water delivery capacity of approximately 77 gpm. The peak hour demand is projected to surpass the current firm pumping capacity to the bench zone in 2017. The 20 year projected pumping deficiency in the bench pressure zone is approximately 1,200 gpm.

Alternative B1 includes rehabilitating Well No. 1 (2017), which would provide sufficient added pumping capacity through 2021. At that time an additional 850 gpm of pumping capacity would need to be added for the bench pressure zone. This could be done by adding a new pump at the existing booster station, upsizing the two existing main pumps at the bench booster station, or construction of a new booster station to service the bench pressure zone.

This alternative has the advantage of alleviating the immediate needs by restoring Well No. 1 to production, allowing time to evaluate if growth in the bench pressure zone is realized in line with the projections used in this evaluation.

The disadvantage of rehabilitating Well No. 1 as a water source delivering into the Bench

Pressure Zone is that the source would not be able to be used to supplement water needs in the lower pressure zone or fill storage volume during low demand periods without further improvements. The ADD of the bench pressure zone is approximately the same as the current pump capacity of Well No. 1.

The estimated cost of this alternative is $480,000.

7.10.2 Alternative B2 – Upsize Well No. 1 & Bench BPS

There is an immediate need to implement additional pumping capacity into the bench pressure zone. The 20 year projected pumping need is approximately 1,200 gpm.

Alternative B2 includes upsizing Well No. 1 (2017) to 600 gpm of capacity or greater. Based on the pump test reported on the well drilling log, the well was test pumped at approximately 1,300 gpm. No information on the duration or drawdown is available from this source. If the well can be upsized to 850 gpm or greater, this would address the bench pressure zone for about 15 years, at which time additional pumping capacity of 350 gpm or greater would need to be added to the bench pressure zone. This could be done by adding a new pump at the existing booster station, upsizing the two existing main pumps, or constructing a new booster pump station for the bench pressure zone.

This alternative has similar advantages as Alternative B1. Additionally, the cost of upsizing the pump is estimated to be approximately 40% greater than rehabilitation of Well No. 1 at the same capacity. This alternative provides the needed immediate additional pumping capacity in the bench pressure zone. The disadvantage of rehabilitating Well No. 1 as a water source delivering into the Bench Pressure Zone is that the source would not be able to be used to supplement water needs in the lower pressure zone or fill storage volume during low demand periods without further improvements. The ADD of the bench pressure zone is approximately the same as the current pump capacity of Well No. 1.

The estimated present value cost of Alternative B2 is $586,000.

7.10.3 Alternative B3 – New Pump in Bench BPS

This alternative addresses the 1,200 gpm of 20 year projected water delivery deficiency through installing approximately 1,200 gpm of booster pumping capacity at the bench booster station. This could be accomplished by installing a new booster pump, if space and intake capacity permits. Further evaluation of the space that can be utilized in the existing booster building, the intake capacity to deliver the needed water, and the standby generator capacity is needed to ascertain the viability of this alternative. If a new booster pump cannot be accommodated in the existing booster station, then this alternative would not be a valid option.

The estimated cost for this alternative is $207,000.

7.10.4 ALTERNATIVE B4 – NEW BENCH BPS

This alternative addresses the bench pressure zone water delivery need through the construction of a new booster pumping station. If additional booster pumping is to be developed and the existing booster station cannot accommodate the additional pumping capacity, then this alternative would be the remaining option.

A new booster station could be located adjacent to the existing building, at a new location along Chubbuck Road, or another location with good connection to the distribution network and close to the bench service area.

Looking forward to the future growth area that would need to be served with booster pumping, the area to the north of Chubbuck Road and between I-15 and Hiline Road, a location near the intersection of Hiline and Siphon Roads would be a possibility. This is fairly removed from the current bench pressure zone distribution network, but as a long term alternative it would provide good connection to the main distribution network and water service to this future growth area. Also, if future development in this area were to be non-residential, i.e. commercial or industrial, additional water delivery capacity would be needed to satisfy fire protection flow requirements. A new booster pumping station would be needed to add enough capacity for this as the industrial and commercial fire protection requirements in the City of Chubbuck are 2,000 gpm greater than for residential zoning.

A new booster station would be needed with capacity of 1,200 gpm to address the 20 year projected water delivery deficiency of the bench pressure zone. The estimated cost of constructing a booster station with this capacity is $635,000.

7.10.5 ALTERNATIVES B1-B4 WITH WATER CONSERVATION

Water conservation at the 0.5% per year reduction (Section 7.4.1) would yield a 10.5% reduction in the 20 year bench pressure zone water demands. This would directly result in reduced need for water delivery capacity into the bench pressure zone of 322 gpm.

With water conservation considered, Alternative B1 would see a reduction of the additional pumping capacity that would need to be added to the bench pressure zone of approximately 320 gpm. This would reduce the estimated cost of this alternative only slightly.

Alternative B2 would have the greatest reduction in cost with water conservation as the addition of Well No. 1 at 850 gpm would provide the needed water delivery capacity increase for the 20 year projected need in the bench pressure zone, therefore no additional booster pumping capacity would be needed within the planning timeframe. This would reduce the estimated cost of this alternative to $284,000.

Alternatives B3 & B4 would see a reduction of the booster pump capacity that would need to be included of 320 gpm, resulting in a slightly smaller pump size being required. The reduction in cost of these alternative would be small.

The greatest impact of water conservation for the considered alternatives would be for Alternative B2. The increase in size of Well No. 1 would provide sufficient water delivery capacity in the bench pressure zone for the 20 year planning period. This alternative would still have the limitations outlined previously.

7.10.6 Bench Pressure Zone Alternative Evaluation

The four alternatives considered for the bench pressure zone are listed in the tables below for comparison on the basis of the following:

- Capital cost – estimated present value cost of constructing
- O&M cost – relative level of O&M parts, material and labor for operation
- Reliability – relative reliability of the improvements to satisfy the current and future projected water deficiencies
- Distribution redundancy – degree to which the alternative provides redundancy by placing production, storage, and delivery water assets across the system
- Future development – degree to which the improvements would aid in serving projected future development areas
- Environmental Impact – relative impact to the environment

For each of these criteria an importance factor of 1 to 5 (5= highest importance) was applied to indicate the relative priority with which these criteria are viewed by the City of Chubbuck. Each alternative was rated on its relative effectiveness at satisfying the criteria on a scale of 1 to 5 (5= greatest effectiveness). The final score for each alternative is the sum of each criteria weight x score. This analysis is presented in Table 7-15 below.

Table 7-15 – Bench Booster Station Alternative Weighted Criteria Table

Parameter	Importantce Factor, 1-5 (least to greatest)	Bench Alternative B1 – Rehab W No. 1/Upsize BPS		Bench Alternative B2 – Upsize Well No. 1 & BPS		Bench Alternative B3 – Upgrade Bench BPS		Bench Alternative B4 – New Bench BPS	
Capital Cost	5	3	15	4	20	5	25	1	5
O & M Cost	3	4	12	3	9	4	12	3	9
Reliability	5	2	10	2	10	3	15	5	25
Distribution Redundancy	4	1	4	3	12	3	12	5	20
Future Development	4	2	8	2	8	3	12	5	20
Environmental Impact	2	4	8	4	8	5	10	3	6
Total Rating			**57**		**67**		**86**		**85**

In reviewing the analysis presented in Table 7-16 it is seen that Alternatives B3 and B4 score nearly the same at 86 and 85. Alternative B3 is the least cost alternative while

Alternative B4 provides the greatest benefits in distribution redundancy, future development, and reliability in providing current and future water delivery needs. These high scores for Alternative 4 are a result of the flexibility in increasing the water delivery capacity into the bench pressure zone to address future needs and projected development.

If a longer planning period were considered, all four alternatives would include construction of a new booster station for the bench pressure zone. Understanding that when development happens in the bench area water demands will increase to a level that will require a new booster pump station, the City should anticipate constructing a new booster station to feed into the bench pressure zone when new development is proposed in the bench area.

There remain enough unknown factors in approaching the bench pressure zone (i.e. feasibility of increasing the pumping capacity of Well No. 1 and of installing additional pumping capacity at the bench booster station, timing of future development in the bench area) that the recommendation of this study is as follows:

- Conduct further evaluation of the feasibility of Well No. 1 rehabilitation, Well No. 1 size increase, and bench BPS upsizing.
- Implement one of these improvements in the short term to alleviate the current and short term projected water delivery deficiencies in the Bench Pressure Zone.
- Implement water conservation efforts as recommended for the system as a whole.
- Continue monitoring of water demand in the Bench Pressure Zone.
- When additional development in the bench area becomes imminent, construct a new booster pump station either along Chubbuck Road or Hiline Road.

Following these recommendations for the Bench Pressure Zone will alleviate the present and short term projected deficiencies and allow the City to implement a booster pump station project at the time and in the manner that will meet the needs in the bench area.

7.11 Cost Summary

Opinions of probable cost are based on Keller Associates perception of the current conditions and reflect our opinion of probable cost at the time. Opinions of probable cost are subject to change as the project design matures. The design costs for each of the alternatives have been estimated to reflect the anticipated conditions for each of the various project alternatives. Keller Associates has no control over the cost of labor materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding, market conditions, and/or bidding practices or strategies. Keller Associates cannot and does not guarantee the proposals, bids, or actual construction costs will not vary from the costs presented herein.

These estimates include costs associated with construction and materials (material costs plus installation, engineering service during design and bidding (13%), engineering services during construction (3%), funding/legal fees (4-5%), contractor overhead and profit (10%), and a contingency factor (20%) to account for variation in construction costs and uncertainties. A summary of estimated costs are found in Table 7-16 and detailed cost estimates can be found in Appendix G . The cost estimates for the Alternatives in Table 7-16, and that were presented previously in the consideration of the alternatives, are on a present value basis for the implementation schedule outlined in the respective sections of Section 7 that address each alternative. They apply a construction inflation rate of 6% per year with a general inflation rate of 3% per year and a water rights cost inflation rate of 7.5% per year. Other recommendations are a current construction cost estimate with no adjustments for inflation. These will not represent the cost for implementation at future dates.

Table 7-16 – Summary of Conceptual Alternative Cost Estimates

Alternative	Estimated Cost
Alternative 1 – New Wells	$22,895,000
Alternative 2 – 40 year Equalization Storage	$15,436,000
Alternative 3 – Well/Tank/BPS Packages	$17,563,000
Alternative 4 – Wells with Conservation	$13,720,000
Alternative 5 – 40 year Equalization Storage with Conservation	$12,739,000
Alternative 6 – Well/Tank/BPS Packages with Conservation	**$10,145,000**
Alternative B1 – Rehabilitate Well No. 1 & Upsize Bench BPS	$480,000
Alternative B2 – Upsize Well No. 1 and Bench BPS	$622,000
Alternative B3 – Install New Pump in Bench BPS	$207,000
Alternative B4 – New Bench BPS	$635,000

Table 7-17 below summarizes other related project options for improvements to the water system.

Table 7-17 – General Recommendations Cost Estimate Summary

Alternative	Estimated Cost
Tank Farm Transmission Line	$995,000
Pressure Sustaining Valve in Chubbuck Transmission Line	$156,000
Initial Water Conservation Plan & Implementation	$30,000
General Scheduled Improvements	
Fire Flow Improvements	$665,000
Distribution Network Improvements	$1,053,000
Distribution System Expansion – Philbin Area	$3,188,000
Distribution System Expansion – Tyhee Area	$2,714,000
Distribution System Expansion – Rio Vista Area	$4,023,000

7.12 Recommendations Summary & Priority

The recommended improvements will address current and projected water supply, storage, equalization delivery, and distribution system deficiencies throughout the Chubbuck water system. The recommendations are summarized in Table 7-18 below and a proposed implementation schedule is discussed in Chapter 8 of this report.

Table 7-18 – Recommendations Summary

Recommendation	Description	Priority	Est. Cost
Alternative 6 – Ph1	Well #6/ 1.5 MG Storage/4,000 gpm BPS	Priority 1 – Immediate	$10,145,000
Bench Pressure Zone –	Further analysis + Well No. 1 Rehab/Well No. 1 Upsize/Bench BPS Upsize	Priority 1 – Immediate	$200,000 to $285,000
PSV for Bench BPS	Install a PSV in the Chubbuck Road Transmission Line	Priority 1 – Immediate	$156,000
Water Conservation	Develop Immediate Water Conservation Plan	Priority 1 – Immediate	$30,000
Alternative 6 – Ph 2	Well #7/ 1.0 MG Storage/ 4,000 gpm BPS	Priority 2 – Short Term	
Fire Flow Improvements	Various Line Replacement Projects to address fire flow capacity deficiencies	Priority 1-2 – Immediate to Intermediate Term	$665,000 (current estimate)
Future Bench Booster Station	Plan and implement a new bench booster station as bench area demands increase	Priority 2 – Intermediate	$700,000 to $900,000 (Depending on time of implementation)
Distribution Network Improvements	Various Line Replacement Projects to address projected distribution network needs	Priority 2 – Intermediate	$1,053,000 (current estimate)
Distribution Expansion Improvements	Philbin Area Tyhee Area Rio Vista Area	Priority 3 – Long Term	~$10 Million (current estimate)

The improvements recommended, as summarized in the table above, are assigned a priority based on how soon they are required to address the system needs. Priority 1 – Immediate indicates that the improvements should be undertaken immediately. These include the Alternatives for the system and the bench pressure zone. Priority 2 – Intermediate are improvements that are projected to be necessary within a 5-10 year timeframe. Priority 3 – Long Term are improvements that are projected to be needed at some time in the future, dictated by development patterns and desire of the City to extend water service into those growth areas, including the area currently served by the sewer collection system.

The following sections discuss implementation of the recommended improvements.

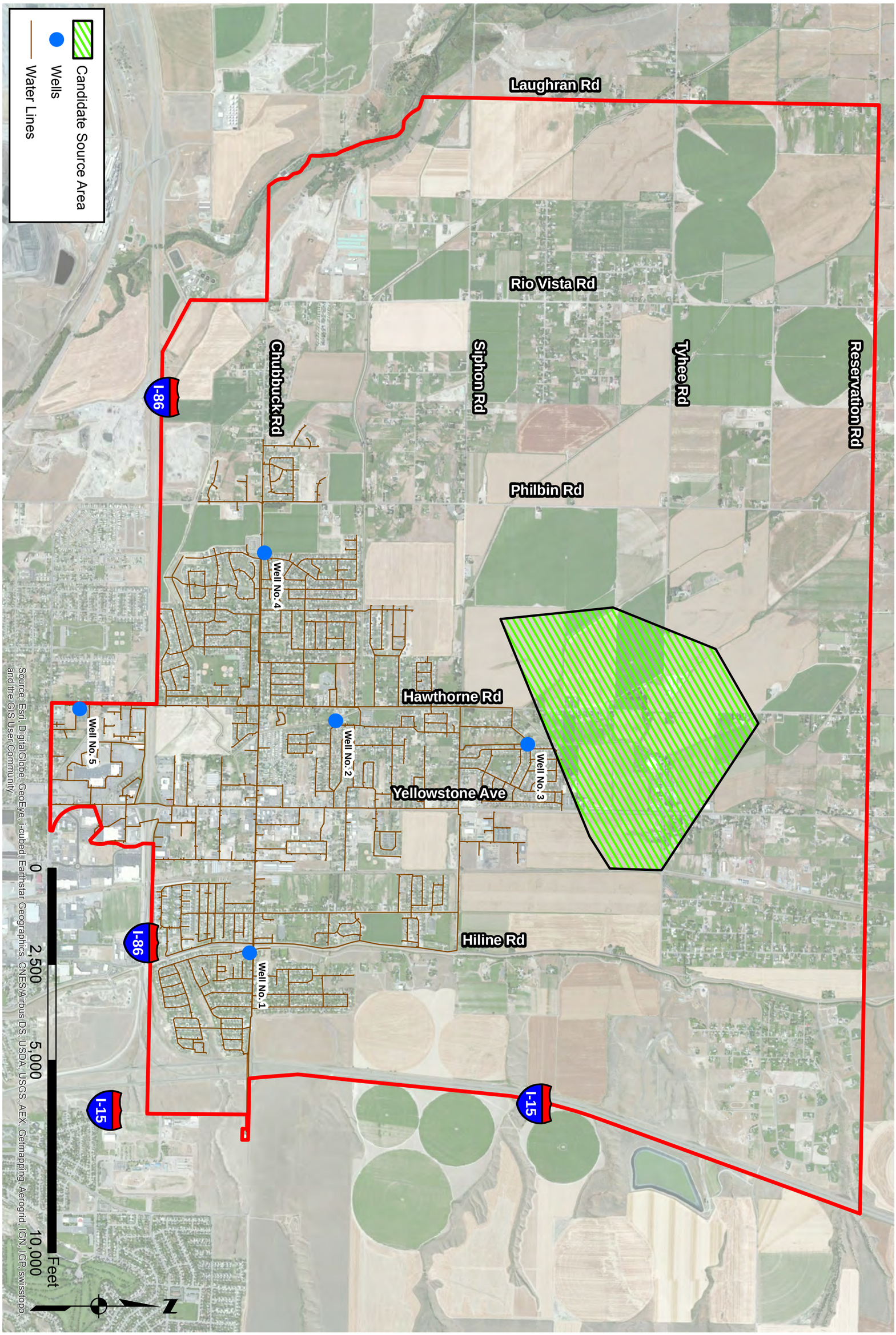
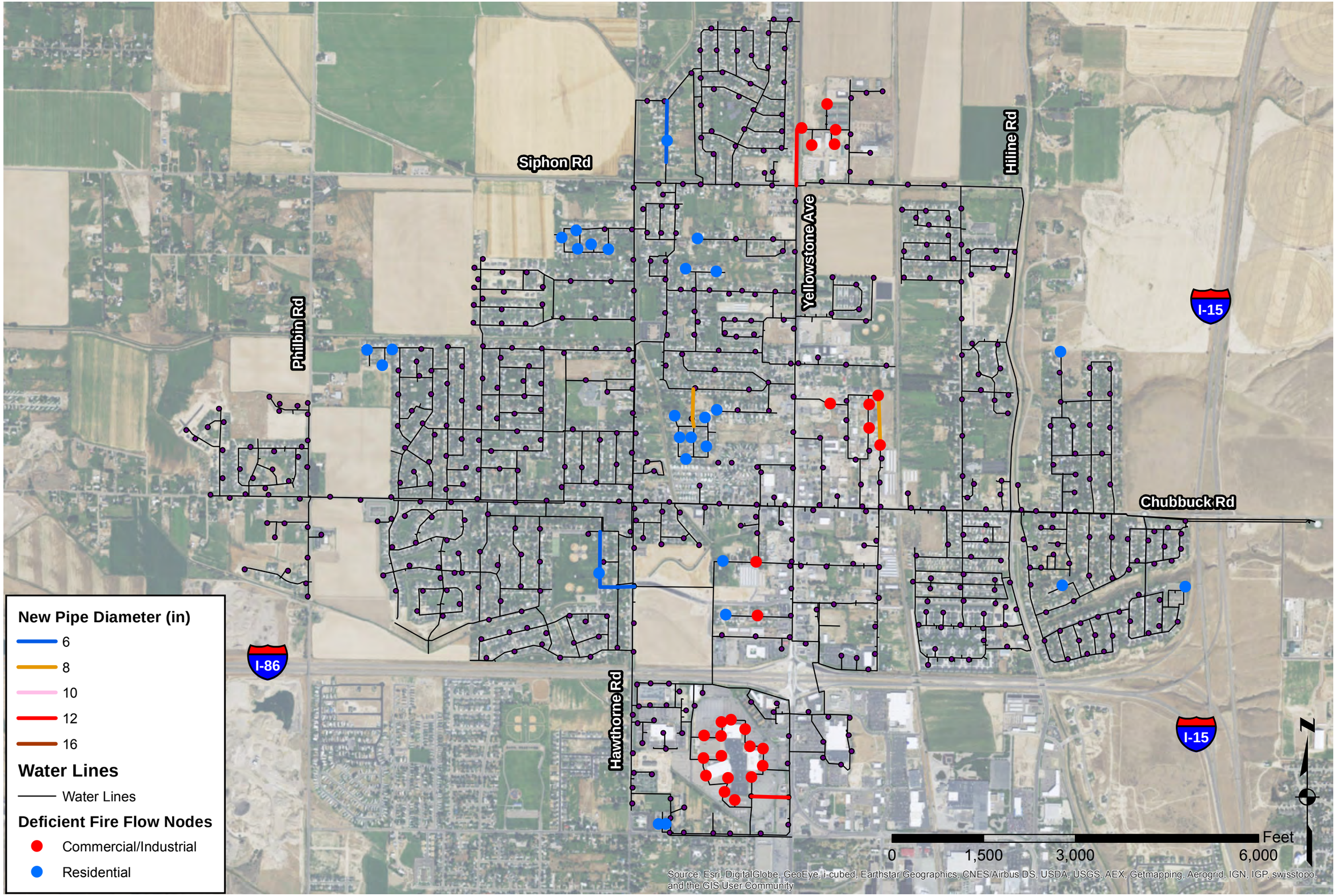


FIGURE NO. 7.8	Water Facilities Planning Study Potential Future Well Site Location	City of Chubbuck	KELLER associates 305 N. 3rd Avenue Pocatello, ID 83201 208.238.2146 www.kellerassociates.com	PROJECT NO. 210078 FILENAME 7.8 - Source Area.mxd



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PROJECT NO. 210078

FILENAME 7.9 - Fire Impvmnts.mxd

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City of Chubbuck

Water Facilities Planning Study

Fire Flow Deficiencies and Associated Improvements

FIGURE NO. 7.9

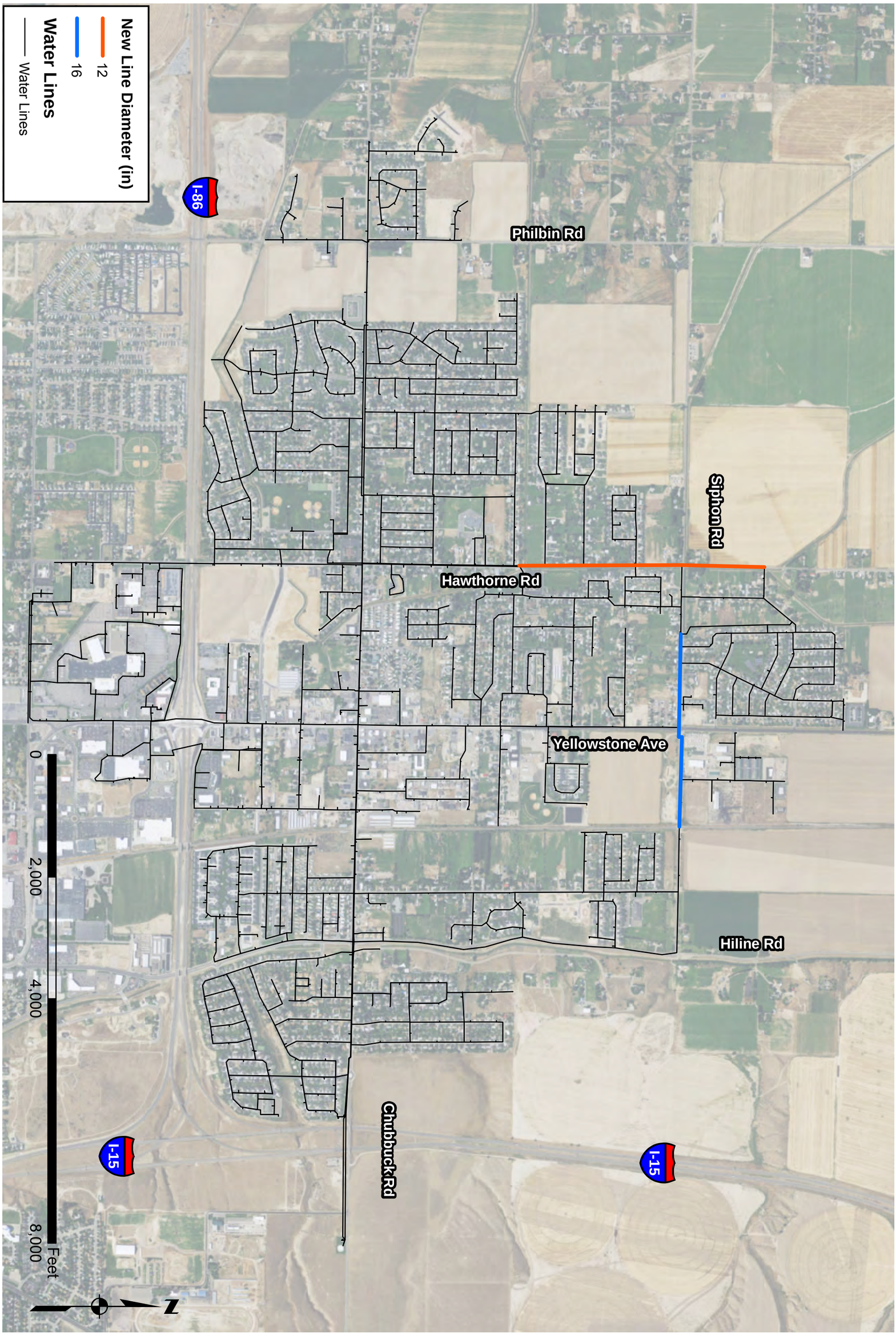
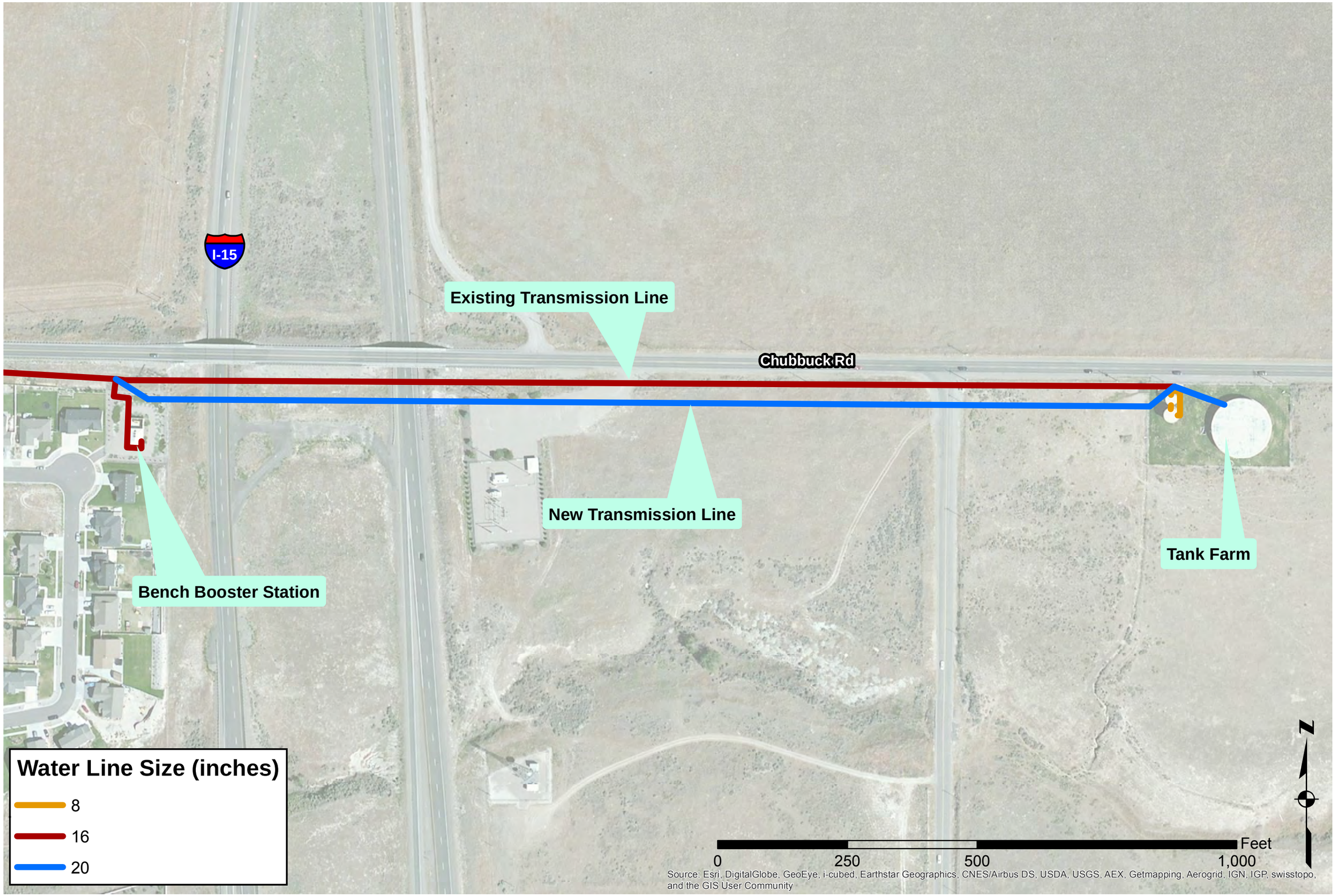


FIGURE NO. 7.10	Water Facilities Planning Study Distribution Network Improvements	City of Chubbuck	KELLER associates 305 N. 3rd Avenue Pocatello, ID 83201 208.238.2146 www.kellerassociates.com	PROJECT NO. 210078 FILENAME 7.10 - Dist Ntwrk Impvmnts.mxd



PROJECT NO. 210078

FILENAME 7.11 - Tank Xmssn Line.mxd

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City of Chubbuck

Water Facilities Planning Study

Tank Transmission Line

FIGURE NO. 7.11

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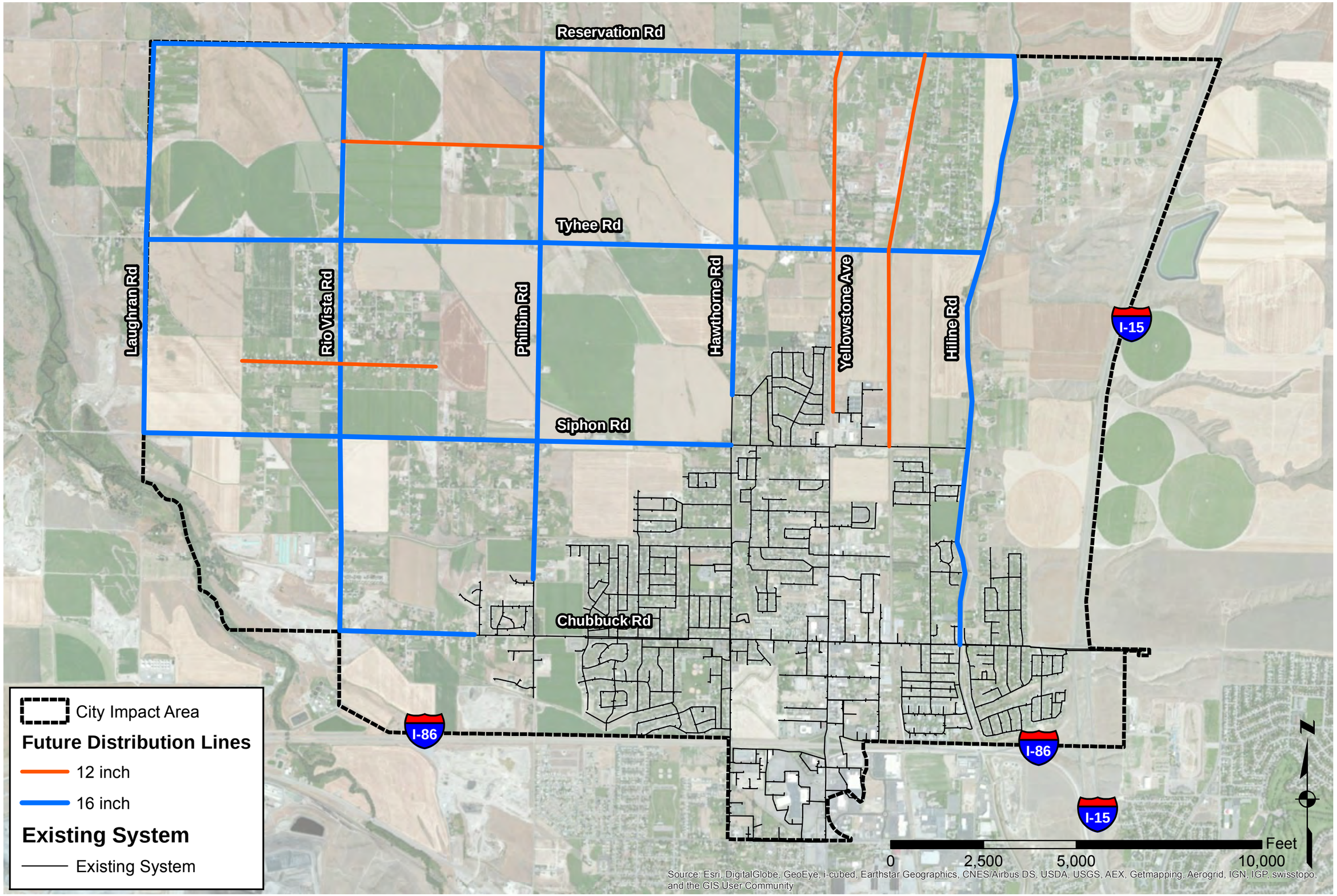

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PROJECT NO. 210078

FILENAME 7.12 - Future Xmssn Ln.mxd

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City of Chubbuck

Water Facilities Planning Study

Future Transmission Lines

FIGURE NO. 7.12

Chapter 8 Implementation and Funding Analysis

8.1 PROJECT IMPLEMENTATION

This Chapter outlines the recommended implementation sequencing and potential funding mechanisms to complete the recommended water system improvement projects. Together, the schedule and funding plan comprise a Capital Improvements Plan for the City of Chubbuck Water System. The improvements were inserted into the improvements plan in their priority for implementation.

The Priority 1 projects will need to be completed to meet the current and projected water system deficiencies. Priority 2 projects are needed to address less critical and projected system deficiencies. Priority 3 projects include those that solely address the expansion of the distribution system into new service areas. Timing for implementation of Priority 3 improvements is driven solely by the City's desire to extend water service into new areas to serve developing areas. As discussed in Section 7.8, water service is an important component for encouraging new commercial and industrial development, as well as residential.

8.1.1 PROJECT SCHEDULE

Priority 1 improvements are vital to reliable operation of the water system and should be addressed immediately. Keller Associates recommends that design of these improvements begin in summer 2015 with construction beginning in fall of 2015 or spring 2016. Priority 1 improvements for immediate implementation include:

Table 8-1 – Priority 1 Improvements Schedule

Start Date	Improvement Description
2015	Evaluate capacity upgrade alternatives for the Bench Pressure Zone
2015	Rehabilitate Well No. 2
2015	Secure land for well site(s) (target 1.5-2 acres each)
2016	Construct Well No. 6 (production target >2,200 gpm
2016	Construct storage tank (1.5 million gallons)
2016	Construct booster pump station (pumping capacity ~4,000 gpm)
2016	Install Pressure Sustaining Valve in Chubbuck Transmission Line
2016	Develop Water Conservation Program & begin implementation
2016	Begin scheduling of Fire Flow Improvements for completion on an achievable and affordable schedule
2017	Begin scheduling of Distribution Network Improvements for completion within 10-15 years

Priority 2 improvements are necessary intermediate term improvements to protect the water system. Priority 2 improvements include the following:

Table 8-2 – Priority 2 Improvements Schedule

Start Date	Improvement Description
2022	Evaluate success of Water Conservation Program
2022	Construct new Bench Booster Pump Station
2023	Construct Well No. 7 (production target >2,200 gpm
2023	Construct storage tank (1.0 million gallons or greater)
2023	Construct booster pump station (pumping capacity ~4,000 gpm)
2030	Complete Fire Flow and Distribution Network Improvements
2016	Develop Water Conservation Program & begin implementation
2016	Begin scheduling of Fire Flow Improvements for completion on an achievable and affordable schedule

Priority 3 Improvements include installation of new distribution network piping to extend the water service area into developing areas North and West of the current City boundaries. The sequencing of these improvements should be selected based on the City's desire to provide water service to new development areas. It is recommended that the City continually re-evaluate implementation of the various components of the Priority 3 Improvements as development conditions evolve.

8.2 FUNDING ANALYSIS

Funding for implementing the recommended system improvements should come from the water system revenues. The City has reported that the water system has a significant cash reserve accumulated. This puts the City in the enviable position of being able to fund a good portion of the needed improvements from cash reserves. A portion of future revenues may also be allocated to financing these improvements. The Idaho Department of Environmental Quality State Revolving Fund (SRF) loan program provides low interest loans for projects of this nature. The City submitted a Letter of Interest (LOI) for a DEQ SRF loan in 2015.

The City may also be eligible to apply for grant funding such as the Idaho Department of Commerce Community Development Block Grant Program (CDBG) and Special Congressional Appropriations. Based on 2000 census data for the City of Chubbuck, the City's "low to moderate income" level (LMI) was 36%, meaning that the City would not qualify for a Community Development Block Grant. Special Congressional Appropriations have been infrequent in recent years, vary in amount, and are difficult to predict. However, this option should not be overlooked.

8.2.1 PROJECT FUNDING NEED

The total estimated cost of implementing the recommended improvements in 2015 Present Value (PV) cost is approximately $22.3 Million. Table 8-3 shows the estimated construction cost in 2015, the Future Value (FV) for each project component at the start

year, and the Present Value cost for all of the recommended improvements.

The costs presented in this table are estimated construction costs as presented in Chapter 7. The funding analysis utilizes a 6% annual construction cost inflation rate and a 3% interest rate.

Table 8-3 – Project Funding Analysis

Improvement Item		Year		Est. Cost	FV Cost	PV Cost
Priority 1 - Immediate		2016-2017				
Rehab Well #2		2016		$324,000	$343,000	$333,000
Well #6		2017		$1,117,000	$1,255,000	$1,183,000
Booster Station (~4,000 gpm)		2017		$1,215,000	$1,365,000	$1,287,000
1.5 MG Storage Tank		2017		$2,506,000	$2,816,000	$2,654,000
Transmission Trunk Line (2,500 ft of 16-inch)		2017		$347,500	$390,000	$368,000
Rehab Well #1 or Upsize Bench BPS		2017		$270,000	$303,000	$286,000
Water Conservation Plan		2016		$30,000	$32,000	$31,000
Priority 1 - Immediate Total				**$5,809,500**	**$6,504,000**	**$6,142,000**
Priority 1 - Intermediate		2020-2025				
New Bench Booster Station		2022		$600,000	$902,000	$733,000
Well #7		2023		$793,000	$1,264,000	$998,000
Booster Station (4,000 gpm)		2023		$1,215,000	$1,937,000	$1,529,000
1 MG Storage Tank		2023		$1,990,000	$3,172,000	$2,504,000
Transmission Trunk Line (1,500 ft of 16-in)		2023		$208,500	$332,000	$262,000
Priority 1 - Intermediate Total				**$4,806,500**	**$7,607,000**	**$6,026,000**
Priority 2 Improvements						
Fire Flow Improvements		2020		$665,000	$890,000	$768,000
Distribution Network Improvements		2020		$1,053,000	$1,409,000	$1,215,000
Priority 2 - Total				**$1,718,000**	**$2,299,000**	**$1,983,000**
Priority 3 Improvements						
Distribution System Expansion - Tyhee		2025		$2,714,000	$4,860,000	$3,616,000
Distribution System Expansion - Philbin		2025		$3,188,000	$5,709,000	$4,248,000
Distribution System Expansion - Rio Vista		2025		$4,023,000	$7,205,000	$5,361,000
Priority 3 - Total				**$9,925,000**	**$17,774,000**	**$13,225,000**
Total Present Value Cost of All Recommended Improvements						**$27,376,000**

8.2.2 FUNDING FOR PRIORITY 1 IMPROVEMENTS

The projects recommended for immediate implementation total $5,809,500 in estimated construction cost (2015 dollars).

The Priority 1 – Intermediate improvements are projected to be needed within seven years. The total estimated construction cost of Priority 1 – Intermediate improvements is $4,806,500. There are additional considerations that may make the addition of these improvements more quickly.

The City submitted a Letter of Interest to the Idaho Department of Environmental Quality in January 2015 for $5.5 million in loan funding toward the implementation of the needed improvements. Estimated annual payment on a $5.5 million loan with IDEQ is estimated to be approximately $328,000 (20 year term, 2.75% interest). The City has expressed interest in completing all of the Priority 1 Improvements as soon as possible to address

the projected 20 year needs and lay the strategic groundwork for anticipated future growth. The City has requested that the loan total be increased to $11.5 million. This amount would allow the City to complete the construction of the majority of the Priority 1 recommended improvements as a single project and free the reserve funds to be used for the Priority 2 and Priority 3 Improvements and other service area improvements. IDEQ has indicated that the payment terms for an $11.5 million loan would be 1.5% over 30 years. This would result in an annual payment of approximately $480,000. The City has expressed that this payment could be met within the existing user rate without rate increases.

As reported in the City's audited financial statements for fiscal year 2013, the City has a significant capital reserve fund, (~$5,250,000 in unrestricted capital at end of FY 2013 (Deaton Company, CPA, 2014)). The financial report also indicates that the City is accumulated a net income of $1.17 million in 2013. This money is reflected in the unrestricted capital reserves for the water fund. A similar net income would be expected for 2014 and 2015 as no major projects have been undertaken.

Analysis of the current water system budget indicates that the projects for immediate and short term implementation can be funded through a combination of loans and use of capital reserve funds without increasing user rates.

8.2.3 Funding for Priority 2 and Priority 3 Projects

The projects identified as Priority 2 and 3 include recommended improvements for addressing system fire protection and distribution deficiencies that will be needed in the future. These include the construction of a new bench booster station and Well No. 7 with a storage tank and booster pump station. It is recommended that net income be saved in the capital reserve fund in anticipation of implementing these improvements in 2022-2023. It is projected that the reserve fund may accumulate much of the funding needed to implement these projects. Remaining funds could be acquired from an additional loan, either from IDEQ or private market.

The Long Term projects include the Distribution System Expansion projects and are indicated with an implementation time between 2020 and 2035. This timeframe is at the discretion of the City, as discussed previously, and should be implemented using revenues from connection fees and use charges on a scheduled basis. Accelerating the implementation of these projects through the use of loan funding would be expected to decrease the construction cost, as it is projected that construction inflation will exceed general inflation and the interest cost of borrowing money.

8.3 Rate Analysis

The City of Chubbuck currently has a minimum base charge of $20.22 per month for residential connections and a volumetric charge of $1.15 per one thousand gallons of metered water. In order to afford the proposed water improvement projects the City will need to increase water usage rates in the future. Water rates should be set based upon the loan amounts that the City will receive and operation and maintenance costs.

As discussed in 8.2.2, it is likely that the City will be able to implement the immediate project improvements without a user rate increase. Inflation has averaged approximately 2.4% over the past 20 years (U.S. BLS, 2015). In this report inflation is projected at 3% annually. As operating costs and construction cost of future improvements will increase with inflation, it is recommended that the City increase user rates and connection fees on a regular basis to avoid the erosion of the funding base for the water system.

8.4 PUBLIC INVOLVEMENT

As part of the development of this report, several presentations were given to the Chubbuck City Council and discussions held with City Staff. In addition to this, public comments should be solicited and information shared with the public. Keller Associates recommends that at least one public open house should be scheduled to provide information on the alternatives analyzed and the recommendations given by this report. Feedback from the public should be considered by the City in making final decisions regarding the recommendations of this document.

Chapter 9 Preliminary Engineering Report

9.1 General Information

The City of Chubbuck, Idaho contracted with Keller Associates to prepare an update to the 2004 Water System Facilities Planning Study. The purpose of the study update is to provide a comprehensive evaluation of the existing system and provide recommendations to meet future demands and continue to provide quality water to all City residents. This report is also intended to satisfy the requirements of a Preliminary Engineering Report for the proposed immediate improvements to the water system. This chapter specifically addresses the requirements for a Preliminary Engineering Report. It makes extensive reference to the 2015 Water Facilities Planning Study (2015 WFPS), but is intended to address the requirements for a PER as a stand-alone document.

This Preliminary Engineering Report applies to the Priority 1 Recommendations of the 2015 WFPS: Well No. 6, 1.5 million gallon storage tank, and 4,000 gpm booster pumping station, Well No. 7, 1.5 million gallon storage tank, and 4,000 gpm booster station. Other immediate recommendations under priority 1 include: Rehabilitate Well No. 2, Rehabilitate Well No. 1 OR increase capacity of the Bench Booster Station, and develop and implement a Water Conservation Program. Priority 2 improvements include replacement of various water lines for fire protection flow delivery and distribution network improvement. The improvements for the Bench Pressure Zone require further analysis to select the preferred improvement. Well No. 2 rehabilitation will be addressed in a separate PER document. The Water Conservation Program does not require a PER. Priority 2 improvements for distribution system improvements are regular line replacement projects that will be scheduled according to the City's ability to implement them.

9.1.1 Project Description

A number of system improvements are needed by the Chubbuck City water system to provide a reliable water supply for residents now and in the future. Implementing all of the improvements during one construction season would be difficult both financially and logistically

Each option and improvement presented in Chapter 7 was ranked based upon current Idaho Rules for Drinking Water Systems violations, potential Idaho Rules for Drinking Water Systems violations, cost, maintenance needs, and feedback from City leaders and employees. It was necessary to evaluate the proposed improvements based upon all of these criteria to ensure that the needs of the City's water system are met as a whole rather than simply addressing one aspect of the water system's needs.

Priority 1 improvements are vital to reliable operation of the water system and should be addressed immediately. Implementing priority 1 items will improve the long term and short term operation of the system. If any of the existing wells (Well No. 3, No. 4 or No. 5) fail during peak demand periods, the City would be faced with serious water shortages and IDEQ violations (i.e. minimum pressure violations). Priority 2 improvements should be planned for and scheduled for implementation on the time frame indicated in the project schedule with adjustments made as the realization of, or variation from,

the projections of this report becomes known. Priority 3 improvements should be evaluated on the basis of the City's desire to accommodate future growth in the areas North and West of the current water service area. As development begins to take shape, these improvements will become necessary.

The recommended improvements, their estimated cost, and recommended time for implementation are depicted in Table 9-1. Keller Associates recommends the design of the Priority 1 improvements begin in 2015 with construction beginning in spring of 2016.

Table 9-1 – Recommendations Summary

Recommendation	Description	Priority	Est. Cost
System Improvement - Alternative 6	Well/Tank/BPS Packages & Water Conservation	Priority 1 – Immediate	$10,145,000
Bench Pressure Zone –	Further analysis + Well No. 1 Rehab/Well No. 1 Upsize/Bench BPS Upsize	Priority 1 – Immediate	$200,000 to $285,000
PSV for Bench BPS	Install a PSV in the Chubbuck Road Transmission Line	Priority 1 – Immediate	$156,000
Water Conservation	Develop Immediate Water Conservation Plan	Priority 1 – Immediate	$30,000
Fire Flow Improvements	Various Line Replacement Projects to address fire flow capacity deficiencies	Priority 1-2 – Immediate to Intermediate Term	$665,000 (current estimate)
Future Bench Booster Station	Plan and implement a new bench booster station as bench area demands increase	Priority 2 – Intermediate	$700,000 to $900,000 (Depending on time of implementation)
Distribution Network Improvements	Various Line Replacement Projects to address projected distribution network needs	Priority 2 – Intermediate	$1,053,000 (current estimate)
Distribution Expansion Improvements	Philbin Area Tyhee Area Rio Vista Area	Priority 3 – Long Term	~$10 Million (current estimate)

The Preliminary Engineering Report presented in this chapter is targeted to cover the Priority 1 Improvement titled System Improvement Alternative 6 – Well/Tank/BPS Packages & Water Conservation. The immediate improvements included in this alternative are Rehabilitation of Well No. 2 and construction of Well No. 6 and No. 7 with 1.5 million gallon water storage tanks and booster pump stations of approximately 4,000 gpm capacity each. The water conservation component will be addressed through the development and implementation of a water conservation program.

9.1.2 ELECTRICAL REQUIREMENTS

An emergency generator should be installed with each of the wells and the booster pump stations. Including emergency power will meet the requirement of standby power for

groundwater sources (IDAPA 501.07.c) and maintain the capability to deliver water into the distribution system in the event of power loss. The generators will be installed with automatic switching capability. Pumps are to be equipped with VFD drives and harmonic filters.

9.1.3 STRUCTURAL REQUIREMENTS

The structural components of the project must be designed to withstand the seismic, wind, and snow loading requirements under the applicable building codes. Foundations and exterior piping will be placed below frost depth. Flexible couplers will be used where pipes pass under the building foundation.

9.1.4 SITE SELECTION

Site selection will be based upon the groundwater contamination plumes present in the area as discussed in section 5.2.7. Drawing water from an uncontaminated point in the aquifer will reduce the cost of water treatment. The yellow polygon in figure 5-2 shows the best candidate areas for the new well sites.

Evaluation and selection of new well sites is discussed in more detail in Section 9.14. The recommended improvement includes rehabilitation of Well No. 2 and construction of Well No. 6 immediately. Well No. 6 would be constructed with a 1.5 MG storage tank and booster pumping station on the same site. Well No. 7 with a 1.5 MG storage tank and booster pumping station should be constructed in the short term as the storage and pumping from this station is projected to be needed within 5 to 7 years. The wells would supply the tanks and the booster pump stations would draw from the tanks to provide delivery of equalization storage into the distribution system.

9.1.5 PROJECT NEED

The City of Chubbuck water system is currently deficient in water source capacity (~1000 gpm, 2015) and water storage capacity (~0.75 MG) with these deficiencies projected to increase as population growth continues. It is projected that in 2035 the water system will have deficiencies in water supply capacity of 3,266 gpm and in water storage of 2 million gallons.

9.1.6 ACCESS AND UTILITIES

Regular maintenance and monitoring of the new wells, tank, and booster station require access to the sites on which they are constructed. The city will be responsible for maintaining access to these locations. The locations considered are all accessible for installation of needed utilities.

9.1.7 SURROUNDING LAND USE

The project area is a roughly even mix of urban and agricultural areas. Agricultural land use occurs mostly in the northern and western edges of the project area. The City of Chubbuck consists primarily of residential and commercial land use with an occasional isolated agricultural area.

9.1.8 SECURITY

Security will need to be considered in the construction of new facilities. Wells, pump houses, tanks and other culinary water facilities need to be protected from both intentional and unintentional contamination. Well houses and booster pump stations will be protected by solid doors with deadbolt locks. Tanks will be installed with locking ladders to prevent unauthorized access to the roof.

9.2 COORDINATION WITH FACILITY PLAN

9.2.1 EXISTING SYSTEM – WATER SOURCES

The existing system consists of 5 wells, 3 tanks, and a booster pump station along with the associated distribution system. Of the 5 wells, 3 are currently active. The storage tanks are built on the Eastern Bench near Chubbuck Road. The current water sources can produce a combined total of 7,415 gpm. The capacity with the largest well offline (Well No. 5) is 3,915 gpm.

Well Number 1 is located in Bistline Park east of Hiline Road on East Chubbuck Road. The use of Well No.1 was discontinued in 2003. It was not removed from the system, instead it has been designated as a redundant, back-up water source for that pressure zone.

Well Number 2 is located in Stuart Park along Hawthorne Road. Well No. 2 was discontinued and the well was disconnected from the water system due to tetrachloroethylene (also known as perchloroethylene or PERC) levels greater than the MCL. Recent water quality monitoring at Well No. 2 indicates that PERC levels have decreased. The City is pursuing the possibility of rehabilitating this well. Rehabilitating Well No. 2 is one of the recommendations presented as part of the immediate Priority 1 improvements.

Well Number 3 is located in an older residential neighborhood on Lariat Lane off of Hawthorne Road north of Siphon Road. Drilled in December 1962, Well No. 3 is operated by a turbine pump with a 200-hp motor. The well was recently pulled and the pump rehabilitated, new impellers and a new casing installed. The peak volume pumped by Well No. 3 during a 24-hour period was 1.6 million gallons which equates to an average of 1,111 gpm. In 2013 an emergency standby generator was constructed at Well No. 3 to provide backup power.

Testing of Well No. 3 has detected arsenic, barium, chromium, fluoride, nitrate, selenium and tetrachloroethylene at levels below the respective MCLs. No health hazard is currently identified for Well No. 3 from these contaminants.

Well 4 is situated at the intersection of West Chubbuck Road and Independence Avenue. Drilled in June 1984, the well is operated by a turbine pump with a 125-hp motor. The peak volume pumped by Well No.4 during a 24-hour period was 3.3 million gallons which equates to an average of 2,295 gpm. The well was modified in 1994 adding the Aeration Tower, Booster Pump, and Clear Well. The aeration tower was added for

treatment of tetrachloroethylene, also known as perchloroethylene (PERC). The well is equipped with liquid chlorine injection for disinfection. Installation of an emergency generator was completed in 2012.

Testing at Well No. 4 has revealed arsenic, barium, chromium, nitrate, selenium, and PERC at levels below the respective MCLs. PERC levels have been observed to be decreasing and are below the MCL prior to treatment. Use of the aeration tower for PERC removal continues as a precaution and to avoid disruption of the Well No. 4 configuration.

Well Number 5 is located on Hawthorne Road north of Quinn Road on the south side of the City of Chubbuck in a medium to high-density residential area. Drilled in April 1996 the well is operated by a turbine pump with a 500-hp motor. The peak volume pumped by Well No. 5 during a 24-hour period was 5.0 million gallons, which equates to an average of 3,500 gpm. The well is equipped with an emergency generator and has a liquid chlorine disinfection system.

Water quality tests at Well No. 5 have detected arsenic, barium, nitrate, selenium and tetrachloroethylene at levels below the respective MCLs.

9.2.2 EXISTING SYSTEM - STORAGE

The Chubbuck City water system is equipped with one concrete tank and two steel tanks. The three tanks are built East of I-15 along Chubbuck Road. Total stored volume is 1.65 million gallons.

The concrete storage tank is a partially buried, pre-stressed, concrete tank that was constructed in 1977. The tank is 110 ft. in diameter and 22 ft. inside height with a capacity of 1.5 million gallons. The concrete storage tank is located east of I-15 adjacent to East Chubbuck Road. In 2004, the City of Chubbuck undertook a rehabilitation of the concrete tank which included the installation of a concrete curb around the perimeter of the tank which allows for wall movement independent of the roof slab. The curb included drain openings to prevent water accumulation on the roof. The roof was sealed with a waterproof coating. The interior floor of the tank was sealed and the exterior surface repainted. Inspection of the tank in 2012 revealed that it is in good condition with some surface bubbling of the interior coating. Continual monitoring was recommended.

The first welded steel tank was constructed around 1949 and is 24 ft. high with a diameter of 20 ft., having a capacity of 50,000 gallons. The second welded steel tank was constructed around 1960 and is 24 ft. high with a diameter of 27 ft., having a capacity of 75,000 gallons. Both steel storage tanks are located on the south side of East Chubbuck Road and are in relatively good condition.

The water storage reservoirs are connected to the distribution system with a 16-inch transmission line along Chubbuck Road. Near the Bench Booster Station the 16-inch line connects to a 24-inch line with extends further west along Chubbuck Road to Hiline Road where it begins to branch out into the distribution system.

9.2.3 EXISTING SYSTEM - DISTRIBUTION

The potable water distribution system in the City of Chubbuck consists of two main pressure zones, the main pressure zone and the bench pressure zone. A booster station, located west of Interstate 15 and south of Chubbuck Road on Stars Road supplies the area east of Hiline Road and north of Interstate 86. The main or lower pressure zone serves the majority of the city with typical pressures from 80 to 85 psi.

The City's distribution system is fed by a main transmission line from the tank site along East Chubbuck Road into the distribution network. This main line is 16-inch in diameter with a 2,600 linear foot stretch of 24 inch main line from Interstate 15 to Hiline Road. The water is distributed in a closed loop or redundant fashion to maintain water service to each area serviced. Major redundant loops generally occur on the half-mile interval west of Hiline Road from the main 16-inch line in Chubbuck Road. These loops connect at Whitaker Road, Yellowstone Avenue, and Hawthorne Road and extend north from Chubbuck Road to Siphon Road. To the south of Chubbuck Road, major loops run along Burley Drive, Yellowstone Avenue, and Hawthorne Road and continue across the Interstate 86 into the commercial districts of the City and adjoin on Quinn Road. This redundant looping divides the City into sub-quadrants which delivers water into secondary lines and finally service lines. There are a few isolated dead end lines.

9.2.4 EXISTING SYSTEM – BENCH BOOSTER STATION

The bench pressure zone is isolated from the main pressure zone and is supplied by the bench booster station located at the intersection of Stars Road and Revolution Road. The booster pump station was completed in 2003 with CMU construction and contains three pumps, one jockey pump and two larger main pumps. The station has an emergency generator. The station maintains a target outlet pressure of 62 psi. The booster station draws from the waterline on Chubbuck Road which connects the water tanks to the main distribution zone. Pressures in this zone are typically between 58 and 100 psi.

The Bench Booster Station was designed with a firm pumping capacity of 2,200 gpm to accommodate peak demand periods. The station has a total capacity of 2,900 gpm, but when the station is pumping over 2,200 gpm there is no pumping redundancy and inefficiencies increase due to headloss in the piping. Observations at the booster station have indicated that the pumps are not operating to their design peak capacity. SCADA information from the summer of 2012 indicates that the station operates near 2,000 gpm during peak hour demands with flows and pressures fluctuating greatly at this flow rate. The SCADA information shows discharge pressures ranging from 27 to 64 psi during high demand periods. The flows fluctuate over 800 gallons from minute to minute. This information indicates the station has likely reached its maximum pumping capacity and the booster station will need some improvements or an additional booster station in the upper pressure zone prior to additional growth.

9.2.5 System Size

The City of Chubbuck population at the 2010 census was 13,922. It is estimated that 2015 population is approximately 15,500 persons and that population increase will result in population of approximately 25,050 in 2035.

9.2.6 Water Demands

The current and projected water demands and deficiencies are depicted in Table 9-3. The Chubbuck system is currently unable to meet the maximum day demand (MDD) (4,497 gpm) if the largest water source (Well No. 5 -3500 gpm) is taken out of service. To satisfy the service requirements, the firm water supply capacity must be equal to or greater than the projected MDD.

Table 9-2 – System Water Demands and Projections

	2012	2035 (Projected)	2045 (Projected)	2055 (Projected)
ADD	2,017 gpm	3,566 gpm	4,179 gpm	4,821 gpm
MDD	4,497 gpm	7,952 gpm	9,320 gpm	10,751 gpm
PHD	9,425 gpm	16,699 gpm	19,572 gpm	22,578 gpm

Table 9-3 – Projected Water Demands and Deficiencies

Estimated Year	Estimated Population	Max Day Demand (gpm)	Firm Supply (gpm)	Reserve Supply (gpm)
2012	14,166	4,497	3,915	-582
2015	15,593	4,950	3,915	-1,035
2020	18,111	5,750	3,915	-1,835
2035	25,048	7,952	3,915	-4,037
2055	33,866	10,751	3,915	-6,836

Table 9-4 – Bench Pressure Zone Demand Projections

	2012	2017 (Projected)	2025 (Projected)	2035 (Projected)
ADD	317 gpm	349 gpm	476 gpm	560 gpm
MDD	706 gpm	777 gpm	1,062 gpm	1,248 gpm
PHD	1,906 gpm	2,228 gpm	2,868 gpm	3,371 gpm

Idaho state code stipulates that a system must be capable of providing the MDD plus fire flow demand. Commercial fire flow demand is rated at 3,500 gpm and residential fire flow demand is 1,500 gpm. The current system is not capable of handling fire flow demand plus maximum day demand (MDD) with the largest water source out of service.

9.2.7 WATER RIGHTS

The City currently holds a total of 30.9 cfs (13,873 gpm) of usable water rights for the water system. A portion of these rights (5,525 gpm) are usable only during April – October. The water rights currently owned by the City are projected to be sufficient for the water supply needed for the next 30-40 years.

9.2.8 STORAGE

Keller Associates recommends a minimum storage capacity equal to the equalization, fire suppression, and standby storage needs. The three tanks currently in place are not large enough to meet the storage requirements for the system. The storage deficit that currently exists will increase as the population of the City of Chubbuck increases (Table 9-5).

Table 9-5 – City of Chubbuck Storage Requirements

Storage Component	2012	2035	2055
Operating Storage[1] (MG)	0.35	0.55	0.70
Equalization Storage[2] (MG)	1.39	2.48	3.35
Fire Storage[3] (MG)	0.63	0.63	0.63
Standby Storage[4] (MG)	0	0	0
Total Storage Required (MG)	*2.37*	*3.66*	*4.68*
Total Effective Storage Available (MG)	1.625	1.625	1.625
Storage Surplus (MG)	-0.745	-2.04	-3.055

Notes:
1. Operating storage recommendation is ~15% of total required tank volume.
2. Using a PHD factor of 2.1 based on hourly data from 2012. Also assumes firm water source capacity equal to the MDD.
3. Existing and future fire flow volume is based on 3,500 gpm for 3 hours.
4. Standby emergency power generators at Wells 3, 4 & 5 and the booster pump station currently meet this need. Future wells will need to be equipped with standby power.

9.2.9 OPERATING PRESSURE

System pressures were investigated as part of the hydraulic analysis discussed in section 9.2.6 of this report. The Main Pressure Zone has a normal operating pressure ranging from 80 to 85 psi. If water for the system is being supplied only by the tank, then the highest system pressure is approximately 98 psi near the Brookstone Subdivision. If one of the system wells is on during low demand periods, the pressures near the wells are shown to be 110-115 psi. The Bench Pressure Zone has typical pressures ranging from 58 to 100 psi. The target pressure at the Bench Booster Station is 62 psi.

9.2.10 HYDRAULIC ANALYSIS

A computer model of Chubbuck's distribution system was created. The model was built with Bentley's WaterCAD v8i to aid in the evaluation of the distribution and transmission system in its present and future states. The hydraulic model of the water system was created from the existing mapping, and field investigations.

Keller Associates collaborated with City staff in calibration efforts which included collecting data on a series of coordinated pressures and flows at strategic points throughout the City's system. The calibration points in the system are shown in Figure 1 in Appendix C and in Table 9-3. Using the field data, the computer model was calibrated to simulate field conditions. This iterative process resulted in more realistic model results used in the planning and evaluation process. Additional calibration information can be found in Appendix C .

Table 9-6 – Fire Flow Field Tests, September 2011[10]

Hydrant Location	Duration (min:sec)	Flow (gpm)	Residual Pressure (psi)	Pressure Hydrants	Static Pressure (psi)	Residual Pressure (psi)
South End – Independence Ave.	3:32	1,322	62	Chubbuck Rd. & Galena Ave.	92	87
				4583 Independence	91	80
Lariat Ln. & Sorrel St.	4:01	1,394	69	Chubbuck Rd. & Galena Ave.	92	87
				5656 Sorrel St.	87	81
Lucky Ave.	4:25	1,384	68	Chubbuck Rd. & Galena Ave.	90	87
				James Ave. & Henry Ave.	90	84
Pheasant Ridge Dr. & Eagle Dr.	5:03	1,454	75	Chubbuck Rd.	89	86
				Pheasant Ridge Dr. & Whitaker Rd.	91	84
South End – Canterbury St.	5:24	1,343	64	Chubbuck Rd.	92	92
				Taylor Rd.	91	78
Washburn St.& Leatherman St.	5:57	1,394	69	Brundage St. & Mountain Park Rd.	75	74
				Washburn St. & Teewinot St.	76	70

Maximum Day Demand plus Fire Demands: The model was populated with fire flow demands for areas with specific requirements identified by the ISRB and the local fire authority. These specific requirements can be found in Appendix C . For areas zoned commercial/industrial, a minimum fire flow of 3,500 gpm at 20 psi was used as the design criteria. For all other areas, 1,500 gpm at 20 psi was selected as the default minimum for the model evaluation. Service lines or dead end lines without hydrants or within 300 ft. of another node capable of providing fire flow were eliminated from the fire flow evaluation.

Under maximum day demands with the largest pump offline (Well No. 5), and the fire flow requirements stated, the system was tested with the criterion of pressures not dropping below 25 psi at nodes of concern. The lower limit of 25 psi was used in the

[10] Fire flow testing performed by Keller Associates, Inc.

model to account for small variations between the model and physical system. The water model evaluates each node individually under maximum day demands with the specific fire flow requirement for that node, while considering pressures at other nodes in the same zone. The analysis is steady state and assumes adequate fire storage is provided to support the design durations. Figure 7-9 in Chapter 7 highlights the modeled nodes in the water system that do not meet Maximum Day Demand plus fire flow requirements. Appendix D contains the detailed model results report for this and all other model evaluations discussed in this section. Section 7.6.1 and Section 9.2.11discuss potential capital improvements to improve fire flow in these areas.

Peak Hour Demand: The system was also modeled under peak hour demands to check for pressures in the system dropping below 40 psi. Model results indicate that with all 3 wells and the tank online that all of the distribution system nodes are above 80 psi.

Maximum System Pressures: Because total demands decrease during the winter season, the low demand scenario was evaluated to check for high distribution system pressures. Pressure in excess of 100 psi can cause damage to residential homes if they are not properly equipped to handle high pressures.

Model results vary depending on various wells being active during low demand periods. If water for the system is being supplied only by the tank, then the highest system pressure is approximately 98 psi near the Brookstone Subdivision. If one of the system wells is on during low demand periods, the pressures near the wells are shown to be 110-115 psi.

9.2.11 Fire Flow & Distribution Network Improvements

Recommendations for improvements to address the fire flow deficiencies and distribution network improvements that will be needed for future network connectivity identified in the hydraulic analysis are summarized in Table 9-7,

Table 9-8 and Table 9-9 below. Mapping of the recommended improvements for fire flow and distribution network improvements are shown in Figure 9-5 and Figure 9-6.

Table 9-7 – Recommended Residential Fire Flow Improvements

Residential Fire Flow 1,500 gpm				
Street	Available Fire Flow (gpm)	Min. Pipe Diameter (in)	Approx. Length (ft.)	Probable Cost
Sorrel Street	1250	8	1,000	$116,000
Rose Street	1150-1350	8	600	$70,000
Teton Street	500-700	8	1,300	$150,000
				$336,000

Table 9-8 – Recommended Commercial Fire Flow Improvements

Industrial/Commercial Fire Flow 2,250 - 3,500 gpm				
Street	Available Fire Flow (gpm)	New Pipe Diameter (in)	Approx. Length (ft.)	Probable Cost
Yellowstone to Mall Loop	2,800-3,300	12	600	$80,000
Burley Dr. to Laurel Ln.	8	8	900	$104,000
Yellowstone N. of Siphon to Southside Way	12	12	1,100	$145,000
				$329,000

Table 9-9 – Recommended Distribution Network Improvements

Distribution Network Improvements				
Street	New Pipe Diameter (in)	Approx. Length (ft.)	Location	Probable Cost
Hawthorne Rd.	12	4,000	James Ave. to Lariat Ln.	$528,000
Siphon Rd.	16	3,180	Eve St. to Railroad Crossing	$455,000
RR Crossing on Siphon			Siphon Rd.	$70,000
				$1,053,000

9.2.12 Sources of Water

Chubbuck and the planning area sit on the southern extent of the Eastern Snake River Plain Aquifer (ESRPA). The Snake River Aquifer is considered a sole source aquifer. Approximately 67% of the aquifer recharge occurs from infiltration of surface water diverted from the Snake River for irrigation. Additionally much of the precipitation that falls on the Snake River Plain quickly infiltrates due to openings in the Pliocene and basaltic rocks. Water within the aquifer flows in a southwesterly direction until it is discharged from springs on the north side of American Falls Reservoir and Thousand Springs, near Twin Falls (Whitehead, 1994).

The City of Chubbuck withdraws approximately 1 billion gallons of water per year with the three groundwater wells discussed previously.

9.2.13 Sewage

The City of Chubbuck operates a municipal sewer collection system as shown in Figure 9-7. The collection system consists of PVC and concrete pipe ranging in size from 8 to 42 inches. The collection system has recently been upgraded in anticipation of the City's future population growth. The wastewater is treated at the Pocatello Wastewater Treatment Plant located on the west side of the valley near I-86.

There are currently five sanitary sewer lift stations in the City of Chubbuck. Lift stations are located within the City and to the northwest and include Paradise, Rio Vista, Sorrel, Ellis, and Valenty lift stations.

9.2.14 Treatment Wastes

Groundwater in the Chubbuck area is generally clean. If treatment is needed it is expected to be minimal. If treatment is necessary, it will likely be limited to either liquid chlorination in the case of pathogens or an air stripping tower in the case of chemical contaminants, as is currently utilized at Well No. 4. Neither treatment process produces wastes that cannot be dealt with by the city sanitary system. No special considerations will be needed for this project.

9.2.15 Financing Methods

Funding for implementing the system improvements may come from several sources. The primary source of funds for the recommended system improvements will come from the water system revenues and capital reserves along with low interest loans through IDEQ's State Revolving Fund (SRF) loan program. The City may also choose to pursue Special Congressional Appropriations to assist in funding the recommended improvements.

9.2.16 Flooding

The FEMA map service center was used to determine the potential for flooding in the project area. The firmette provided by FEMA indicates several 100 year flood zones exist around the peripherals of the project area. There are not any flood zones that pose a threat to the project area. The mapped floodplains are shown in Figure 9-4.

9.2.17 Additional Information – Groundwater

Groundwater in the area has several limitations presented by known contaminant plumes and geothermal water. Water quality and well siting are addressed further in Sections 9.6 and 9.10.

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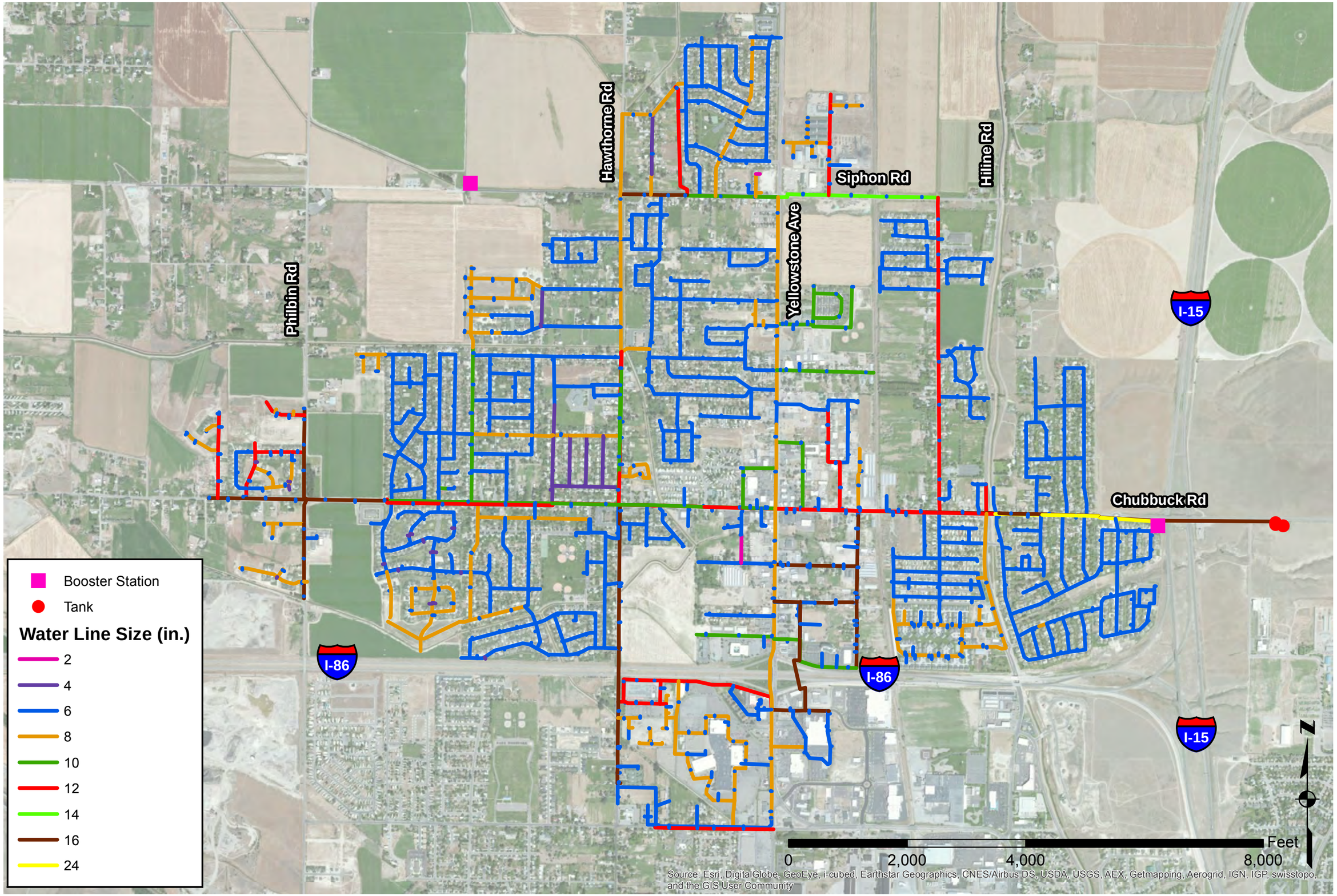

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PROJECT NO. 210078

FILENAME 5.17 - Water System.mxd

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Water Facilities Planning Study

Existing Water System

FIGURE NO. 9.1 (5.17)

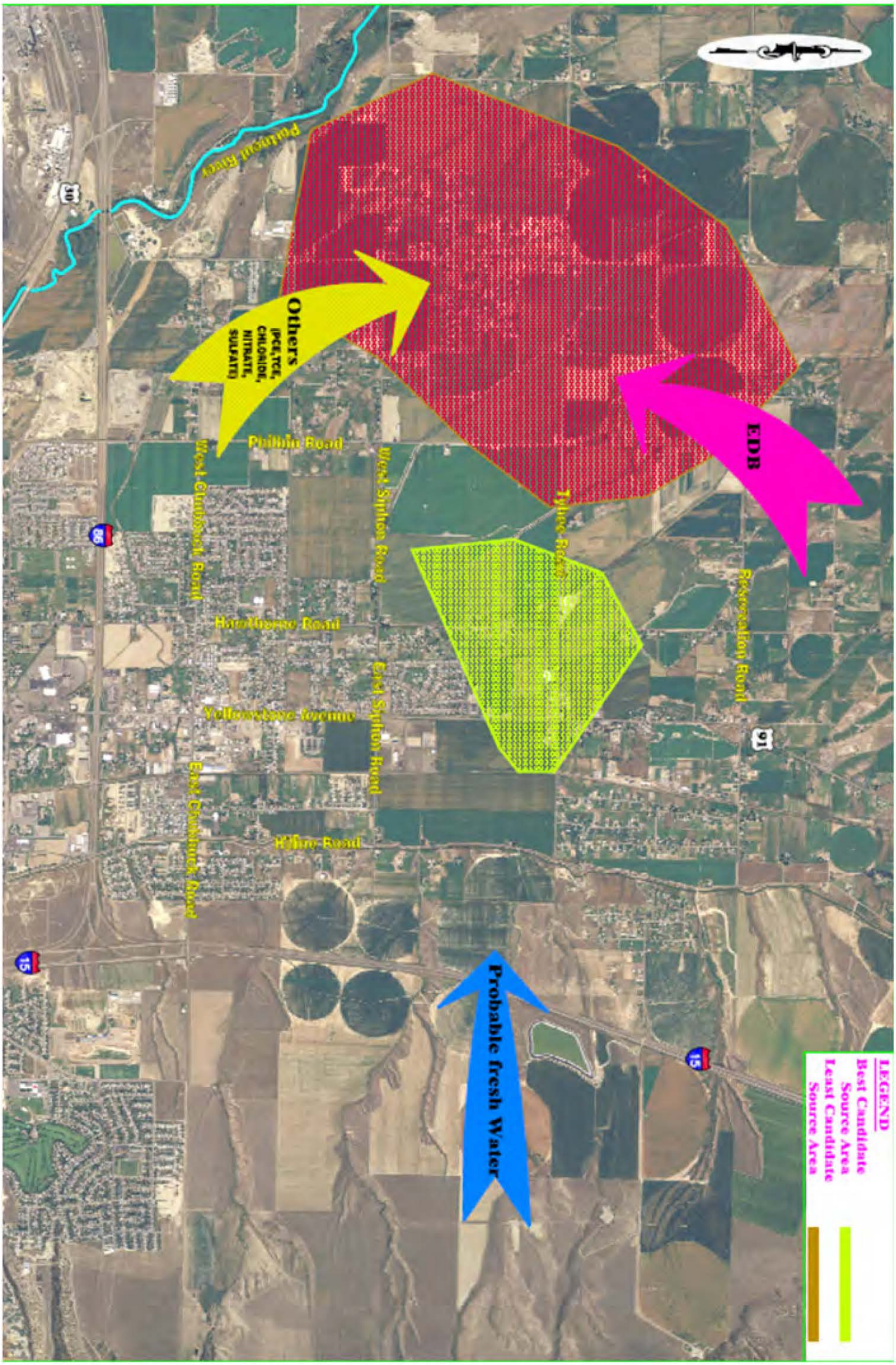
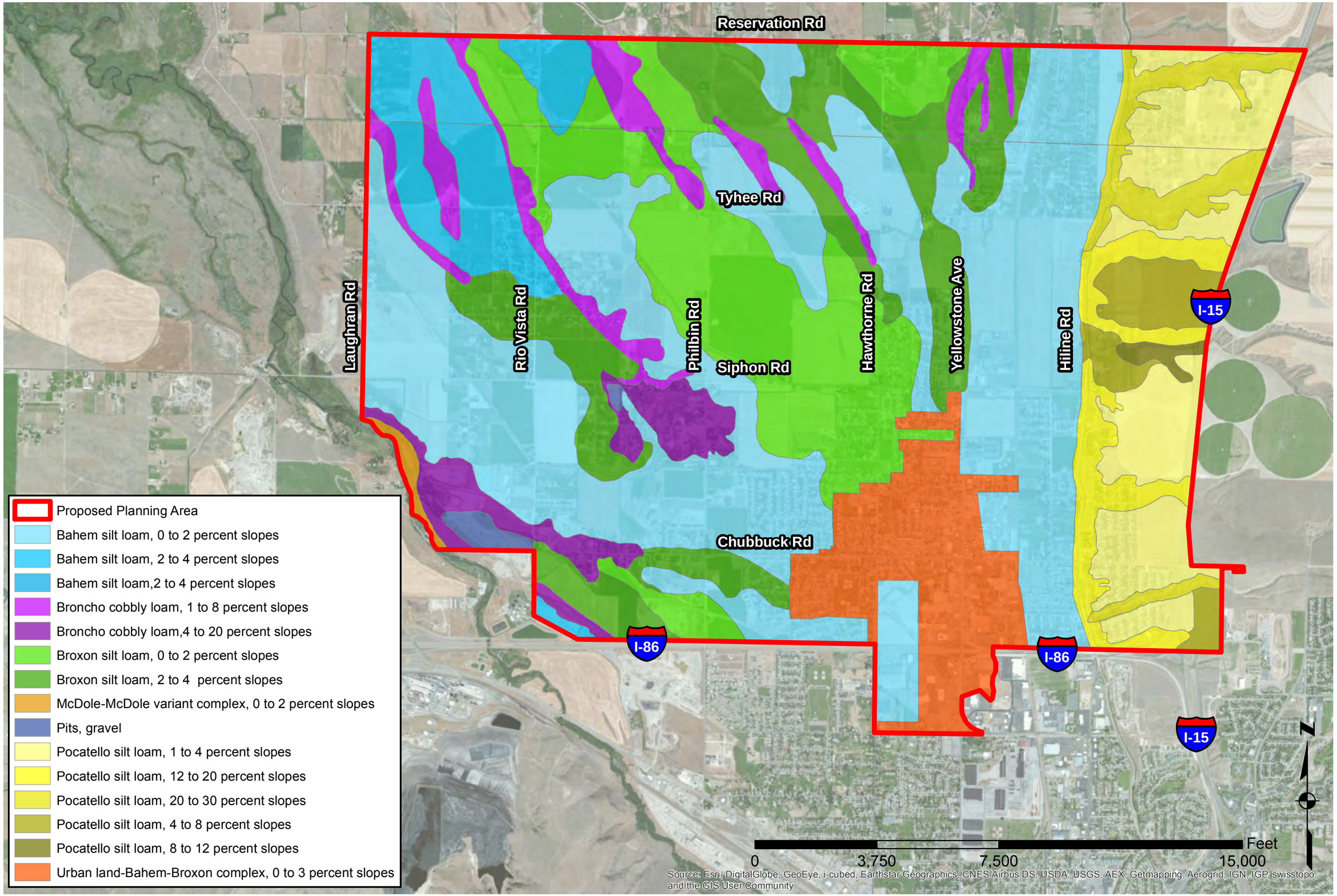


FIGURE NO. 9.2 (5.7)	Water Facilities Planning Study	City of Chubbuck	KELLER associates 305 N. 3rd Avenue Pocatello, ID 83201 208.238.2146 www.kellerassociates.com	PROJECT NO. 210078
	Water Quality Map			FILENAME 5.7 - Water Quality Map.mxd

Print Date: 3/19/2015



PROJECT NO. 210078

FILENAME 4.3 - Soils.mxd

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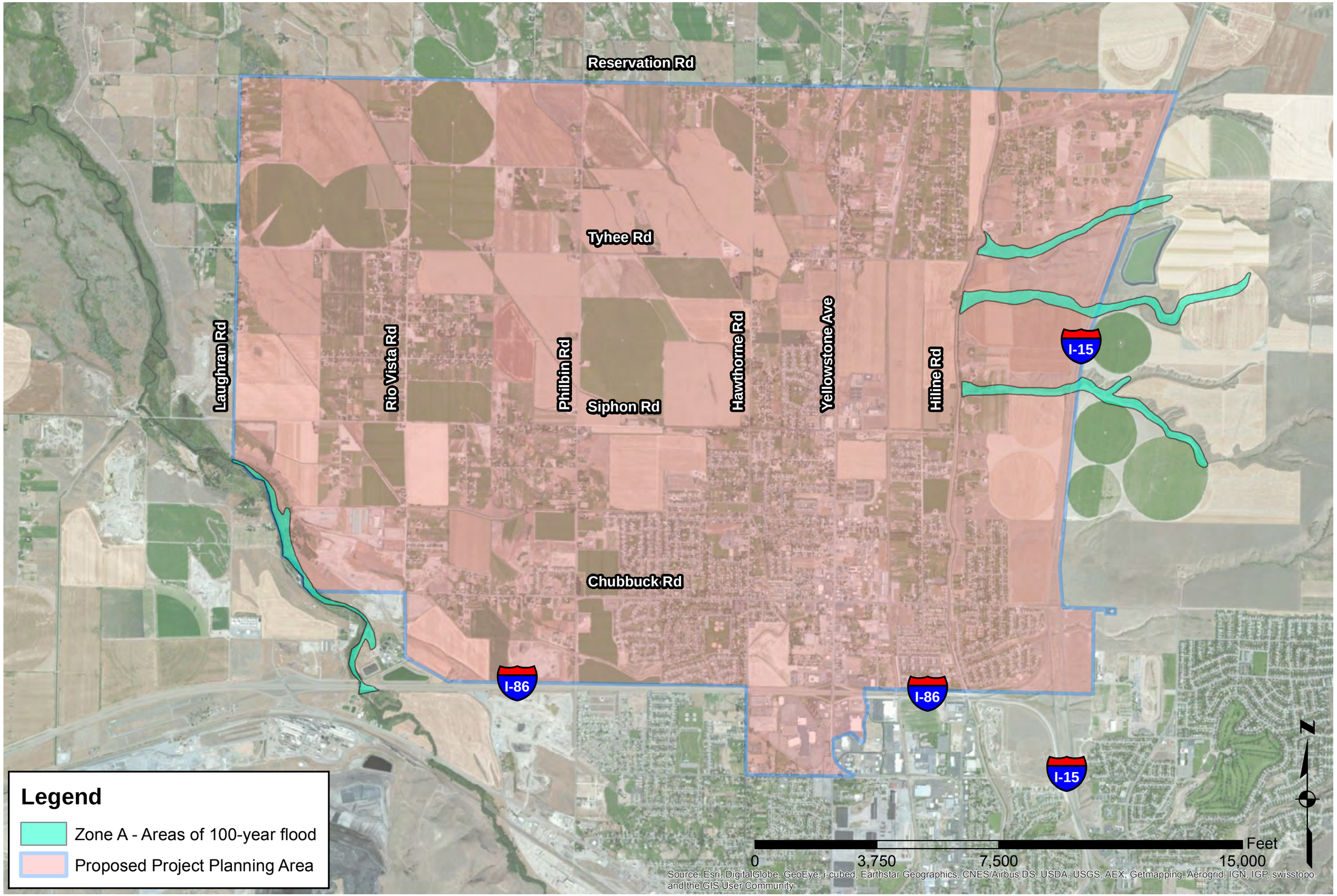
Water Facilities Planning Study

NRCS Soil Survey

FIGURE NO. 9.3 (4.3)

Document Path: Y:\Projects\210078-000 Chubbuck 2011 WFPS\Figures\ARC Figures\4.3 - Soils.mxd

Print Date: 3/19/2015



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PROJECT NO. 210078

FILENAME 4.5 - Floodplains.mxd

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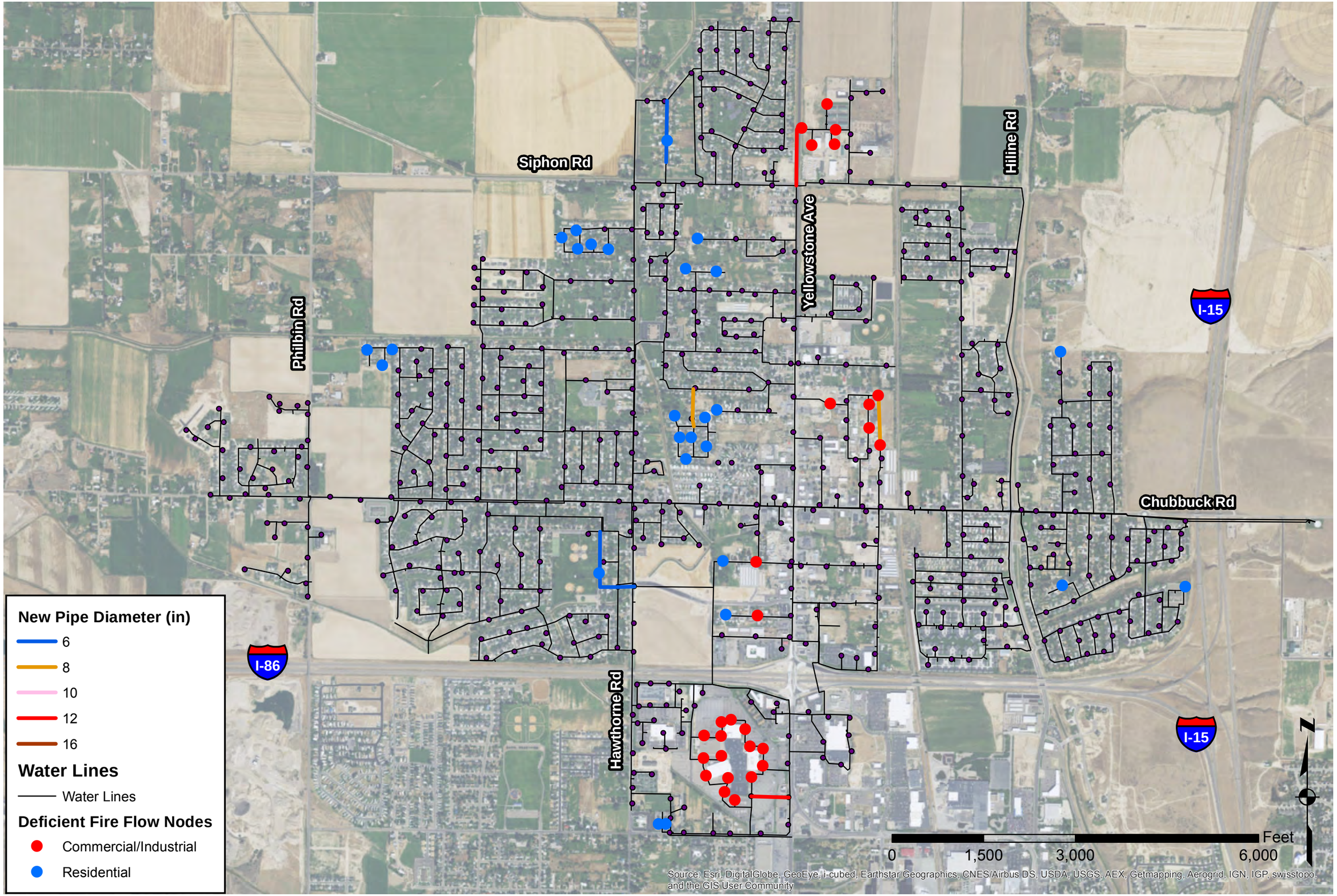
Water Facilities Planning Study

Floodplains

FIGURE NO.
9.4 (4.5)

Print Date: 8/20/2015



Document Path: Y:\Projects\210078-000 Chubbuck 2011 WFPS\Figures\ARC Figures\7.9 - Fire Impvmnts.mxd

PROJECT NO. 210078

FILENAME 7.9 - Fire Impvmnts.mxd

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City of Chubbuck

Water Facilities Planning Study

Fire Flow Deficiencies and Associated Improvements

FIGURE NO.

9.5 (7.9)

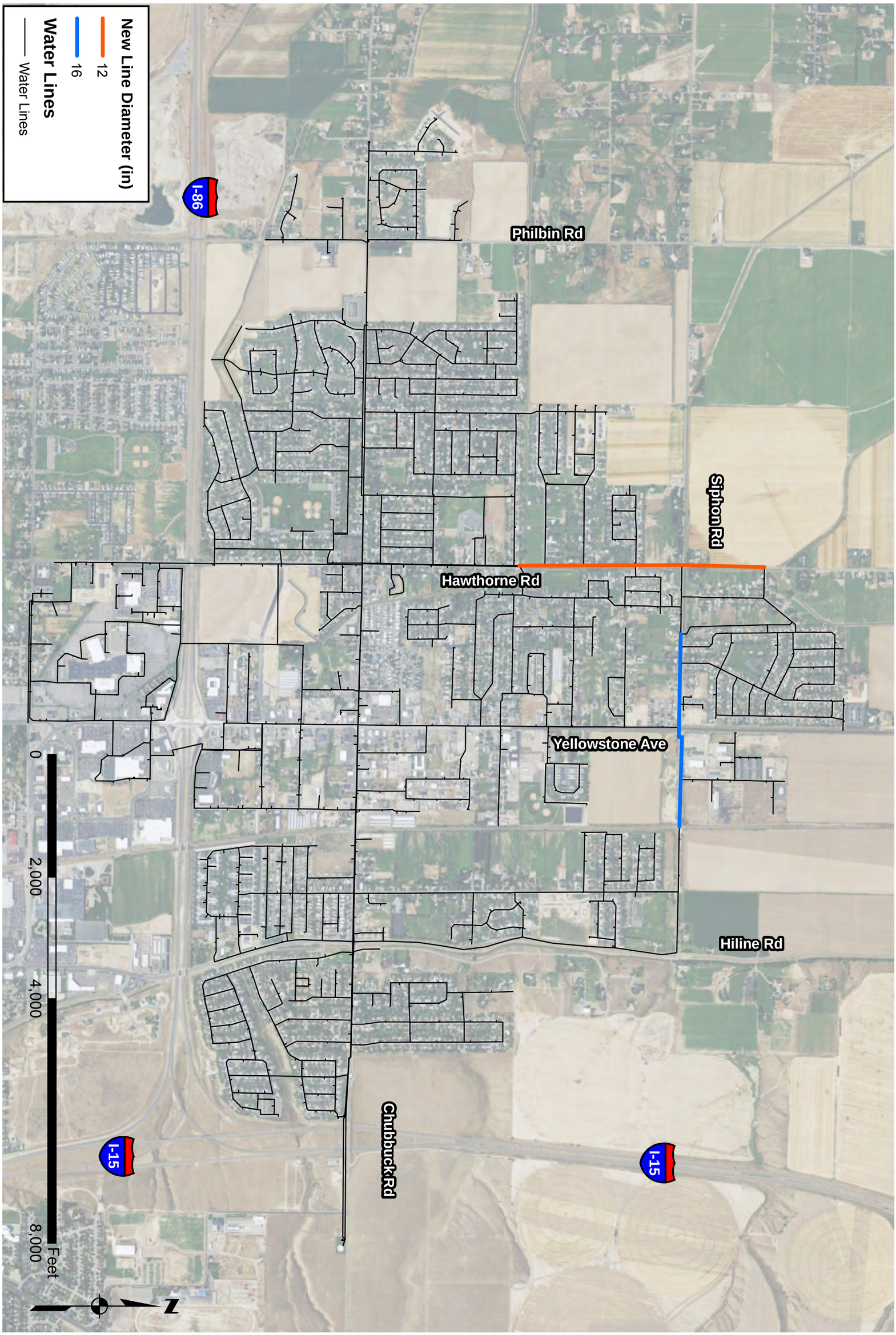
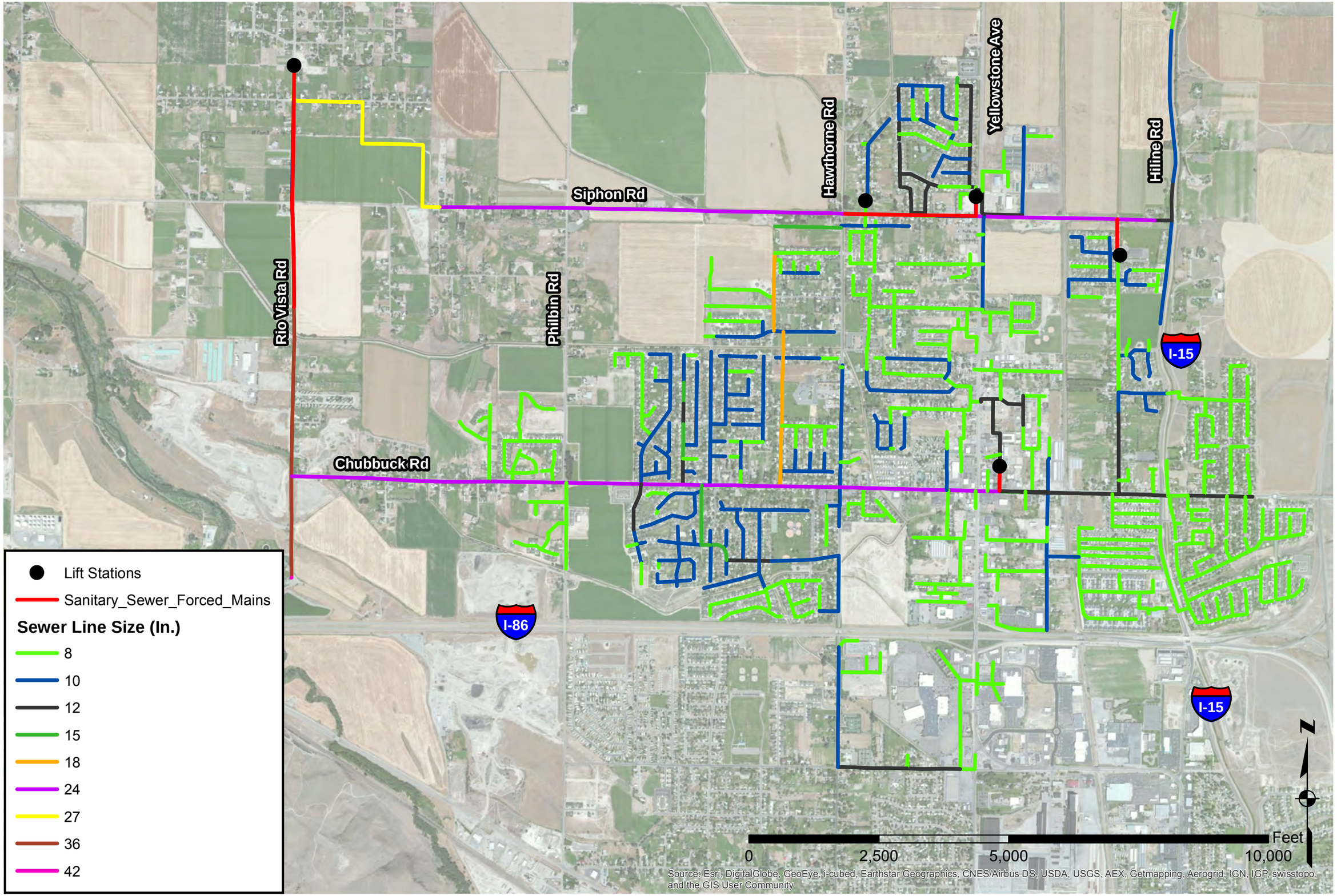


FIGURE NO. 9.6 (7.10)	Water Facilities Planning Study	City of Chubbuck	KELLER associates 305 N. 3rd Avenue Pocatello, ID 83201 208.238.2146 www.kellerassociates.com	PROJECT NO. 210078
	Distribution Network Improvements			FILENAME 7.10 - Dist Ntwrk Impvmnts.mxd



PROJECT NO. 210078

FILENAME 5.18 - Sanitary Sewer.mxd

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Water Facilities Planning Study

Sanitary Sewer System

FIGURE NO. 9.7 (5.18)

Print Date: 3/19/2015

Document Path: Y:\Projects\210078-000 Chubbuck 2011 WFPS\Figures\ARC Figures\5.18 - Sanitary Sewer.mxd

9.3 CODE PROVISIONS

Design of the new infrastructure will adhere to the rules and guidelines set by the state of Idaho and the Environmental Protection Agency (EPA). These include the Idaho Administrative Procedures Act (IDAPA), the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08), and the Idaho Standards for Public Works Construction (ISPWC). Clean water standards are set by the EPA and the Clean Water Act. Any necessary water treatment will strive to meet or exceed the clean water standards set by the EPA.

9.4 COST ESTIMATE

Opinions of probable cost are based on Keller Associates perception of the current conditions and reflect our opinion of probable cost at the time. Opinions of probable cost are subject to change as the project design matures. The design costs for each of the alternatives have been estimated to reflect the anticipated conditions for each of the various project alternatives. Keller Associates has no control over the cost of labor materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding, market conditions, and/or bidding practices or strategies. Keller Associates cannot and does not guarantee the proposals, bids, or actual construction costs will not vary from the costs presented herein.

These estimates include costs associated with construction and materials (actual material costs plus installation engineering service during design and bidding (13%), engineering services during construction (3%), funding/legal fees (4-5%), contractor overhead and profit (10%), and a contingency factor (20%) to account for variation in construction costs and uncertainties. These estimated costs are presented in 2015 dollars and are not adjusted for inflation. A construction inflation rate of 6%, general inflation rate of 3%, and interest rate of 3% were used in the 2015 WFPS to project these cost estimates for future implementation as applicable.

The estimated cost for the proposed improvements project is summarized in Table 9-10 below.

Table 9-10 – Immediate Improvement Cost Estimate

Improvement Item		Year		2015 Est. Cost
Priority 1 - Immediate		2016-2017		
Rehab Well #2		2016		$324,000
Well #6		2017		$1,117,000
Booster Station (~4,000 gpm)		2017		$1,215,000
1.5 MG Storage Tank		2017		$2,506,000
Transmission Trunk Line (2,500 ft of 16-inch)		2017		$347,500
Rehab Well #1 or Upsize Bench BPS		2017		$270,000
Water Conservation Plan		2016		$30,000
Priority 1 - Immediate Total				**$5,809,500**
Priority 1 - Intermediate		2020-2025		
New Bench Booster Station		2022		$600,000
Well #7		2023		$793,000
Booster Station (4,000 gpm)		2023		$1,215,000
1 MG Storage Tank		2023		$1,990,000
Transmission Trunk Line (1,500 ft of 16-in)		2023		$208,500
Priority 1 - Intermediate Total				**$4,806,500**
Priority 2 Improvements				
Fire Flow Improvements		2020		$665,000
Distribution Network Improvements		2020		$1,053,000
Priority 2 - Total				**$1,718,000**
Total Estimated Cost Priority 1 & 2 Improvements				**$12,334,000**

9.5 CONSTRUCTION SCHEDULE

Table 9-11 depicts the recommended implementation schedule for design and construction of the recommended immediate improvements from the 2015 WFPS.

Table 9-11 – Immediate Improvement Implementation

Improvement Item	Predesign	Design	Construction	Completion
Priority 1				
Rehab Well #2	Spring 2015	Summer 2015	Fall 2015	May-16
Well #6/BPS/1.5 MG Storage Reservoir	Sep-15	Nov-15	Apr-16	Jun-17
Well #7/BPS/1.5 MG Storage Reservoir	Sep-15	Nov-15	Apr-16	Jun-17
Rehab Well #1 OR Upsize Bench BPS	2016	2016-2018	2017-2018	2018
Water Conservation Plan		2016	2017-2020	Ongoing
Priority 2 Improvements				
Fire Flow Improvements	2016	2016-2018	2016-2020	2018-2020
Distribution Network Improvements	2016	2016-2018	2016-2020	2018-2020

Design and construction of the Well No. 2 Rehabilitation project is recommended for immediate implementation with design beginning in the spring of 2015 and construction completion in spring 2016. Pre-design for Well No. 6 & 7, storage tanks, and booster stations is recommended to begin in summer 2015 with design beginning in the Fall of 2015. Pre-design for the improvement to address the bench pressure zone (Rehab Well #1 or Upsize Bench BPS) would

occur in summer 2016 with design in Fall 2016. Construction of these improvements would be scheduled for completion between 2016 and 2018.

The fire flow and distribution network improvements are Priority 2. A schedule for implementation of these improvements is recommended to be developed with design and construction of the various pipeline improvements scheduled from 2015 through 2020.

9.6 POTENTIAL SOURCES OF CONTAMINATION

9.6.1 EXISTING CONTAMINANT PLUMES

Perchloroethylene (PERC) is a dissolved industrial solvent which has been detected in Well No. 2 and Well No. 4. As discussed previously, Well No. 2 was removed from service and Well No. 4 was equipped with an aeration tower for treatment as a result of the presence of this contaminant. The PERC plume contaminates the water in South and West Chubbuck

Ethylene Dibromide is a pesticide that was used and likely discharged on the ground surface near Fort Hall. A contaminant plume of ethylene dibromide has been detected in the groundwater flow of the ESRPA and potentially impacts the northern boundary of Chubbuck.

9.6.2 SURFACE WATER SOURCES

Potential surface water contamination sources are primarily agricultural areas that prevail around the project site. Runoff from field could potentially introduce pesticides, fertilizers or other agricultural chemicals into the water supply. Runoff from livestock operations could contaminate the water supply with undesired nutrients or pathogens.

9.7 SOILS AND GROUNDWATER LEVELS

9.7.1 WATER MAIN SOIL CONCERNS

Corrosion of concrete and steel pipes is largely controlled by the type of soil in which they are laid. The NRCS soil report indicates that soils west of Hiline Road have a low affinity towards the corrosion of concrete. Alternatively, soils lying on the East side of Hiline Road are highly aggressive and will corrode concrete. Any concrete piping or foundations placed in this area will need be protected from the soil.

The NRCS soil report also provides information in regards to the corrosion of steel. Soils within the project area range from moderately to highly corrosive towards steel. Steel used anywhere within the project area will need to be protected from the soil.

9.7.2 SOIL, WATER TABLE, AND GEOLOGICAL SUBSTRATE

The NRCS soil report indicates that the water table is deep throughout the project area. Soils are well drained eliminating the tendency to hold water. The water table is greater than 80 inches deep in all areas. Due to the depth of the water table, it is not anticipated to be a concern in the placement of any structures.

Site specific considerations will need to be accounted for during design and construction. A geotechnical investigation will be performed on the proposed site during the preliminary design. The report will provide all of the information required.

9.7.3 GROUNDWATER ELEVATIONS

Nearby well driller's logs indicate that the groundwater elevation of surrounding wells is approximately 45-85 feet below the ground surface. It is likely that any well drilled in the area will have a standing groundwater elevation within this range.

9.8 ANTICIPATED GEOLOGY

Geologic stratum in the area consists mostly of clay in various colors and gravel. Well driller's logs indicate the occasional presence of boulders or other lithologic types such as basalt and cinders. It is likely that new wells drilled in the area will have a similar geological composition.

9.9 DRILLING METHODOLOGY

The new wells will be drilled with rotary or impact drilling methods. The City intends to drill test wells for Well #6 and #7 to explore the subsurface conditions prior to full implementation of the proposed projects.

9.10 WATER QUALITY

The source water assessment discusses several known contaminant plumes present in the Eastern Snake River Plain Aquifer (ESRPA) and Portneuf Valley Aquifer which have significant impact on the existing and potential water sources for the City of Chubbuck. The ESRPA flows generally south southwest mostly parallel to the Snake River. The Portneuf Valley Aquifer flows to the northwest. The City of Chubbuck lies approximately at the confluence of these two groundwater flows.

Locations for new wells are limited by the contaminated groundwater around Chubbuck. Wells 2 and 4 on the western side of town have tested positive for perchloroethylene. A plume of ethylene dibromide lies to the north of Chubbuck. A new well drilled in these areas may require treatment before it could be used as potable water.

Well driller's logs indicate that groundwater to the north and west of Chubbuck is of high quality. The preferred area based on water quality is in the general area of the intersection of Tyhee and Hawthorne Roads.

9.11 WATER RIGHTS

Water rights held by the City of Chubbuck are summarized in Table 9-12. Appendix B contains more information regarding these water rights.

Table 9-12 – Water Rights

Water Right	Priority	Use Dates	Rate (cfs)	Volume (AFA)
29-2385	1/11/1957	1/1 - 12/31	0.78	564.7
29-2413	6/25/1959	1/1 - 12/32	1.10	796.36
29-2469	3/1/1963	1/1 - 12/33	1.11	803.6
29-7624	12/14/1981	1/1 - 12/34	4.96	3590.88
29-8229	4/5/1999	1/1 - 12/35	1.74	1259.7
29-8188	12/16/1996	1/1 - 12/36	6.70	4850.58
29-8230	4/5/1999	1/1 - 12/37	2.21	1599.97
29-14016	1/17/1966	4/1 - 10/15	1.89	449.2
29-14012	8/19/1952	4/1 - 10/31	1.83	488.8
29-14013	8/19/1952	4/1 - 10/31	2.25	651.2
29-14054	12/31/1974	4/1 - 10/31	1.47	491.6
29-14055	6/20/1961	4/1 - 10/31	0.13	26.4
29-14056	10/26/1966	4/1 - 10/31	0.09	18.8
29-14058	8/19/1952	4/1 - 10/31	0.05	16
29-14080	12/31/1974	4/1 - 10/31	0.266	87.6
29-14081	6/20/1961	4/1 - 10/31	0.025	4.4
29-14082	11/29/1971	4/1 - 10/31	0.018	3.6
29-14096	11/29/1971	4/1 - 10/31	0.21	83.2
29-14097	11/29/1971	4/1 - 10/31	0.02	8.8
29-14099	5/2/1966	4/1 - 10/31	2.52	462
29-14106	8/18/1953	4/1 - 10/31	0.93	486.4
29-14107	12/3/1980	4/1 - 10/31	0.61	121.6
		Totals	30.909	16,565.39

The City currently holds a total of 30.909 cfs (13,873 gpm) of usable water rights for the water system. The City recently purchased 12.3 cfs (5,525 gpm) of water rights that have use dates from April to October for use during the irrigation season. Of the total water rights 18.6 cfs (8,348 gpm) are usable year round. Water right transfers have consolidated all of these rights for diversion from any of the City's five existing well locations and for point of use defined as the City's water service area.

9.12 Well Lot Dimensions

Well lots must be of sufficient size to accommodate the required setbacks from adjacent features, such as roads, surface water, other wells, subsurface drainfields, etc. Each well site must be evaluated to determine the required size for setbacks. Generally, approximately 1 acre should be considered to obtain the needed space for setbacks and building construction. The site for the well with storage tank and booster pump station is recommended to be 1 -2 acres in size at a

minimum to provide sufficient space for the wellhead, pump building, storage tank, overflow pond, and access to all facilities.

9.13 Surface Water Influence

The proposed system improvements rely upon groundwater to increase capacity. The groundwater is pulled from wells with an expected water elevation of 45-85 feet below the ground surface. The groundwater is deep enough that it is not likely influenced by any surface waters. The proposed well sites are located relatively close to portions of the Hiline and Siphon Canals. The wells will be located beyond the minimum setback distance from surface water.

9.14 Site Selection

To aid in selecting the best available site for construction of new wells, the City of Chubbuck identified 9 potential locations for screening. A decision matrix was constructed to evaluate these sites on the following attributes: distance to power, distance to a water main, site access distance, benefit to the distribution network, and proximity to the preferred groundwater zone. The detailed analysis was presented to the City of Chubbuck in a report included in Appendix H . Each of the criteria were weighted and the sites was scored on the basis of the criteria. The final ranking of the alternate sites is shown in Table 9-13 below, a low score being optimal.

Table 9-13 – Potential Well Site Ranking

Alternatives	Score	Rank
Potential Well 1	440	1
Potential Well 2	524	2
Potential Well 6	794	3
Potential Well 8 (Route b)	820	4
Potential Well 7	854	5
Potential Well 9	902	6
Potential Well 5	915	7
Potential Well 4	932	8
Potential Well 8 (Route c)	1016	9
Potential Well 8 (Route a)	1306	10
Potential Well 3	1891	11

The location of these well sites is depicted in Figure 9-8. The most favorable site scored best due to very close proximity to the existing distribution network, power, accessibility, and reasonable proximity to the preferred water zone. None of the well sites evaluated would be unfavorable. The lowest rankings were primarily due to the distance for access and for connection to the existing distribution system. The City is pursuing the purchase of one or more of these sites for the construction of new water sources. The City's ability to acquire the site will have a strong bearing on which of these sites is ultimately utilized.

9.15 Well and Pump Houses

Each new well and the booster pump will be contained within a well house or booster station. These structures will contain electrical and controls equipment, pressure tanks, piping, control and check valves, surge anticipation relief valves, chlorination systems, and standby power generation. The well head will be located outside of the building to allow access for potential, future repairs and development that may be required. Piping will be buried at a sufficient depth to prevent freezing.

9.15.1 Well Houses and Booster Pump Station

Each well will be enclosed in a well house building that will contain the required mechanical components associated with the well. Well houses and booster pump stations will be designed for construction in accordance with the requirements for pumping facilities in IDAPA 58.08.541. Each facility will be equipped with standby power and the booster station will include a redundant pump of the largest size at the facility to satisfy the pumping redundancy requirements of IDAPA 58.08.501.17 and 18.

9.15.2 Water Level Measurement

The new wells will be equipped with submersible level transducers installed on the pump columns to observe active water levels.

9.15.3 Well Pumps

The two wells that will be constructed as part of this project will have a target capacity of 2,200 gpm. Vertical turbine pumps will be utilized. Results of the test well drilling will provide the information needed on groundwater levels for sizing of the pumps and motors. The anticipated combined pumping capacity of proposed Wells #6 and #7 as part of Priority 1 improvements is projected to be approximately 4,400 gpm. The booster pumps will be sized to assist in providing adequate water supply during high demand periods with a target redundant pumping capacity of 4,000 gpm at each station.

9.15.4 Controls

The system will be equipped with a SCADA control system to allow onsite and remote operator monitoring and control of the water system. The pumps will have VFD controls and will target a discharge pressure of approximately 70-80 psi to match the system pressure at the distribution network location.

9.15.5 Piping and Appurtenances

Above ground piping will be ductile iron pipe. Valves located in the ground and in the well houses will be ductile iron with stainless steel or non-metallic internal components. Subsurface piping will be C-900 PVC.

9.15.6 Venting

Wells will be vented in accordance with the applicable requirements with protective screens, etc. The well house will be equipped with a louver and blower to maintain ventilation in the building.

9.15.7 Casings and Caps

The wells will be cased and capped to prevent the introduction of foreign contaminants.

9.15.8 Pitless Adapters

Pitless adapters will not be used. Pumps will be vertical turbine pumps and adapters will be installed above grade within an enclosed well house building.

9.15.9 Soil and Water Conditions

The NRCS Soil Survey provides information on the electro-chemical corrosion properties of soil. Soil within the project area shows a moderate to high corrosion potential for steel and a low corrosion potential for concrete. Any steel pipes used in the project area will need to be protected against corrosion by epoxy lining or some other method.

Soil in the project area is well drained. Depth to the water table is more than 80 inches in nearly all areas. Snake silt loam and Parehat silt loam, high water table have higher water tables which could influence the installation of structure. However, these two soil types comprise only 0.3 acres of the more than 11,000 acres in the project area. It is unlikely that either of these two soil types will be encountered during construction.

9.16 Storage Construction

9.16.1 Sizing

The water storage reservoirs will be built to contain approximately 1.5 MG each. This capacity will adequately provide equalization storage required through approximately 2035.

9.16.2 Overflow

The storage tanks will be constructed with overflows to a surface detention basin. An air gap will be established between overflow piping and drain piping to the detention basin.

9.16.3 Vents

The water storage tank will be installed with downturned vents equipped with anti-corrosion screens.

9.16.4 Construction Materials

The tank will be constructed of reinforced concrete.

9.16.5 Protection From Freezing

Subsurface waterlines will be buried at 5 feet or greater of cover. Foundations will be placed below the accepted frost depth. Well houses and booster pump buildings will be equipped with heating units to maintain acceptable temperatures. The water storage tank will be equipped with a mixing system to maintain water circulation.

9.16.6 Grading and Site Work

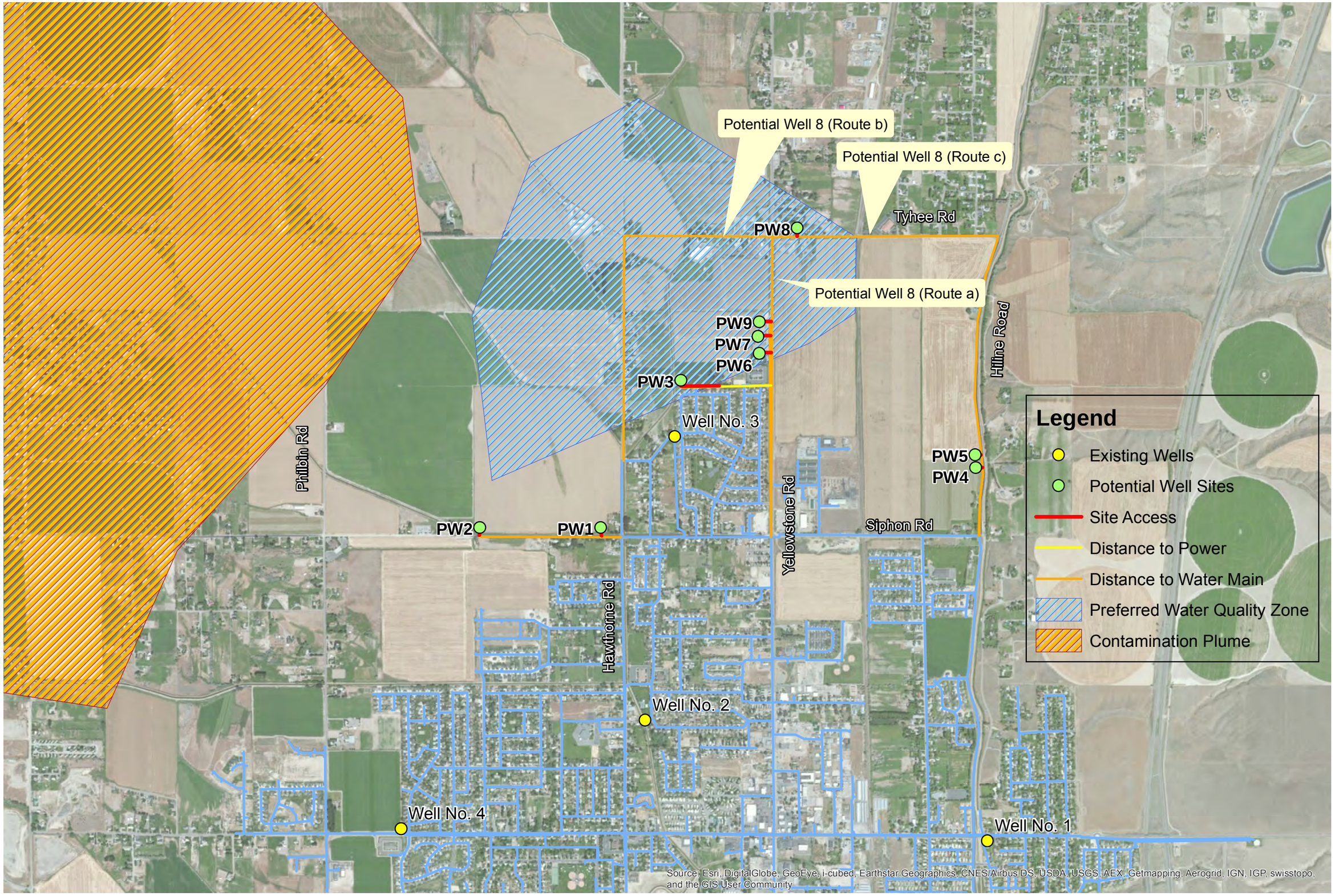
All work at the project sites is to be completed in accordance with the Idaho Standards for Public Works Construction. Finish grading will be done to maintain drainage away from structures. Contractors will be directed through contract documents to comply with storm water pollution prevention requirements (SWPP) and implement best management practices for grading and site work.

9.16.7 Corrosion Prevention

Materials that are resistant to corrosion or with protective coatings appropriate to the material and conditions will eliminate or reduce the occurrence of corrosion. All coatings used in contact with potable water will be NSF approved.

9.16.8 Disinfection

The well utilized for tank fill will be installed with a tablet feed or liquid sodium hypochlorite disinfection system. This system will be used to maintain disinfection of the water storage tank and distribution system.



PROJECT NO. 210078

FILENAME Decision Matrix Map2.mxd

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Chubbuck WFPS

Decision Matrix Attributes

FIGURE NO. 9.8

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Document Path: Y:\Projects\210078-000 Chubbuck 2011 WFPS\Study Working Folder\Well Location Decision Matrix\GIS\Decision Matrix Map2.mxd

REFERENCES

Biggerstaff, H. W., & McGrath, C. L. (1981). *Soil survey of Power County area, Idaho.* Washington D.C.: United States Department of Agriculture.

Chin, D. A. (2000). *Water-resources engineering.* Upper Saddle River, NJ: Prentice Hall.

Cornwell, D. A., & Davis, M. L. (1998). *Introduction to environmental engineering.* Boston: WCB McGraw Hill.

Deaton Company, CPA. (2014). *City of Chubbuck, ID Audited Financial Statements for the Fiscal Years Ended September 30, 2013 and 2012.* Pocatello: Deaton Company.

Evaporation Stations - ABD EXP STN. (2006). Retrieved February 28, 2013, from wrcc.dri.edu: http://www.wrcc.dri.edu/htmlfiles/westevap.final.html

Federal Emergency Management Agency. (2015). *FEMA: Map service center*. Retrieved October 12, 2009, from http://www.msc.fema.gov

Idaho Department of Commerce. (2006). *Idaho community profile: American Falls.* Retrieved October 9, 2009, from http://commerce.idaho.gov/assets/content/docs/Cities/AmericanFalls.pdf

Idaho Department of Environmental Quality. (2011). *Air Quality Planning: Idaho's State Implementation Plan*. Retrieved February 23, 2011, from http://www.deq.idaho.gov/air/data_reports/planning/sip.cfm#sip

Idaho Department of Water Resources. (2009). *Water Rights Transfer No. 75304.* State of Idaho.

Idaho Department of Water Resources. (n.d.). *Idaho Department of Water Resources map server.* Retrieved October 9, 2009, from http://maps.idwr.idaho.gov/mapall2/viewer.htm

Kawamura, S. (2000). *Integrated design and operation of water treatment facilities* (2nd ed.). New York: John Wiley & Sons, Inc.

Keller Associates. (2004). *City of Chubbuck Water Facilities Planning Study.* Keller Associates.

Keller Associates. (2007). *Water Source Evaluation and Preliminary Design.* Pocatello, ID.

Keller Associates. (2008). *Water Source Addendum.* Pocatello, ID: Keller Associates.

Maupin, M. A. (2014). *Estimated Use of Water in the United States in 2010.* U.S. Department of the Interior, U.S. Geological Survey. Reston, VA: USGS.

National Wild and Scenic Rivers System. (2015, 08). *rivers.gov*. Retrieved Mar 4, 2015, from www.rivers.gov

Tchobanoglous, G., Burton, F. L., & Stensel, H. D. (2004). *Wastewater engineering: Treatment and reuse* (4th ed.). New York: McGraw Hill.

U.S. BLS. (2015). *CPI Detailed Report, Data for January 2015.* Retrieved March 16, 2015, from U.S. Inflation Calculator: http://www.bls.gov/cpi/cpid1501.pdf

U.S. Congress. (1968). *Wild and Scenic Rivers Act, 16 U.S.C. 1271-1287.* U.S. Congress.

U.S. Department of the Interior. (2015). *National Park Service*. Retrieved Mar 4, 2015, from National Register of Historic Places: www.nps.org/nr/

U.S. Fish & Wildlife Service. (2015, 08 20). *IPaC Trust Resource Report*. ecos.fws.gov/ipac.

United States Department of Agriculture. (2012). *Custom Soil Resource Report for Bannock County Area, Idaho.* Natural Resources Conservation Service.

US Bureau of Labor Statistics. (2009). *CPI inflation calculator*. Retrieved October 13, 2009, from http://www.bls.gov/data/inflation_calculator.htm

US Census Bureau. (2009). *Population finder*. Retrieved October 13, 2009, from http://www.census.gov/

US Census Bureau. (2010). *2010 Census.*

US Environmental Protection Agency. (2006). *Ground water & drinking water: Drinking water standards*. Retrieved October 13, 2009, from http://www.epa.gov/safewater/standards.html

US Fish and Wildlife Service. (2009). *Species information by county.* Retrieved October 12, 2009, from http://www.fws.gov/idaho/agencies/COlists/Power.pdf

US Fish and Wildlife Service. (2010). *National Wetlands inventory*. Retrieved November 19, 2010, from http://www.fws.gov/wetlands/

US Geological Survey. (2005). *Estimated use of water in the United States in 2000*. Retrieved October 13, 2009, from http://pubs.usgs.gov/circ/2004/circ1268/htdocs/table05.html

US Geological Survey. (2015). *United States Geological Survey.* Retrieved March 9, 2015, from http://water.usgs.gov/watuse/data/2010/

USDA Natural Resource Conservation Service. (2009). Retrieved November 15, 2010, from Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Western Regional Climate Center. (2006). *Idaho climatic summaries*. Retrieved November 15, 2010, from http://www.wrcc.dri.edu/summary/Climsmsid.html

Western Regional Climate Center. (2012). *Pocatello WSO ARPT, Idaho (107211)*. Retrieved February 28, 2013, from http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?id7211

Whitehead, R. L. (1994). *Ground water atlas of the United States: Idaho, Oregon, Washington HA 730-H.* Retrieved October 9, 2009, from http://pubs.usgs.gov/ha/ha730/ch_h/H-text8.html

APPENDIX A PROFILE OF CHUBBUCK

DP-1

Profile of General Population and Housing Characteristics: 2010

2010 Demographic Profile Data

NOTE: For more information on confidentiality protection, nonsampling error, and definitions, see http://www.census.gov/prod/cen2010/profiletd.pdf.

GEO: Chubbuck city, Idaho

Subject	Number	Percent
SEX AND AGE		
Total population	13,922	100.0
Under 5 years	1,512	10.9
5 to 9 years	1,406	10.1
10 to 14 years	1,157	8.3
15 to 19 years	929	6.7
20 to 24 years	822	5.9
25 to 29 years	1,087	7.8
30 to 34 years	1,141	8.2
35 to 39 years	886	6.4
40 to 44 years	760	5.5
45 to 49 years	738	5.3
50 to 54 years	756	5.4
55 to 59 years	711	5.1
60 to 64 years	622	4.5
65 to 69 years	410	2.9
70 to 74 years	343	2.5
75 to 79 years	241	1.7
80 to 84 years	197	1.4
85 years and over	204	1.5
Median age (years)	30.2	(X)
16 years and over	9,632	69.2
18 years and over	9,253	66.5
21 years and over	8,772	63.0
62 years and over	1,733	12.4
65 years and over	1,395	10.0
Male population	6,766	48.6
Under 5 years	785	5.6
5 to 9 years	695	5.0
10 to 14 years	591	4.2
15 to 19 years	453	3.3
20 to 24 years	377	2.7
25 to 29 years	515	3.7
30 to 34 years	575	4.1
35 to 39 years	427	3.1
40 to 44 years	387	2.8
45 to 49 years	363	2.6
50 to 54 years	356	2.6
55 to 59 years	341	2.4
60 to 64 years	304	2.2
65 to 69 years	181	1.3
70 to 74 years	166	1.2
75 to 79 years	101	0.7
80 to 84 years	85	0.6
85 years and over	64	0.5

Subject	Number	Percent
Median age (years)	29.7	(X)
16 years and over	4,590	33.0
18 years and over	4,411	31.7
21 years and over	4,171	30.0
62 years and over	764	5.5
65 years and over	597	4.3
Female population	7,156	51.4
Under 5 years	727	5.2
5 to 9 years	711	5.1
10 to 14 years	566	4.1
15 to 19 years	476	3.4
20 to 24 years	445	3.2
25 to 29 years	572	4.1
30 to 34 years	566	4.1
35 to 39 years	459	3.3
40 to 44 years	373	2.7
45 to 49 years	375	2.7
50 to 54 years	400	2.9
55 to 59 years	370	2.7
60 to 64 years	318	2.3
65 to 69 years	229	1.6
70 to 74 years	177	1.3
75 to 79 years	140	1.0
80 to 84 years	112	0.8
85 years and over	140	1.0
Median age (years)	30.7	(X)
16 years and over	5,042	36.2
18 years and over	4,842	34.8
21 years and over	4,601	33.0
62 years and over	969	7.0
65 years and over	798	5.7
RACE		
Total population	13,922	100.0
One Race	13,510	97.0
White	12,596	90.5
Black or African American	62	0.4
American Indian and Alaska Native	339	2.4
Asian	159	1.1
Asian Indian	8	0.1
Chinese	41	0.3
Filipino	35	0.3
Japanese	22	0.2
Korean	19	0.1
Vietnamese	13	0.1
Other Asian [1]	21	0.2
Native Hawaiian and Other Pacific Islander	36	0.3
Native Hawaiian	1	0.0
Guamanian or Chamorro	0	0.0
Samoan	11	0.1
Other Pacific Islander [2]	24	0.2
Some Other Race	318	2.3
Two or More Races	412	3.0
White; American Indian and Alaska Native [3]	100	0.7
White; Asian [3]	64	0.5
White; Black or African American [3]	63	0.5
White; Some Other Race [3]	92	0.7
Race alone or in combination with one or more other races: [4]		
White	12,968	93.1
Black or African American	145	1.0
American Indian and Alaska Native	481	3.5

Subject	Number	Percent
Asian	243	1.7
Native Hawaiian and Other Pacific Islander	82	0.6
Some Other Race	445	3.2
HISPANIC OR LATINO		
Total population	13,922	100.0
Hispanic or Latino (of any race)	1,050	7.5
Mexican	901	6.5
Puerto Rican	14	0.1
Cuban	4	0.0
Other Hispanic or Latino [5]	131	0.9
Not Hispanic or Latino	12,872	92.5
HISPANIC OR LATINO AND RACE		
Total population	13,922	100.0
Hispanic or Latino	1,050	7.5
White alone	517	3.7
Black or African American alone	1	0.0
American Indian and Alaska Native alone	60	0.4
Asian alone	4	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.0
Some Other Race alone	310	2.2
Two or More Races	158	1.1
Not Hispanic or Latino	12,872	92.5
White alone	12,079	86.8
Black or African American alone	61	0.4
American Indian and Alaska Native alone	279	2.0
Asian alone	155	1.1
Native Hawaiian and Other Pacific Islander alone	36	0.3
Some Other Race alone	8	0.1
Two or More Races	254	1.8
RELATIONSHIP		
Total population	13,922	100.0
In households	13,912	99.9
Householder	4,732	34.0
Spouse [6]	2,839	20.4
Child	5,212	37.4
Own child under 18 years	4,349	31.2
Other relatives	573	4.1
Under 18 years	267	1.9
65 years and over	62	0.4
Nonrelatives	556	4.0
Under 18 years	53	0.4
65 years and over	28	0.2
Unmarried partner	302	2.2
In group quarters	10	0.1
Institutionalized population	0	0.0
Male	0	0.0
Female	0	0.0
Noninstitutionalized population	10	0.1
Male	6	0.0
Female	4	0.0
HOUSEHOLDS BY TYPE		
Total households	4,732	100.0
Family households (families) [7]	3,586	75.8
With own children under 18 years	1,971	41.7
Husband-wife family	2,839	60.0
With own children under 18 years	1,492	31.5
Male householder, no wife present	225	4.8
With own children under 18 years	157	3.3
Female householder, no husband present	522	11.0
With own children under 18 years	322	6.8

Subject	Number	Percent
Nonfamily households [7]	1,146	24.2
Householder living alone	942	19.9
Male	371	7.8
65 years and over	101	2.1
Female	571	12.1
65 years and over	295	6.2
Households with individuals under 18 years	2,116	44.7
Households with individuals 65 years and over	1,019	21.5
Average household size	2.94	(X)
Average family size [7]	3.40	(X)
HOUSING OCCUPANCY		
Total housing units	4,961	100.0
Occupied housing units	4,732	95.4
Vacant housing units	229	4.6
For rent	97	2.0
Rented, not occupied	7	0.1
For sale only	50	1.0
Sold, not occupied	10	0.2
For seasonal, recreational, or occasional use	23	0.5
All other vacants	42	0.8
Homeowner vacancy rate (percent) [8]	1.5	(X)
Rental vacancy rate (percent) [9]	6.4	(X)
HOUSING TENURE		
Occupied housing units	4,732	100.0
Owner-occupied housing units	3,324	70.2
Population in owner-occupied housing units	10,245	(X)
Average household size of owner-occupied units	3.08	(X)
Renter-occupied housing units	1,408	29.8
Population in renter-occupied housing units	3,667	(X)
Average household size of renter-occupied units	2.60	(X)

X Not applicable.

[1] Other Asian alone, or two or more Asian categories.

[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.

[3] One of the four most commonly reported multiple-race combinations nationwide in Census 2000.

[4] In combination with one or more of the other races listed. The six numbers may add to more than the total population, and the six percentages may add to more than 100 percent because individuals may report more than one race.
[5] This category is composed of people whose origins are from the Dominican Republic, Spain, and Spanish-speaking Central or South American countries. It also includes general origin responses such as "Latino" or "Hispanic."
[6] "Spouse" represents spouse of the householder. It does not reflect all spouses in a household. Responses of "same-sex spouse" were edited during processing to "unmarried partner."
[7] "Family households" consist of a householder and one or more other people related to the householder by birth, marriage, or adoption. They do not include same-sex married couples even if the marriage was performed in a state issuing marriage certificates for same-sex couples. Same-sex couple households are included in the family households category if there is at least one additional person related to the householder by birth or adoption. Same-sex couple households with no relatives of the householder present are tabulated in nonfamily households. "Nonfamily households" consist of people living alone and households which do not have any members related to the householder.

[8] The homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale." It is computed by dividing the total number of vacant units "for sale only" by the sum of owner-occupied units, vacant units that are "for sale only," and vacant units that have been sold but not yet occupied; and then multiplying by 100.
[9] The rental vacancy rate is the proportion of the rental inventory that is vacant "for rent." It is computed by dividing the total number of vacant units "for rent" by the sum of the renter-occupied units, vacant units that are "for rent," and vacant units that have been rented but not yet occupied; and then multiplying by 100.
Source: U.S. Census Bureau, 2010 Census.

APPENDIX B WELLS & WATER RIGHTS

Form 238-7
3/95

JO
OMDWR
C

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
Use Typewriter or Ballpoint Pen

093260

Office Use Only
Inspected by _____
Twp____ Rge____ Sec____
____1/4____1/4____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 29-95-E-0087-000
Other IDWR No. 29-02469/7624/2413/2385

2. OWNER:
Name City of Chubbuck
Address PO Box 5604
City Chubbuck State Id Zip 83202

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 6 North ☐ or South ☒
Rge. 34 East ☒ or West ☐
Sec. 10, ____ 1/4 (10 acres) SW 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot ____ County Bannock
Lat: : : Long: : :
Address of Well Site _____
_____ City _____
(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD
☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Concrete	0	155	8 yds	overbore
concrete	-6	265	30 yds	overbore
bentonite	265	320	40 bags	overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 155 & 323
Was drive shoe seal tested? ☒ Y ☐ N How? baled water out

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
28	0	150	375	steel	☒	☐	☒	☐
24	0	155	375	steel	☒	☐	☒	☐
20	+2	323	375	steel	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☒ ~~Perforations~~ Method 40 slot
☒ Screens Screen Type SST 304 Johnson

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
329	449	40		16"	SST	screen	
45	145	3/8X3	100	28"	steel	☒ perforations	
						☐	☐

perforations at top were pressure grouted

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
63 ft. below ground Artesian pressure _____ lb.
Depth flow encountered 312 ft. Describe access port or control devices: well cap

11. WELL TESTS:
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
2000	~~[illegible]~~ 38	101	35 hrs

Water Temp. approx 58° Bottom hole temp. 58°
Water Quality test or comments: excell.
[redacted] Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
28	0	3	top soil		X
28	3	12	gravel		X
28	12	30	sand & gravel		X
28	30	40	gravel & clay		X
28	40	44	boulders		X
28	44	57	gravel	X	
28	57	99	gravel & clay sand	X	
28	99	140	large gravel & clay	X	
28	140	144	grabel gravel & sand		X
28	144	150	brown clay		X
28	150	160	gray lava		X
24	160	212	Black lava	X	
24	212	229	Black lava & clay		X
24	229	272	brown clay & gravel		X
20	272	290	brown clay & sand		X
20	290	312	gravel, clay & sand, gravel		X
20	312	318	clay & gravel		X
20	318	323	gravel	X	
20	323	335	gravel & clay	X	
20	335	343	gravel	X	
20	343	403	gravel & clay	X	
20	403	435	gravel	X	
20	435	460	gravel & clay	X	

RECEIVED
MAY 22 1996
Department of Water Resources
Eastern Region

AUG 21 1996

Completed Depth 460 (Measurable)
Date: Started Oct 15, 1995 Completed April 17, 96

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

Firm Name High Plains Drilling Firm No. 299
Firm Official Marcus Franchr Date 5-17-96
and
~~Supervisor~~ or Operator Terry Franchr Date 5-17-96
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
1/78

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.

E

gb-

1. WELL OWNER

Name City of Chubbuck

Address Chubbuck Ida.

Owner's Permit No. Applied for

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

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
3/8 inches	24 inches +	0 feet	168 feet
3/8 inches	20 inches	+3 feet	201 feet
~~5/16~~ inches	~~16~~ inches	feet	feet
5/16 inches	16 inches	195 feet	400 feet

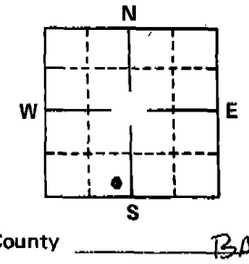
Was casing drive shoe used? ☒ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☒ Yes ☐ No
How perforated? ☐ Factory ☒ Knife ☐ Torch
Size of perforation ~~5/8~~ 3/8 inches by 4 inches

Number	From	To
6 perforations	feet	feet
400 perforations	260 feet	210 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 20 Material used in seal: ☐ Cement grout ☒ Puddling clay & ☒ Well cuttings
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 _____

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____
Lot No. 1 Block No. 1
County BANNOCK
SE ¼ SW ¼ Sec. 4, T. 6 S, R. 34 E.

7. WATER LEVEL

Static water level 80' 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 _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
4000	82'	12 hrs.

9. LITHOLOGIC LOG

79251

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
30	0	3	Clay		✓
"	3	5	Clay & Balders		
"	5	20	gravel & Balders		
24	20	50	gravel Large		
"	50	63	Clay & gravel		
"	63	80	Hard clay - little gravel		
"	80	86	gravel	✓	
24	86	102	Sandy clay & gravel		
24	102	144	Hard gravel	✓	
24	144	168	clay & gravel		
"	168	185	Basalt		
"	185	186	Sand		
"	186	188	Firm Basalt		
"	188	192	Cinders	✓	
"	192	200	Fairly hard Basalt		
20	200	221	Fairly hard Basalt		
"	221	254	Broken Brown Basalt	✓	
	254	267	Hard Grey Basalt		
	267	272	Brown sticky clay		
	272	278	Conglomerate clay & rocks		
	278	302	sticky clay		
	302	350	clay & conglomerate		
16	350	400	clay & "		

RECEIVED SEP 13 1985 Department of Water Resources

RECEIVED SEP 19 1985 Department of Water Resources Eastern District Office

RECEIVED SEP 20 1985 Department of Water Resources

MICROFILMED

Work started March 9-84 finished 6/14/84

DRILLER'S CERTIFICATION

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

Firm Name Jack Cushman Drilling Firm No. #94
1405 South Broadway
Address Blackfoot, Idaho Date 7/10/84
Signed by (Firm Official) Jack Cushman
and
(Operator) Kyle Bailey

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

RECEIVED
JAN 8 ...
Department of Reclamation

WELL LOG AND REPORT OF THE STATE RECLAMATION ENGINEER OF IDAHO

Permit No. 25284 Well No. _____ County Bannock

Owner Blaine Shoemaker

Address Pocatello Idaho

Driller Ivan Borty

Address Grace Idaho

Well location ~~SW~~ ¼ ~~SW~~ ¼ Sec. 34, T. 5 ~~N~~/S, R. 34 E/~~W~~

Size of drilled hole 16"

Total depth of well 250 ft

Locate well in section

NW¼	NE¼
SW¼	SE¼

Give depth to standing water from the ground 70 ft. Water temp. _____ °Fahr.

31215

On "Pumping Test" delivery was 3000 g.p.m. or _____ c.f.s. Drawdown was 30 feet.

Size of pump and motor used to make test 14" Bowl - 10" Column 500 HP

Length of time of test 8 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 Domestic (Housing Development) Weight of casing per lineal foot _____

Thickness of casing ¼" Casing material steel
(STEEL, CONCRETE, WOOD, ETC.)

Diameter, length and location of casing 16" OD To 160' — 12¾ OD - 152' to 250'
(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.
16"	0	160	160	Driven
12¾	152	250	98	Torch Perforated & then Set & swedged

WSS.

Number and size of perforations 250 - 3/16 X 4 located 215 feet to 250 feet from ground

Date of commencement of well 11/17/62 Date of completion of well 12/20/62

I F

55 - 34E —— 34 NWSW

29

1

WELL LOG

From Feet	To Feet	Type of Material	Water-bearing Formation Ans. Yes or No	Casing Perforated Ans. Yes or No
0	4	soil	no	no
4	22	clay & Boulders	no	"
22	58	gravel & Boulders	no	"
58	75	clay with some Boulders	no	"
75	85	gravel with clay & a little water	yes	"
85	93	sandy clay	no	"
93	105	clay, gravel a little dirty water	yes	"
105	123	yellow clay	no	"
123	135	clay, gravel dirty water	yes	"
135	159	clay, gravel not much water	yes	"
159	168	lava rock	no	"
168	188	stickey yellow clay	no	"
188	189	Boulder	no	"
189	192	stickey clay & gravel	?	"
192	198	lava rock	no	"
198	205	Gumbo clay	no	"
205	216	Porus lava rock	yes	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 Ivan Borg

By

License No. 57

Dated 12/31, 1962

SHEET NO. 2

Well Owner Blaine Shoemaker

Well Driller Ivan Borty

Well Location SW 1/4 NW 1/4 534 # 55 N 34 E

WELL LOG

From Feet	To Feet	Type of Material	Water-bearing Formation Ans. Yes or No	Casing Perforated Ans. Yes or No
216	228	Broken lava lost cuttings	yes	yes
228	230	Porus but firm lava	yes	"
230	240	Hard lava	?	"
240	250	Soft Loose Rock (caveing Bad)	yes	"
			31216	

NWSW

29

55-34E —— 34 NWSW

WELL LOG AND REPORT TO THE STATE RECLAMATION ENGINEER OF IDAHO

RECEIVED
DEC 1 0 1957
Department of Reclamation

Log No. _____
Rec. _____, 19____
Well No. 2
Permit No. 267
31288
(DO NOT FILL IN)

Owner VILLAGE OF CHUBBUCK Address CHUBBUCK IDAHO.

Driller CHUCK AT C. JENSEN Address [illegible], [illegible]. Lic. No. 16

Location of Well: NW ¼ NW ¼ Sec. 11, T. 6 N/S, R. 2 E/W BANNOCK County,

and _____ feet N/S, and _____ feet E/W from _____ Corner of _____ ¼ _____ ¼ Sec. _____

Size of Drilled Hole [illegible] Total depth of Well 255 feet

Give depth of standing water from surfaace 65 Water Temp. 40 °Farenheit

On pumping test delivery was 1350 g.p.m. or _____ c.f.s. Drawdown was 5 feet.

Size of pump and motor used to make the test 10" bowlas 6" col. 100 H. P. motor

Length of time pumped during check was 4 hr., _____ minutes.

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

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

Water will be used for City Weight of casing per linear foot 43 & 34

Thickness of casing 312 & 279 Casing material steel
E.G., PIPE, CONCRETE, WOOD.

Diameter, length and location of casing 12" 154 feet 10" 150 feet
(CASING 12" IN DIAMETER AND UNDER GIVE INSIDE DIAMETER; CASING OVER 12" IN DIAMETER GIVE OUTSIDE DIAMETER.)

Number and size of perforations 210 from 5/16 to 2 [illegible] located 210 feet to 240 feet from surface of ground.

Other perforations _____

Date of commencement of well Oct. 31 1957 Date of completion of well Dec. 1 1957.

Type of well rig 60-L Ducrus-Dido

CASING RECORD

DIAM. CASING	FROM FEET	TO FEET	LENGTH	"REMARKS" -- SEALS, GROUTING, ETC.
12"	0	154	154	There is a lead packer at top of the 10" pipe to seal between the 12" & 10"
10"	100	250	150	

GENERAL INFORMATION—Pumping Test, Quality of Water, Etc.

I P

29 65-34E ——— 11 NWNW 19

WELL LOG

From Feet	To Feet	Type of Material	Drilling Time Hrs.	Drilling Time Min.	Water-bearing Formation Ans. Yes or No	Casing Perforated Ans. Yes or No
0						
0	3	clay	[illegible]			
3	6	boldors	7			
6	45	clay & gravel	20			
45	91	clay, gravel & some sand	23		yes	no
91	102	clay & sand	3		yes	no
102	112	boldors	12		yes	no
112	116	sand & gravel	12		yes	no
116	147	clay & gravel	11		yes	no
147	154	gravel & sandy clay	8		yes	no
154	183	hard black lava	15		no	no
183	187	red clay		30	no	no
187	200	brown clay	[illegible]		no	no
200	215	yellow clay	4		no	no
215	216	black lava		15	no	no
216	245	black & red cinders	20		yes	yes
		If more space is required use Sheet No. 2				

WELL DRILLER'S STATEMENT

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

Signed [illegible]

By Ray Cleaburn

License No. 16

Contractors License 1029

Dated December 7, **19** 57

City of Chubbuck Water Rights
Summary of IDWR Record, Oct 28, 2014

Type	Basin	Sequence	Basis	Status	Priority Date	Div. Rate (cfs)	Div. Volume AFA	Source	Water Use	Owner
Water Right	29	2385	Decreed	Active	1/11/1957	0.78	564.70	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	2413	Decreed	Active	6/25/1959	1.10	796.36	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	2469	Decreed	Active	3/10/1963	1.11	803.60	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	7624	Decreed	Active	12/14/1981	4.96	3590.88	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	8188	License	Active	12/16/1996	6.70	4850.58	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	8229	License	Active	4/5/1999	1.74	1259.70	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	8230	License	Active	4/5/1999	2.21	1599.97	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14012	Decreed	Active	8/19/1952	1.83	488.80	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14013	Decreed	Active	8/19/1952	2.25	651.20	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14016	Decreed	Active	1/17/1966	1.89	483.00	GROUND WATER	MITIGATION, MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14054	Decreed	Active	12/31/1974	1.47	491.60	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14055	Decreed	Active	6/20/1961	0.13	26.40	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14056	Decreed	Active	10/26/1966	0.09	18.80	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14058	Decreed	Active	8/19/1952	0.05	16.00	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14080	Decreed	Active	12/31/1974	0.27	87.60	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14081	Decreed	Active	6/20/1961	0.03	4.40	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14082	Decreed	Active	10/26/1966	0.02	3.60	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14096	Decreed	Active	11/29/1971	0.21	83.20	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14097	Decreed	Active	11/29/1971	0.02	8.80	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14099	Decreed	Active	5/2/1966	2.52	462.00	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14106	Decreed	Active	8/18/1953	0.93	186.40	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK
Water Right	29	14107	Decreed	Active	12/3/1980	0.61	121.60	GROUND WATER	MUNICIPAL	CITY OF CHUBBUCK

30.91 16599.19

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

TRANSFER OF WATER RIGHT

TRANSFER NO. 77438

This is to certify that: IDAHO WATER CO LLC
1135 VALLEY RD S
EDEN ID 83325
(208) 312-1135

has requested a change to the water right(s) listed below. This change in water right(s) is authorized pursuant to the provisions of Section 42-222, Idaho Code. A summary of the changes is also listed below. The authorized change for each affected water right, including conditions of approval, is shown on the following pages of this document.

Summary of Water Rights Before the Proposed Change

Right	Origin/Basis	Priority	Rate	Volume	Acre Limit	Total Acres	Source
35-14149	WR/Decreed	08/19/1952	1.83 cfs	488.8 af	N/A	122.2	GROUND WATER
35-14157	WR/Decreed	08/19/1952	2.25 cfs	651.2 af	N/A	162.8	GROUND WATER

Purpose of Transfer (Changes Proposed)

Current Number	Split	POD	POU	Add POD	Period of Use	Nature of Use
35-14149	NO	YES	YES	NO	NO	YES
35-14157	NO	YES	YES	NO	NO	YES

Summary of Water Rights After the Approved Change

Existing Right	New No. (changed portion)	Transfer Rate	Transfer Volume	Acre Limit	Total Acres	New No. (remaining portion)	Remaining Rate	Remaining Volume	Remaining Acre Limit	Remaining Total Acres
35-14149	**29-14012**	1.83 cfs	488.8 af	122.2	(Municipal		N/A	N/A	N/A	N/A
35-14157	**29-14013**	2.25 cfs	651.2 af	162.8	Boundary)		N/A	N/A	N/A	N/A
COMBINED TOTALS		**4.08 cfs**	**1140 af**	**285.0**	**(Municipal Boundary)**		N/A	N/A	N/A	N/A

Detailed Water Right Description(s) attached

Dated this 7th day of October, 20 11

Water Resources Program Manager

SUPPORT DATA

IN FILE # 35-14149

WATER RIGHT NO. 29-14012
As Modified by Transfer No. 77438

In accordance with the approval of Transfer No. 77438, Water Right No. 29-14012 is now described as follows.

Right Holder: IDAHO WATER CO LLC
C/O DEL KOHTZ
1135 VALLEY RD S
EDEN ID 83325

Priority Date: August 19, 1952

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate	Volume
MUNICIPAL	04/01 to	10/31	1.83 CFS	488.8 AF

LOCATION OF POINT(S) OF DIVERSION:
GROUND WATER NWNWSW Sec. 3 Twp 06S Rge 34E BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.

3. Municipal use under rights 29-14012 and 29-14013 is for irrigation of 285.0 acres within the authorized place of use in a single irrigation season.

4. This right is limited to the irrigation of 122.2 acres within the authorized place of use in a single irrigation season.

5. Rights 29-14012 and 29-14013 when combined shall not exceed the irrigation of 285.0 acres.

6. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

7. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

8. Prior to diversion and use of water under Transfer approval 77438, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

9. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-14012
As Modified by Transfer No. 77438

CONDITIONS OF APPROVAL

10. The combination of changes under:
    Transfer approval 77438 as described under rights 29-14012 and 29-14013;
    Transfer approval 77439 as described under rights 25-14345 and 25-14346;
    Transfer approval 77440 as described under right 36-16917;
    Transfer approval 77441 as described under right 22-14018;
    Transfer approval 77443 as described under right 27-12235;
    Transfer approval 77444 as described under right 25-14347;

    provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation.

    Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right.

11. The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.

12. The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.

13. This right does not grant any right-of-way or easement across the land of another.

14. The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.

15. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

16. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 7th day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-14013
As Modified by Transfer No. 77438

In accordance with the approval of Transfer No. 77438, Water Right No. 29-14013 is now described as follows.

Right Holder: IDAHO WATER CO LLC
C/O DEL KOHTZ
1135 VALLEY RD S
EDEN ID 83325

Priority Date: August 19, 1952

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate	Volume
MUNICIPAL	04/01 to	10/31	2.25 CFS	651.2 AF

LOCATION OF POINT(S) OF DIVERSION:
GROUND WATER NWNWSW Sec. 3 Twp 06S Rge 34E BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3. Municipal use under rights 29-14012 and 29-14013 is for irrigation of 285.0 acres within the authorized place of use in a single irrigation season.
4. This right is limited to the irrigation of 162.8 acres within the authorized place of use in a single irrigation season.
5. Rights 29-14012 and 29-14013 when combined shall not exceed the irrigation of 285.0 acres.
6. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8. Prior to diversion and use of water under Transfer approval 77438, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-14013
As Modified by Transfer No. 77438

CONDITIONS OF APPROVAL

10. The combination of changes under:
    Transfer approval 77438 as described under rights 29-14012 and 29-14013;
    Transfer approval 77439 as described under rights 25-14345 and 25-14346;
    Transfer approval 77440 as described under right 36-16917;
    Transfer approval 77441 as described under right 22-14018;
    Transfer approval 77443 as described under right 27-12235;
    Transfer approval 77444 as described under right 25-14347;

    provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation.

    Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right.

11. The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.

12. The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.

13. This right does not grant any right-of-way or easement across the land of another.

14. The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.

15. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

16. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 7th day of October, 20 11

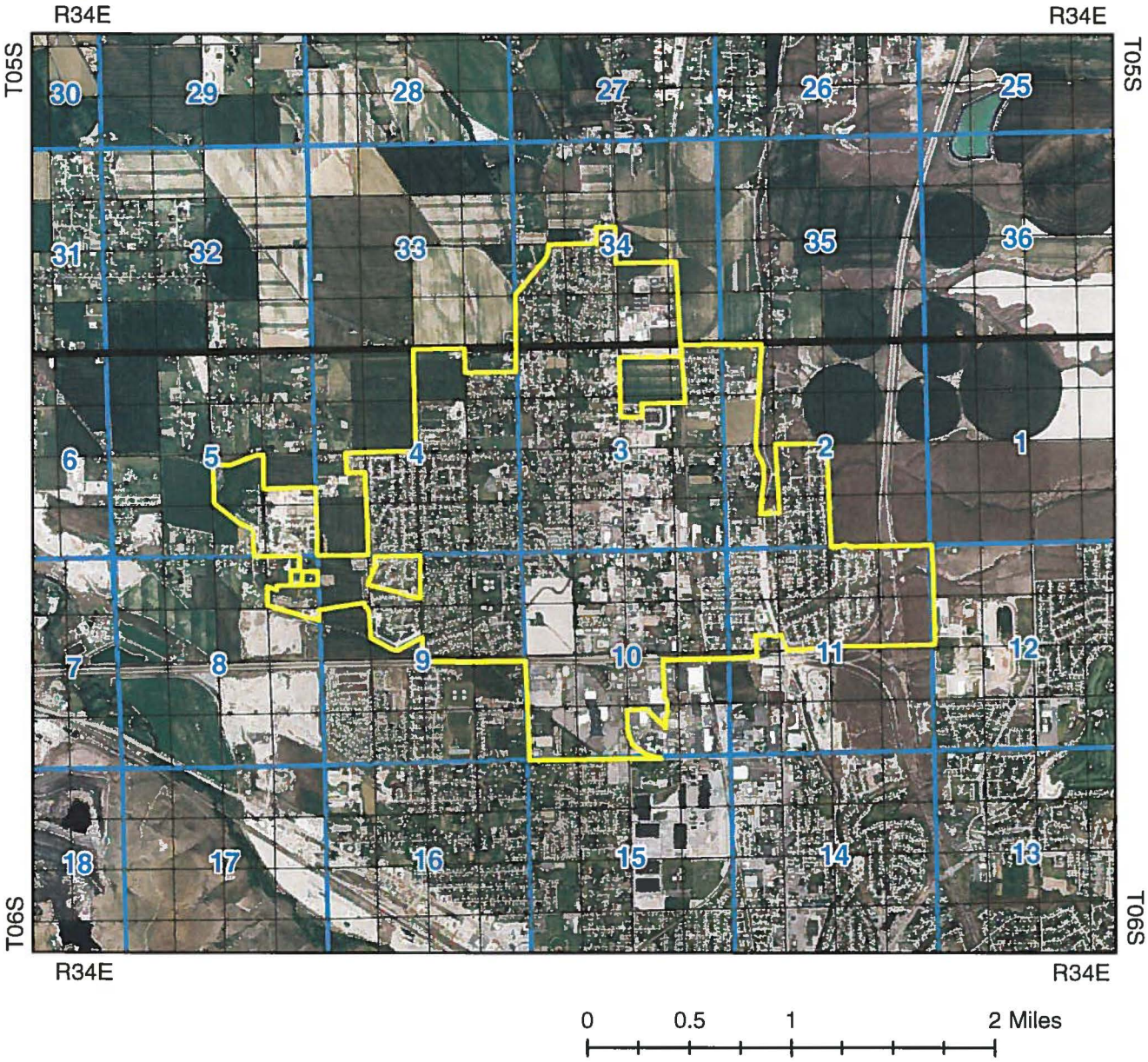
Water Resources Program Manager

State of Idaho
Department of Water Resources

Transfer Of Water Right

Transfer No. 77438

Water Service Area Boundary for the City of Chubbuck
Rights: 29-14012, 29-14013



Legend

- Water Service Area Boundary
- Townships
- PLS Sections
- Quarter Quarters

N

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

TRANSFER OF WATER RIGHT

TRANSFER NO. 77509

This is to certify that: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604
(208)237-2430

has requested a change to the water right(s) listed below. This change in water right(s) is authorized pursuant to the provisions of Section 42-222, Idaho Code. A summary of the changes is also listed below. The authorized change for each affected water right, including conditions of approval, is shown on the following pages of this document.

Summary of Water Rights Before the Proposed Change

Right	Origin/Basis	Priority	Rate	Volume	Acre Limit	Total Acres	Source
35-2892A	WR/Decreed	01/17/1966	1.89 cfs	483 af	N/A	137.0	GROUND WATER

Associated Water Rights Also Included in Transfer Approval (Update Conditions)

Right	Origin/Basis	Priority	Rate	Volume	Acre Limit	Total Acres	Source
29-2385	WR/Decreed	01/11/1957	0.78 cfs	N/A	N/A	N/A	GROUND WATER
29-2413	WR/Decreed	06/25/1959	1.1 cfs	N/A	N/A	N/A	GROUND WATER
29-2469	WR/Decreed	03/10/1963	1.11 cfs	N/A	N/A	N/A	GROUND WATER
29-7624	WR/Decreed	12/14/1981	4.96 cfs	N/A	N/A	N/A	GROUND WATER
29-8229	WR/License	04/05/1999	1.74 cfs	N/A	N/A	N/A	GROUND WATER
29-8188	WR/License	12/16/1996	6.7 cfs	N/A	N/A	N/A	GROUND WATER
29-8230	WR/License	04/05/1999	2.21 cfs	N/A	N/A	N/A	GROUND WATER

Purpose of Transfer (Changes Proposed)

Current Number	Split	POD	POU	Add POD	Period of Use	Nature of Use
35-2892A	NO	YES	YES	YES	NO	YES

Summary of Water Rights After the Approved Change

Existing Right	New No. (changed portion)	Transfer Rate	Transfer Volume	Acre Limit	Total Acres	New No. (remaining portion)	Remaining Rate	Remaining Volume	Remaining Acre Limit	Remaining Total Acres
35-2892A	**29-14016**	1.89 cfs	483 af	127.4	Municipal Boundary		N/A	N/A	N/A	N/A
COMBINED TOTALS		**1.89 cfs**	**483 af**	**127.4**	**Municipal Boundary**		N/A	N/A	N/A	N/A

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

TRANSFER OF WATER RIGHT

TRANSFER NO. 77509

Detailed Water Right Description(s) attached

Dated this 21st day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-14016
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-14016 is now described as follows.

Right Holder: CORNELISON OLSEN PARTNERSHIP
PO BOX 396
REXBURG ID 83440

Priority Date: January 17, 1966

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate	Volume
MITIGATION	04/15	to	10/15	0.13 CFS	33.8 AF
MUNICIPAL	04/15	to	10/15	1.76 CFS	449.2 AF

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34	Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11	Twp 06S	Rge 34E	BANNOCK County

PLACE OF USE: MITIGATION

Twp Rge Sec	NE				NW				SW				SE				Totals
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
05S 34E 33																X	
05S 34E 34								X	X	X	X	X	X	X	X	X	
06S 34E 2						X L 4	X	X	X	X	X	X		X	X		
06S 34E 3	X L 1	X L 2	X	X	X L 3	X L 4	X	X	X	X	X	X	X	X	X	X	
06S 34E 4	X L 1	X L 2	X	X	X L 3			X	X	X	X	X	X	X	X	X	
06S 34E 5													X	X	X	X	
06S 34E 8	X L 1			X L 8													
06S 34E 9	X L 1	X L 2	X L 7	X L 8	X L 3	X L 4	X L 5	X L 6					X L 9	X L 10			
06S 34E 10	X L 1	X L 2	X L 7	X L 8	X L 3	X L 4	X L 5	X L 6	X L 11	X L 12	X L 13	X L 14	X L 9	X L 10	X L 15		
06S 34E 11	X L 1	X L 2	X L 7	X L 8	X L 3	X L 4	X L 5	X L 6		X L 12							
06S 34E 12						X L 4	X L 5										
06S 34E 15		X L 2			X L 3	X L 4											

WATER RIGHT NO. 29-14016
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. To mitigate for the increased depletion of water in the Near Blackfoot to Neeley reach of the ESPA model as a result of transfer 77509, the right holder shall cease diverting and using the following amount of water authorized under right 29-14016:

Use	Rate (cfs)	Volume (AF)	Acres
Irrigation	0.13	33.8	9.6

5. This right is limited to the irrigation of 127.4 acres within the authorized place of use in a single irrigation season.

6. Municipal use under this right is for irrigation of 127.4 acres within the authorized place of use in a single irrigation season.

7. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

8. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

9. Prior to diversion and use of water under Transfer approval 77509, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

10. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

11. The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.

12. The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.

13. This right does not grant any right-of-way or easement across the land of another.

WATER RIGHT NO. 29-14016
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

14. The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.

15. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

16. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-2385
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-2385 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: January 11, 1957

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate
MUNICIPAL	01/01	to	12/31	0.78 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34	Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11	Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-2385
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

8. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 1 located in T06S, R34E, S11, NENWNW Gov Lot 4.

9. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

10. This right does not grant any right-of-way or easement across the land of another.

11. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

12. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

13. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-2413
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-2413 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: June 25, 1959

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate
MUNICIPAL	01/01	to	12/31	1.10 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34	Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11	Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

WATER RIGHT NO. 29-2413
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

8. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 2 located in T06S, R34E, S3, NWNWSW.

9. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

10. This right does not grant any right-of-way or easement across the land of another.

11. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

12. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

13. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-8229
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-8229 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: April 05, 1999

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate
MUNICIPAL	01/01	to	12/31	1.74 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-8229
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

8. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.

9. The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

10. Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.

11. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 4 located in T06S, R34E, S4, SWSESW.

12. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

13. The issuance of this right does not grant any right-of-way or easement across the land of another.

14. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

15. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-8230
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-8230 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: April 05, 1999

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate
MUNICIPAL	01/01	to	12/31	2.21 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34	Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11	Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.58 cfs.

4. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.

5. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

6. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

WATER RIGHT NO. 29-8230
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

7. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.

8. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

9. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

10. Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.

11. The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

12. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

13. The issuance of this right does not grant any right-of-way or easement across the land of another.

14. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

15. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 20 11

Water Resources Program Manager

WATER RIGHT NO. 29-2469
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-2469 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: March 10, 1963

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	1.11 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

WATER RIGHT NO. 29-2469
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

8. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 3 located in T05S, R34E, S34, SENWSW.

9. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

10. This right does not grant any right-of-way or easement across the land of another.

11. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

12. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

13. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 20 11

Water Resources Program Manager

WATER RIGHT NO. 29-7624
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-7624 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: December 14, 1981

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate
MUNICIPAL	01/01	to	12/31	4.96 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34	Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10	Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11	Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 4 located in T06S, R34E, S4, SWSESW.

WATER RIGHT NO. 29-7624
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

7. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

8. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

9. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

10. This right does not grant any right-of-way or easement across the land of another.

11. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

12. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

13. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 2011

Water Resources Program Manager

WATER RIGHT NO. 29-8188
As Modified by Transfer No. 77509

In accordance with the approval of Transfer No. 77509, Water Right No. 29-8188 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: December 16, 1996

Source: GROUND WATER

BENEFICIAL USE	From		To	Diversion Rate
MUNICIPAL	01/01	to	12/31	6.70 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water from the point(s) of diversion authorized under Transfer 77509 shall not exceed a total combined maximum diversion rate as specified below:

   SENWSW, Sec. 34, T05S, R34E, B.M. limited to 18.6 cfs.

   SWSESW, Sec. 04, T06S, R34E, B.M. limited to 11.45 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

WATER RIGHT NO. 29-8188
As Modified by Transfer No. 77509

CONDITIONS OF APPROVAL

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

8. The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

9. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.

10. The use of water under this right shall not give rise to any claim against the holder of a senior water right based upon the theories of forfeiture, abandonment, adverse possession, waiver, equitable estoppel, estoppel by laches or customary preference.

11. Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.

12. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

13. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.

14. The issuance of this right does not grant any right-of-way or easement across the land of another.

15. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

16. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 21st day of October, 2011

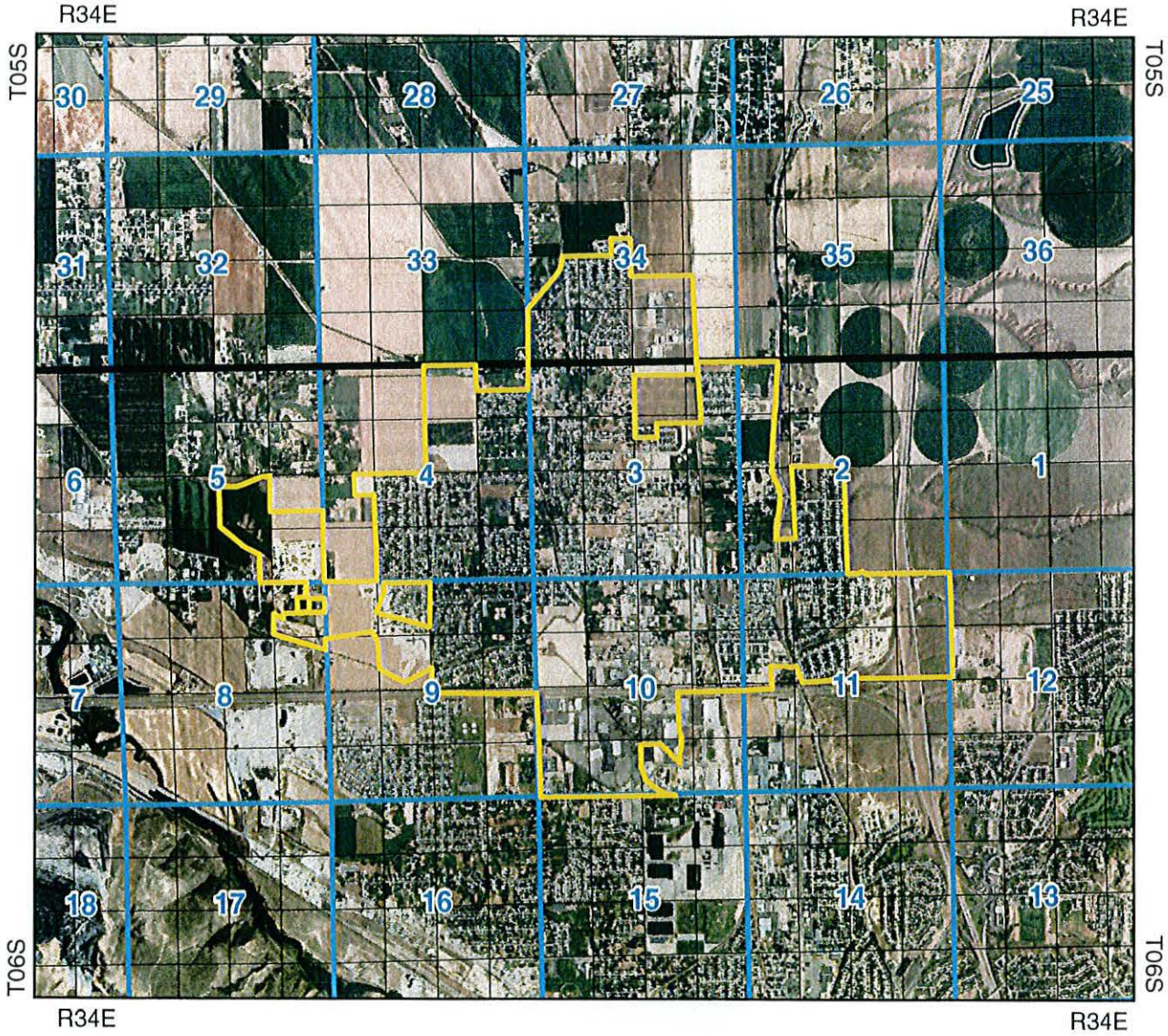
Water Resources Program Manager

State of Idaho
Department of Water Resources

Transfer Of Water Right

Transfer No. 77509

Water Service Area Boundary for the City of Chubbuck
Rights: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230, 29-14016



0 0.5 1 2 Miles

Legend

- Water Service Area Boundary
- Townships
- PLS Sections
- Quarter Quarters

N

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

TRANSFER OF WATER RIGHT

TRANSFER NO. 75304

This is to certify that: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604
(208)237-2430

has requested a change to the water right(s) listed below. This change in water right(s) is authorized pursuant to the provisions of Section 42-222, Idaho Code. A summary of the changes is also listed below. The authorized change for each affected water right, including conditions of approval, is shown on the following pages of this document.

Summary of Water Rights Before the Proposed Change

Right	Origin/Basis	Priority	Rate	Volume	Acre Limit	Total Acres	Source
29-8188	WR/License	12/16/1996	6.7 cfs	N/A	N/A	N/A	GROUND WATER
29-2385	WR/Decreed	01/11/1957	0.78 cfs	N/A	N/A	N/A	GROUND WATER
29-2413	WR/Decreed	06/25/1959	1.1 cfs	N/A	N/A	N/A	GROUND WATER
29-7624	WR/Decreed	12/14/1981	4.96 cfs	N/A	N/A	N/A	GROUND WATER
29-2469	WR/Decreed	03/10/1963	1.11 cfs	N/A	N/A	N/A	GROUND WATER
29-8229	WR/License	04/05/1999	1.74 cfs	N/A	N/A	N/A	GROUND WATER
29-8230	WR/License	04/05/1999	2.21 cfs	N/A	N/A	N/A	GROUND WATER

Purpose of Transfer (Changes Proposed)

Current Number	Split	POD	POU	Add POD	Period of Use	Nature of Use
29-8188	NO	NO	NO	YES	NO	NO
29-2385	NO	NO	NO	YES	NO	NO
29-2413	NO	NO	NO	YES	NO	NO
29-7624	NO	NO	NO	YES	NO	NO
29-2469	NO	NO	NO	YES	NO	NO
29-8229	NO	NO	NO	YES	NO	NO
29-8230	NO	NO	NO	YES	NO	NO

SUPPORT DATA
IN FILE # 29-2385

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

TRANSFER OF WATER RIGHT

TRANSFER NO. 75304

Summary of Water Rights After the Approved Change

Existing Right	New No. (changed portion)	Transfer Rate	Transfer Volume	Acre Limit	Total Acres	New No. (remaining portion)	Remaining Rate	Remaining Volume	Remaining Acre Limit	Remaining Total Acres
29-8188	**29-8188**	6.7 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
29-2385	**29-2385**	0.78 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
29-2413	**29-2413**	1.1 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
29-7624	**29-7624**	4.96 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
29-2469	**29-2469**	1.11 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
29-8229	**29-8229**	1.74 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
29-8230	**29-8230**	2.21 cfs	N/A	N/A	N/A		N/A	N/A	N/A	N/A
COMBINED TOTALS		**18.6 cfs**	**N/A**	**N/A**	**N/A**		N/A	N/A	N/A	N/A

Detailed Water Right Description(s) attached

Dated this 26 day of August, 2009

Ernest Carlson
for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-2385
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-2385 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: January 11, 1957

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	0.78 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

8. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

WATER RIGHT NO. 29-2385
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

9. This right does not grant any right-of-way or easement across the land of another.

10. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

11. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 1 located in T06S, R34E, S11, NENWNW Gov Lot 4.

12. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

13. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

14. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 2009

Ernest Carlson

for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-2413
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-2413 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: June 25, 1959

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01 to	12/31	1.10 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-2413
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

8. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

9. This right does not grant any right-of-way or easement across the land of another.

10. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

11. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 2 located in T06S, R34E, S3, NWNWSW.

12. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

13. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

14. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 2009

Ernest Carlson

for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-2469
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-2469 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: March 10, 1963

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	1.11 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-2469
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

8. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

9. This right does not grant any right-of-way or easement across the land of another.

10. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

11. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 3 located in T05S, R34E, S34, SENWSW.

12. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

13. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

14. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 2009

Ernest Carlson

for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-7624
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-7624 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: December 14, 1981

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	4.96 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

8. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

WATER RIGHT NO. 29-7624
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

9. This right does not grant any right-of-way or easement across the land of another.

10. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

11. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 4 located in T06S, R34E, S4, SWSESW.

12. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

13. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

14. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 20 09

Ernest Carlsen

for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-8229
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-8229 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: April 05, 1999

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	1.74 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-8229
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

8. The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

9. Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.

10. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

11. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.

12. The issuance of this right does not grant any right-of-way or easement across the land of another.

13. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

14. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 4 located in T06S, R34E, S4, SWSESW.

15. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

16. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 2009

Ernest Carlson
for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-8188
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-8188 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: December 16, 1996

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	6.70 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-8188
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

8. The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

9. Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.

10. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

11. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.

12. The issuance of this right does not grant any right-of-way or easement across the land of another.

13. The use of water under this right shall not give rise to any claim against the holder of a senior water right based upon the theories of forfeiture, abandonment, adverse possession, waiver, equitable estoppel, estoppel by laches or customary preference.

14. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

15. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.

16. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

17. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 2009

Ernest Carlson

for Chief, Water Allocation Bureau

WATER RIGHT NO. 29-8230
As Modified by Transfer No. 75304

In accordance with the approval of Transfer No. 75304, Water Right No. 29-8230 is now described as follows.

Right Holder: CITY OF CHUBBUCK
PUBLIC WORKS DEPARTMENT
PO BOX 5604
CHUBBUCK ID 83202-5604

Priority Date: April 05, 1999

Source: GROUND WATER

BENEFICIAL USE	From	To	Diversion Rate
MUNICIPAL	01/01	to 12/31	2.21 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SENWSW	Sec. 34 Twp 05S	Rge 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 3 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 4 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L13 (SWSW)	Sec. 10 Twp 06S	Rge 34E	BANNOCK County
GROUND WATER	L4 (NENWNW)	Sec. 11 Twp 06S	Rge 34E	BANNOCK County

CONDITIONS OF APPROVAL

1. Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.

2. A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.

3. Diversion of water authorized under Transfer 75304 from the well located in SWSESW, Sec. 04, T06S, R34E shall not exceed a total combined maximum diversion rate of 9.69 cfs.

4. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.

5. A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.

6. Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.

7. Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.

WATER RIGHT NO. 29-8230
As Modified by Transfer No. 75304

CONDITIONS OF APPROVAL

8. The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.

9. Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.

10. Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.

11. The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.

12. The issuance of this right does not grant any right-of-way or easement across the land of another.

13. The following rights are diverted through point(s) of diversion described above: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230.

14. To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.

15. The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.

16. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

This water right is subject to all prior water rights and shall be administered in accordance with Idaho law and applicable rules of the Department of Water Resources.

Dated this 26 day of August, 2009

Ernest Carlson

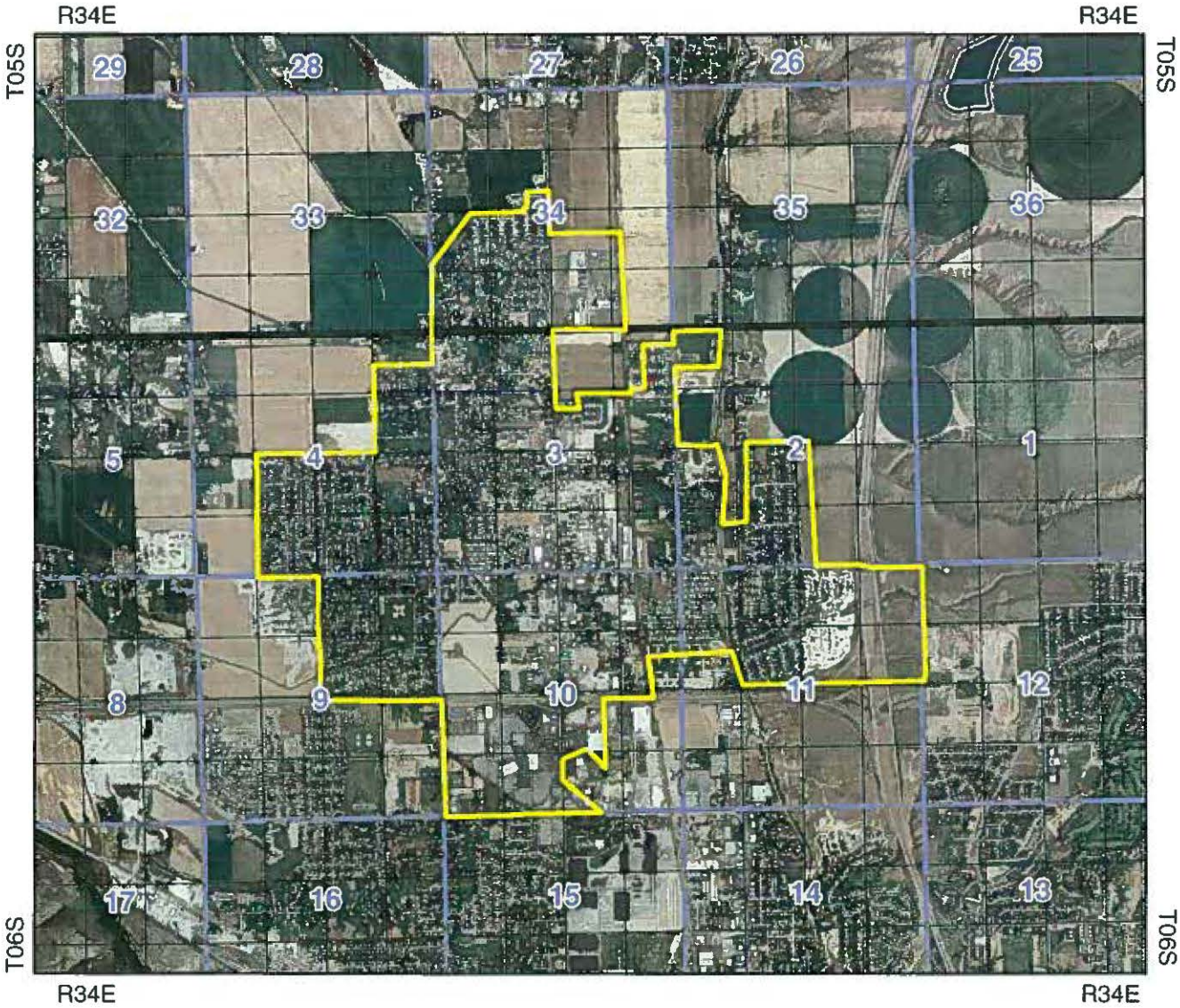
for Chief, Water Allocation Bureau

State of Idaho
Department of Water Resources

Transfer Of Water Right

Transfer No. 75304

Water Service Area Boundary for City Of Chubbuck
Rights: 29-2385, 29-2413, 29-2469, 29-7624, 29-8188, 29-8229, 29-8230



0 0.5 1 2 Miles

Legend

- Water Service Area Boundary
- Townships
- PLS Sections
- Quarter Quarters

N

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-8230

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 04/05/1999
Basis: License
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	2.21 CFS	
Total Diversion			2.21 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.
5.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
6.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
7.	102	The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.
8.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.	075	Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.
11.	022	The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.
12.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
13.	004	The issuance of this right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

Dates:
Licensed Date: 03/12/2003

Decreed Date:
Permit Proof Due Date: 5/1/2000
Permit Proof Made Date: 7/12/1999
Permit Approved Date: 5/12/1999
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date: 04/05/1999
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal:
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14012

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	RALPH MC QUAIN RT 2 RUPERT, ID

Priority Date: 08/19/1952
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	1.83 CFS	488.8 AFA
Total Diversion			1.83 CFS	

Location of Point(s) of Diversion:

GROUND WATER | NWNWSW | Sec. 03 | Township 06S | Range 34E | BANNOCK County

MUNICIPAL Use:

Acre Limit: 122.2

Place(s) of use: Large POU Info

Conditions of Approval:

1.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
2.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.
3.	201	The combination of changes under: Transfer approval 77438 as described under rights 29-14012 and 29-14013; Transfer approval 77439 as described under rights 25-14345 and 25-14346; Transfer approval 77440 as described under right 36-16917; Transfer approval 77441 as described under right 22-14018; Transfer approval 77443 as described under right 27-12235; Transfer approval 77444 as described under right 25-14347; provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation. Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right.
4.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
5.	212	Prior to diversion and use of water under Transfer approval 77438, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
6.	X35	Rights 29-14012 and 29-14013 when combined shall not exceed the irrigation of 285.0 acres.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	004	This right does not grant any right-of-way or easement across the land of another.
9.	228	Municipal use under rights 29-14012 and 29-14013 is for irrigation of 285.0 acres within the authorized place of use in a single irrigation season.
10.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
11.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
12.	X27	This right is limited to the irrigation of 122.2 acres within the authorized place of use in a single irrigation season.
13.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
14.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as

		provided for under Idaho Law.
15.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
16.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s): CITY OF CHUBBUCK
IDAHO WATER CO
Lease Status: Active
Lease Amount: 488.8
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14013

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	ROBERT M YELLAND BLACKFOOT, ID 83221
Original Owner	HELEN L MARSHALL 185 BLAIR DR TWIN FALLS, ID 83301 (208)733-3983

Priority Date: 08/19/1952
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	2.25 CFS	651.2 AFA
Total Diversion			2.25 CFS	

Location of Point(s) of Diversion:

NWNWSW			

GROUND WATER	Sec. 03	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 162.8

Place(s) of use: Large POU Info

Conditions of Approval:

1.	228	Municipal use under rights 29-14012 and 29-14013 is for irrigation of 285.0 acres within the authorized place of use in a single irrigation season.
2.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
3.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
4.	212	Prior to diversion and use of water under Transfer approval 77438, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
5.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
6.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.
7.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
8.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
9.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
10.	X27	This right is limited to the irrigation of 162.8 acres within the authorized place of use in a single irrigation season.
11.	004	This right does not grant any right-of-way or easement across the land of another.
12.	X35	Rights 29-14012 and 29-14013 when combined shall not exceed the irrigation of 285.0 acres.
13.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
14.	201	The combination of changes under: Transfer approval 77438 as described under rights 29-14012 and 29-14013; Transfer approval 77439 as described under rights 25-14345 and 25-14346; Transfer approval 77440 as described under right 36-16917; Transfer approval 77441 as described under right 22-14018; Transfer approval 77443 as described under right 27-12235; Transfer approval 77444 as described under right 25-14347; provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation. Any future action, including a subsequent transfer of this right or an order rescinding

		a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right.
15.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
16.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector: And
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 651.2
Rental Availability: 651.2
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14016

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	LEO R ROGERS ATOMIC CITY, ID 83215
Original Owner	STEVEN B RHODES 552 BONE RD IONA, ID 83427 (208)523-4606

Priority Date: 01/17/1966
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/15	10/15	1.76 CFS	449.2 AFA
MITIGATION	04/15	10/15	0.13 CFS	33.8 AFA
Total Diversion			1.89 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 127.4

MITIGATION Use:
Acre Limit: 9.6

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 127.4 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14016 and 29-14058 is for irrigation of 131.4 acres within the authorized place of use in a single irrigation season.
5.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
6.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8.	212	Prior to diversion and use of water under Transfer approval 77509, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
11.		To mitigate for the increased depletion of water in the Blackfoot to Neeley reach of the ESPA as a result of transfer 77509, the right holder shall cease diverting and using the following amount of water authorized under right 29-14016: Use Rate (cfs) Volume (AF) Acres Irrigation 0.13 33.8 9.6
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of

		water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 01/25/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 449.2
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14054

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	HOWARD & MARILYN ARMSTRONG TRUST 13244 W TRAIL CREEK RD POCATELLO, ID 83204 (208)232-5816

Priority Date: 12/31/1974
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	1.47 CFS	491.6 AFA
Total Diversion			1.47 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 122.9

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 122.9 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is for irrigation of 158.1 acres within the authorized place of use in a single irrigation season.
5.		Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is limited to 1.736 cfs.
6.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
9.	212	Prior to diversion and use of water under Transfer approval 78626, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
10.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
11.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water

rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Combined Acres Limit:
Combined Volume Limit:
Combined Rate Limit: 1.47
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: N
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 491.6 af
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14055

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	HOWARD & MARILYN ARMSTRONG TRUST 13244 W TRAIL CREEK RD POCATELLO, ID 83204 (208)232-5816

Priority Date: 06/20/1961
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.13 CFS	26.4 AFA
Total Diversion			0.13 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 6.6

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 6.6 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is for irrigation of 158.1 acres within the authorized place of use in a single irrigation season.
5.		Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is limited to 1.736 cfs.
6.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
9.	212	Prior to diversion and use of water under Transfer approval 78626, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
10.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
11.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water

rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Combined Acres Limit:
Combined Volume Limit:
Combined Rate Limit: 1.47
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: N
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 26.4
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14056

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	HOWARD & MARILYN ARMSTRONG TRUST 13244 W TRAIL CREEK RD POCATELLO, ID 83204 (208)232-5816

Priority Date: 10/26/1966
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.09 CFS	18.8 AFA
Total Diversion			0.09 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 4.7

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 4.7 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is for irrigation of 158.1 acres within the authorized place of use in a single irrigation season.
5.		Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is limited to 1.736 cfs.
6.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
9.	212	Prior to diversion and use of water under Transfer approval 78626, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
10.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
11.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	X61	The period of use for the irrigation described in this approval may be extended to a beginning date of 4/1 and an ending date of 10/31 provided that beneficial use of the water can be shown and other elements of the right are not exceeded. The use of water before 5/1 and after 10/15 is subordinate to all water rights having no subordinated early or late irrigation use and a priority date earlier than 3/22/2004.
14.	004	This right does not grant any right-of-way or easement across the land of another.
15.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the

		date of this approval.
16.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
17.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Combined Acres Limit:
Combined Volume Limit:
Combined Rate Limit: 1.47
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: N
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 18.8 af
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14058

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	ROBERT M YELLAND BLACKFOOT, ID 83221
Original Owner	HELEN L MARSHALL 185 BLAIR DR TWIN FALLS, ID 83301 (208)733-3983

Priority Date: 08/19/1952
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/1	10/31	0.05 CFS	16 AFA
Total Diversion			0.05 CFS	

Location of Point(s) of Diversion:

	SENWSW			

GROUND WATER		Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 4

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 4.0 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14016 and 29-14058 is for irrigation of 131.4 acres within the authorized place of use in a single irrigation season.
5.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
6.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8.	212	Prior to diversion and use of water under Transfer approval 78373, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
11.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
12.	004	This right does not grant any right-of-way or easement across the land of another.
13.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
14.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
15.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water

rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 16
Rental Availability: 16
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14080

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	HOWARD L ARMSTRONG & SONS INC 13244 W TL CK POCATELLO, ID 83204

Priority Date: 12/31/1974
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.266 CFS	87.6 AFA
Total Diversion			0.266 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 21.9

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 21.9 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is for irrigation of 158.1 acres within the authorized place of use in a single irrigation season.
5.		Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is limited to 1.736 cfs.
6.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
9.	212	Prior to diversion and use of water under Transfer approval 78626, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
10.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
11.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 87.6 af
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14081

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	HOWARD L ARMSTRONG C/O CURTIS S ARMSTRONG TRUSTEE 13244 W TRAIL CREEK POCATELLO, ID 83204 (208)232-5812

Priority Date: 06/20/1961
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.025 CFS	4.4 AFA
Total Diversion			0.025 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 1.1

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 1.1 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is for irrigation of 158.1 acres within the authorized place of use in a single irrigation season.
5.		Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is limited to 1.736 cfs.
6.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
9.	212	Prior to diversion and use of water under Transfer approval 78626, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
10.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
11.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water

rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 4.4 af
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14082

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	HOWARD L ARMSTRONG C/O CURTIS S ARMSTRONG TRUSTEE 13244 W TRAIL CREEK POCATELLO, ID 83204 (208)232-5812

Priority Date: 10/26/1966
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.018 CFS	3.6 AFA
Total Diversion			0.018 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 0.9

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 0.90 acres within the authorized place of use in a single irrigation season.
4.	228	Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is for irrigation of 158.1 acres within the authorized place of use in a single irrigation season.
5.		Municipal use under rights 29-14054, 29-14055, 29-14056, 29-14080, 29-14081 and 29-14082 is limited to 1.736 cfs.
6.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
7.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
8.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
9.	212	Prior to diversion and use of water under Transfer approval 78626, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
10.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
11.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	X61	The period of use for the irrigation described in this approval may be extended to a beginning date of 4/1 and an ending date of 10/31 provided that beneficial use of the water can be shown and other elements of the right are not exceeded. The use of water before 5/1 and after 10/15 is subordinate to all water rights having no subordinated early or late irrigation use and a priority date earlier than 3/22/2004.
14.	004	This right does not grant any right-of-way or easement across the land of another.
15.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the

		date of this approval.
16.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
17.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 3.6
Rental Availability: None
Date Received: 12/18/2013
Lease Begin Date: 1/1/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14096

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	ALICE HEYREND
Original Owner	PAUL HEYREND PO BOX 169 ARTOIS, CA 95913 (530)934-3010

Priority Date: 11/29/1971
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/1	10/31	0.21 CFS	83.2 AFA
Total Diversion			0.21 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 20.8

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	X27	This right is limited to the irrigation of 20.8 acres within the authorized place of use in a single irrigation season.
4.	X35	Rights 29-14096 and 29-14097 when combined shall not exceed the irrigation of 23.0 acres.
5.	228	Municipal use under rights 29-14096 and 29-14097 is for irrigation of 23.0 acres within the authorized place of use in a single irrigation season.
6.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8.	214	Prior to the diversion and use of water under Transfer approval 78935, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion in accordance with Department specifications, or shall obtain an approved variance from the Department to determine the amount of water diverted from power records or to maintain an existing measuring device.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
11.	201	The combination of changes under: Transfer approval 78934 as described under rights 25-14396 and 25-14397 Transfer approval 78935 as described under rights 29-14096 and 29-14097 Transfer approval 78936 as described under rights 21-13178 and 21-13179 Transfer approval 78937 as described under rights 45-14453 and 45-14454 Transfer approval 78938 as described under rights 25-14398 and 25-14399 provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation. Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right under

		Transfer approval 78935.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 83.2 af
Rental Availability: None
Date Received: 3/10/2014
Lease Begin Date: 3/10/2014

Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14097

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	BLAINE L LARSEN
Original Owner	CONNIE L LARSEN PO BOX 188 HAMER, ID 83425-0188 (208) 662-5501

Priority Date: 11/29/1971
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/1	10/31	0.02 CFS	8.8 AFA
Total Diversion			0.02 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 2.2

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	X27	This right is limited to the irrigation of 2.2 acres within the authorized place of use in a single irrigation season.
4.	X35	Rights 29-14096 and 29-14097 when combined shall not exceed the irrigation of 23.0 acres.
5.	228	Municipal use under rights 29-14096 and 29-14097 is for irrigation of 23.0 acres within the authorized place of use in a single irrigation season.
6.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8.	214	Prior to the diversion and use of water under Transfer approval 78935, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion in accordance with Department specifications, or shall obtain an approved variance from the Department to determine the amount of water diverted from power records or to maintain an existing measuring device.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
11.	201	The combination of changes under: Transfer approval 78934 as described under rights 25-14396 and 25-14397 Transfer approval 78935 as described under rights 29-14096 and 29-14097 Transfer approval 78936 as described under rights 21-13178 and 21-13179 Transfer approval 78937 as described under rights 45-14453 and 45-14454 Transfer approval 78938 as described under rights 25-14398 and 25-14399 provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation. Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right under

		Transfer approval 78935.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 8.8 af
Rental Availability: 8.8 af
Date Received: 3/10/2014
Lease Begin Date: 3/10/2014

Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14099

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	WILLIS A BARFUSS 22930 S CAMBRIDGE RD DOWNEY, ID 83234 (208)897-5258
Original Owner	ROBERT M WRIGHT 23929 S OLD MALAD HWY DOWNEY, ID 83234 (208)897-5142
Original Owner	LEO G BURKETT PO BOX 225 DOWNEY, ID 83234
Original Owner	BRAD PETERSON 450 S 50 E SALT LAKE CITY, UT 84105 (801)563-3123

Priority Date: 05/02/1966
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	2.52 CFS	462 AFA
Total Diversion			2.52 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 132

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	228	Municipal use under this right is for irrigation of 132.0 acres within the authorized place of use in a single irrigation season.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	214	Prior to the diversion and use of water under Transfer approval 79001, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion in accordance with Department specifications, or shall obtain an approved variance from the Department to determine the amount of water diverted from power records or to maintain an existing measuring device.
7.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
8.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
9.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
10.	004	This right does not grant any right-of-way or easement across the land of another.

11.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
12.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
13.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number:
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 462.00
Rental Availability: None
Date Received: 5/30/2014
Lease Begin Date: 5/30/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14106

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	WAREHOUSE INVESTMENTS C/O FRANKLIN ADAMSON GEN PART PO BOX 25 FIRTH, ID 83236 (208)346-6897

Priority Date: 08/18/1953
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.93 CFS	186.4 AFA
Total Diversion			0.93 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County

GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 46.6

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	X27	This right is limited to the irrigation of 46.6 acres within the authorized place of use in a single irrigation season.
4.	X35	Rights 29-14106 and 29-14107 when combined shall not exceed a total diversion rate of 0.93 cfs, a total annual maximum diversion volume of 286.0 af at the field headgate, and the irrigation of 71.5 acres.
5.	228	Municipal use under rights 29-14106 and 29-14107 is for irrigation of 71.5 acres within the authorized place of use in a single irrigation season.
6.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8.	212	Prior to diversion and use of water under Transfer approval 79215, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
11.	201	The combination of changes under Transfer approvals: 79213 as described under rights 25-14405 and 25-14406 79215 as described under rights 29-14106 and 29-14107 79217 as described under rights 35-14381 and 35-14382 79218 as described under rights 27-12265 and 27-12266 provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation. Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right under Transfer approval 79215.

12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 186.4
Rental Availability: None
Date Received: 7/11/2014
Lease Begin Date: 7/11/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-14107

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430
Original Owner	ZANE A HANSEN 69 S 1200 W BLACKFOOT, ID 83221 (208)684-3079
Original Owner	WAREHOUSE INVESTMENTS C/O FRANKLIN ADAMSON GEN PART PO BOX 25 FIRTH, ID 83236 (208)346-6897

Priority Date: 12/03/1980
Basis: Decreed
Status: Active
Water Supply Bank Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	04/01	10/31	0.61 CFS	121.6 AFA
Total Diversion			0.61 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

MUNICIPAL Use:
Acre Limit: 30.4

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustrative purposes.
3.	X27	This right is limited to the irrigation of 30.4 acres within the authorized place of use in a single irrigation season.
4.	X35	Rights 29-14106 and 29-14107 when combined shall not exceed a total diversion rate of 0.93 cfs, a total annual maximum diversion volume of 286.0 af at the field headgate, and the irrigation of 71.5 acres.
5.	228	Municipal use under rights 29-14106 and 29-14107 is for irrigation of 71.5 acres within the authorized place of use in a single irrigation season.
6.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
7.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
8.	212	Prior to diversion and use of water under Transfer approval 79215, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.		The irrigation component of municipal use under this right when combined with all other rights shall provide no more than 4.0 afa per acre at the field headgate.
11.	201	The combination of changes under Transfer approvals: 79213 as described under rights 25-14405 and 25-14406 79215 as described under rights 29-14106 and 29-14107 79217 as described under rights 35-14381 and 35-14382 79218 as described under rights 27-12265 and 27-12266 provide the necessary mitigation for any increased depletion to connected reaches of the Snake River that would result from each individual transfer. These transfer approvals shall not require mutual dependence for ongoing mitigation. Any future action, including a subsequent transfer of this right or an order rescinding a transfer approval, which would result in

		a change to the point(s) of diversion under this right may require mitigation for the effects of the change. Such future action to change the point(s) of diversion under this right shall be analyzed for effects to connected reaches of the Snake River based on the priority date, point(s) of diversion and steady-state quantity as authorized for this right under Transfer approval 79215.
12.	205	The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
13.	004	This right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
16.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 01/31/2002
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre: 0.02
Generic Max Volume per Acre: 4
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Water Supply Bank:
Lessor Name(s):CITY OF CHUBBUCK
Lease Status: Active
Lease Amount: 121.6

Rental Availability: None
Date Received: 7/11/2014
Lease Begin Date: 7/11/2014
Expiration Date: 12/31/2014

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-2385

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 01/11/1957
Basis: Decreed
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	0.78 CFS	
Total Diversion			0.78 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
7.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
8.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 1 located in T06S, R34E, S11, NENWNW Gov Lot 4.
9.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
10.	004	This right does not grant any right-of-way or easement across the land of another.
11.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
12.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
13.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Permit Proof Due Date:
Permit Proof Made Date:
Permit Approved Date:
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:

Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-2413

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 06/25/1959
Basis: Decreed
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	1.1 CFS	
Total Diversion			1.1 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
7.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
8.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 2 located in T06S, R34E, S3, NWNWSW.
9.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
10.	004	This right does not grant any right-of-way or easement across the land of another.
11.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
12.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
13.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Permit Proof Due Date:
Permit Proof Made Date:
Permit Approved Date:
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:

Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-2469

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 03/10/1963
Basis: Decreed
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	1.11 CFS	
Total Diversion			1.11 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
7.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
8.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 3 located in T05S, R34E, S34, SENWSW.
9.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
10.	004	This right does not grant any right-of-way or easement across the land of another.
11.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
12.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
13.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Permit Proof Due Date:
Permit Proof Made Date:
Permit Approved Date:
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:

Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-7624

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 12/14/1981
Basis: Decreed
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	4.96 CFS	
Total Diversion			4.96 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 4 located in T06S, R34E, S4, SWSESW.
7.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
8.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
9.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
10.	004	This right does not grant any right-of-way or easement across the land of another.
11.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
12.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
13.	T19	Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Dates:
Licensed Date:
Decreed Date: 03/22/2004
Permit Proof Due Date: 2/1/1987
Permit Proof Made Date: 9/13/1985
Permit Approved Date: 2/2/1982
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:

Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-8188

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 12/16/1996
Basis: License
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	6.7 CFS	
Total Diversion			6.7 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Licensed Diversion Capacity: 9.8

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
7.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
8.	022	The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.
9.	102	The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.
10.	048	The use of water under this right shall not give rise to any claim against the holder of a senior water right based upon the theories of forfeiture, abandonment, adverse possession, waiver, equitable estoppel, estoppel by laches or customary preference.
11.	075	Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.
12.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
13.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.
14.	004	The issuance of this right does not grant any right-of-way or easement across the land of another.
15.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
16.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director

to rescind approval of the transfer.

Dates:
Licensed Date: 04/14/1999
Decreed Date:
Permit Proof Due Date: 2/1/1998
Permit Proof Made Date: 1/30/1998
Permit Approved Date: 2/18/1997
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date: 12/16/1996
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal:
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-8229

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 04/05/1999
Basis: License
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	1.74 CFS	
Total Diversion			1.74 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
5.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
6.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
7.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
8.	102	The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.
9.	022	The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.
10.	075	Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.
11.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 4 located in T06S, R34E, S4, SWSESW.
12.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
13.	004	The issuance of this right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

Dates:
Licensed Date: 03/12/2003

Decreed Date:
Permit Proof Due Date: 5/1/2000
Permit Proof Made Date: 7/12/1999
Permit Approved Date: 5/12/1999
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date: 04/05/1999
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal:
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/6/2014

WATER RIGHT NO. 29-8230

Owner Type	Name and Address
Current Owner	CITY OF CHUBBUCK PUBLIC WORKS DEPARTMENT PO BOX 5604 CHUBBUCK, ID 83202-5604 (208)237-2430

Priority Date: 04/05/1999
Basis: License
Status: Active

Source	Tributary
GROUND WATER	

Beneficial Use	From	To	Diversion Rate	Volume
MUNICIPAL	01/01	12/31	2.21 CFS	
Total Diversion			2.21 CFS	

Location of Point(s) of Diversion:

GROUND WATER	SENWSW	Sec. 34	Township 05S	Range 34E	BANNOCK County
GROUND WATER	NWNWSW	Sec. 03	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSESW	Sec. 04	Township 06S	Range 34E	BANNOCK County
GROUND WATER	SWSW Lt 13	Sec. 10	Township 06S	Range 34E	BANNOCK County
GROUND WATER	NENWNW Lt 4	Sec. 11	Township 06S	Range 34E	BANNOCK County

Place(s) of use: Large POU Info

Conditions of Approval:

1.	124	Place of use is within the service area of the City of Chubbuck municipal water supply system as provided for under Idaho Law.
2.	180	A map depicting the place of use boundary for this water right at the time of this approval is attached to this document for illustration purposes.
3.	186	Diversion of water from the point(s) of diversion authorized under Transfer 78626 shall not exceed a total combined maximum diversion rate as specified below: SENWSW, Sec. 34, T05S, R34E, B.M. limited to 20.386 cfs. SWSESW, Sec. 04, T06S, R34E, B.M. limited to 13.236 cfs.
4.	208	To the extent necessary for administration between points of diversion for ground water, and between points of diversion for ground water and hydraulically connected surface sources, ground water was first diverted under this right at Well No. 5 located in T06S, R34E, S10, SWSW Gov Lot 13.
5.	R05	Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 120.
6.	R02	A lockable device subject to the approval of the Department shall be maintained on the diverting works in a manner that will provide the watermaster suitable control of the diversion.
7.	102	The right holder shall not provide water diverted under this right for the irrigation of land having appurtenant surface water rights as a primary source of irrigation water except when the surface water rights are not available for use. This condition applies to all land with appurtenant surface water rights, including land converted from irrigated agricultural use to other land uses but still requiring water to irrigate lawns and landscaping.
8.	212	Prior to diversion and use of water under Transfer approval 75304, the right holder shall install and maintain acceptable measuring device(s) at the authorized point(s) of diversion, in accordance with Department specifications.
9.	213	Upon specific notification of the Department, the right holder shall install and maintain data loggers to record water usage information at the authorized point(s) of diversion in accordance with Department specifications.
10.	075	Irrigation of large projects such as parks, golf courses, or sports activities fields is not authorized under this right.
11.	022	The daily diversion volume for non-domestic uses under this municipal right shall not exceed 2,500 gallons per use and the daily diversion volume for domestic uses under this right shall not exceed 13,000 gallons per dwelling in accordance with Section 42-111, Idaho Code.
12.	106	Prior to the diversion and use of water under this approval, the right holder shall comply with applicable water quality permitting requirements administered by the Department of Environmental Quality.
13.	004	The issuance of this right does not grant any right-of-way or easement across the land of another.
14.	T07	The right holder shall accomplish the change authorized by this transfer within one year(s) of the date of this approval.
15.	T08	Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

Dates:
Licensed Date: 03/12/2003

Decreed Date:
Permit Proof Due Date: 5/1/2000
Permit Proof Made Date: 7/12/1999
Permit Approved Date: 5/12/1999
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date: 04/05/1999
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal:
Owner Name Connector:
Water District Number: 120
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust: T
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close

APPENDIX C FLOW INFORMATION

Convert to Spreadsheet

CITY OF CHUBBUCK
WELL WATER PUMPED

Year	Well 1 gallons	Well 2 gallons	Well 3 gallons	Well 4 gallons	Well 5 gallons	Total Pumped gallons	Total acre-feet
1990	64,772,600	271,354,000	147,364,000	66,146,700	0	549,637,300	1687
1991	0	243,570,000	247,583,000	46,474,200	0	537,627,200	1650
1992	312,630	288,672,000	229,962,000	74,801,500	0	593,748,130	1822
1993	0	147,345,000	353,936,000	36,120,600	0	537,401,600	1649
1994	12,363,700	87,824,000	470,852,000	33,364,800	0	604,404,500	1855
1995	12,818,100	62,631,000	405,146,000	19,165,000	0	499,760,100	1534
1996	15,519,400	59,363,000	350,000,000	116,955,700	0	541,838,100	1663
1997	15,643,800	27,227,000	332,185,000	0	78,450,000	453,505,800	1392
1998	16,040,700	0	171,133,000	346,812,156	160,407,000	694,392,850	2131
1999	16,588,300	0	332,260,000	65,036,825	96,201,430	510,086,550	1566
2000	14,621,400	0	277,083,000	125,862,000	200,066,418	617,632,820	1896
2001	15,116,700	0	267,618,000	158,119,440	150,582,700	591,436,840	1815
2002	11,927,900	0	252,023,000	206,846,000	184,007,300	654,804,200	2010
2003	234,600	0	273,657,000	290,452,000	208,208,000	772,551,600	2371
2004	3,000	0	282,831,000	242,660,000	220,712,100	746,206,100	2290
2005	5,700	0	246,300,000	292,665,000	233,405,982	772,376,680	2370
2006	12,000	0	311,580,000	216,429,000	344,686,551	872,707,551	2678
2007	0	0	280,136,000	240,259,000	395,632,190	916,027,190	2811
2008	0	0	293,160,000	344,641,000	287,198,400	924,999,400	2839
2009	0	0	211,229,000	241,791,000	400,079,200	853,099,200	2618

2010	**0**	**0**	**190,579,000**	**350,381,000**	**397,733,400**	**939,693.400**	**2884**
2011	**0**	**0**	**187,679,000**	**472,174,200**	**262,398,000**	**922,251,200**	**2830**
2012	**0**	**0**	**64,304,000**	**359,253,000**	**637,253,700**	**1,060,810,700**	
2013	**0**	**0**	**85,499,000**	**372,673,000**	**484,386,000**	**942,558,900**	

compiled by Doyle King 5-8-06

2013 Well #3

SECTION II Water Level Information (Optional data if available)

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 77.8 ft. Date 4-8-13
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Data Industrial Model No. 900 Serial No. 020809

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 1000

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 10

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	**Totalizer Reading**	**Flow Rate** (circle: cfs or gpm)	**Discharge Pressure**
January (2)	5898953	0	85
February (1)	5900910	0	91
March (1)	5903009	0	88
April (1)	5908002	0	88
May (3)	5914091	1630	90
June (3)	5933967	1650	96
July (1)	5957343	1670	94
August (1)	5969469	0	94
September (3)	5973992	0	87
October (1)	5974325	0	87
November (1)	5976560	0	88
December (31)	5984452	0	87

Do totalizer and flow readings above include meter multipliers? _____Yes X No

Total Acre-feet _____ **OR Total Gallons** 85,499,000
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

2013 Well #4

SECTION II Water Level Information (Optional data if available)

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 71.2 ft. Date 4-8-13
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Data Industrial Model No. 2100 Serial No. 2100-001355

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 1000

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 0

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	Totalizer Reading	Flow Rate (circle: cfs or gpm)	Discharge Pressure
January (2)	3443362	0	90
February (1)	3467676	2702	108
March (1)	3482666	2350	113
April (1)	3502369	0	112
May (1)	3522930	0	108
June (4)	3570627	2722	110
July (2)	3630208	2973	110
August (1)	3683553	1823	111
September (3)	3731780	0	102
October (1)	3761055	2322	112
November (1)	3786661	2453	113
December (31)	3816035	0	100

Do totalizer and flow readings above include meter multipliers? ____Yes____No
NO Yes

Total Acre-feet _____ **OR Total Gallons** 372,673,000
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

2013 Well #5

SECTION II Water Level Information (Optional data if available)

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 66.9 ft. Date 4-8-13
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Badger Model No. 200B Serial No. 220BR005-1211

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 100

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 0

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	**Totalizer Reading**	**Flow Rate** (circle: cfs or gpm)	**Discharge Pressure**
January (2)	9497469	0	90
February (1)	9605990	0	97
March (5)	9762965	3471	105
April (1)	9860485	3610	105
May (1)	10076767	3518	105
June (3)	11065356	3592	100
July (1)	11247982	3449	105
August (1)	12765939	3487	105
September (3)	13463352	3553	103
October (1)	13863302	0	90
November (5)	14053115	3352	102
December (31)	14341338	3082	103

Do totalizer and flow readings above include meter multipliers? ____ Yes X No

Total Acre-feet _____ **OR Total Gallons** 484,386,900
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

2012

SECTION II Water Level Information (Optional data if available) well 3

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 77.3 ft. Date 5-29-12
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Data Industrial Model No. 900 Serial No. 020809

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 1000

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 10

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	Totalizer Reading	Flow Rate (circle: cfs or gpm)	Discharge Pressure
January (9)	5834648	1200	99
February (2)	5842296	1040	99
March (1)	5847929	0	86
April (2)	5848379	0	87
May (1)	5850588	0	87
June (1)	5850729	0	94
July (2)	5851668	0	82
August (3)	5865679	1330	98
September (4)	5871554	0	90
October (2)	5880591	1690	92
November (9)	5892505	1660	94
December (31)	5898952	0	90

Do totalizer and flow readings above include meter multipliers? ____ Yes X No

Total Acre-feet _____ **OR Total Gallons** 84,304,000
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

SECTION II Water Level Information (Optional data if available) Well 4

2012

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 70.8 ft. Date 5-29-12
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Data Industrial Model No. 2100 Serial No. 2100-001355

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 1000

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 0

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	Totalizer Reading	Flow Rate (circle: cfs or gpm)	Discharge Pressure
* January (1)	3081912	0	0
* February ( )	—	—	—
* March ( )	—	—	—
April (3)	3095465	2493	114
May (2)	3121900	2530	113
June (5)	3157225	1902	113
July (2)	3201077	1782	113
August (1)	3255130	2410	110
September (5)	3334386	2342	114
October (3)	3372880	2586	113
November (6)	3407141	2642	114
December (31)	3441165	2125	114

Do totalizer and flow readings above include meter multipliers? NO Yes ____ Yes ____ No

Total Acre-feet _____ **OR Total Gallons** 359,253,000
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

* out of service Oct 2011 To Mar 7, 2012

2012

Well 5

SECTION II Water Level Information (Optional data if available)

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 68.2 ft. Date 5-29-12
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Badger Model No. 200B Serial No. 220BR005-1211

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 100

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 0

For meters without rate of flow indicators, check here ☐ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	**Totalizer Reading**	**Flow Rate** (circle: cfs or gpm)	**Discharge Pressure**
January (1)	3124932	0	91
February (2)	3473725	2751	105
March (1)	3781979	3586	104
April (2)	4029854	3514	105
May (3)	4365987	3647	104
June (4)	5413600	3677	105
July (2)	6373405	3580	104
August (2)	7491431	3614	99
September (4)	8458740	3633	101
October (1)	9055353	3143	105
November (1)	9283454	3462	105
December (31)	9497469	0	90

Do totalizer and flow readings above include meter multipliers? _____ Yes X No

Total Acre-feet _____ **OR Total Gallons** 637,253,700
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

WELL #3

July, 20 11

DATE	IND LTS	TEMP F°	HRS	PUMP Y/N	PUMP PKNG	LINE PRESSURE	CHLORINATOR Y/N	CHLORINATOR ROTO	CHLORINATOR PRESS IN	CHLORINATOR RESID	FLOW METER GPM X 10	FLOW METER TOTAL X 1000	INT
01	OK	63	27270	Y	OK	97	Y	5.5	50	.13	154	5717473	KE
02	—	—										—	—
03	—	—										—	—
04	—	—										—	—
05	OK	68	27317	Y	OK	97	Y	5.5/0	50	.25	160	5721475	DK
06	OK	65	27320	Y	OK	97	Y	5.5/0	50	.35	135	5721730	DK
07	OK	68	27323	Y	OK	97	Y	6/0	50	.33	164	5722026	DK
08	OK	68	27338	Y	OK	97	Y	6.0	50	.30	115	5723473	KE
09	—	—										—	—
10	—	—										—	—
11	OK	66	27375	Y	OK	97	Y	6/0	50	.31	147	5727089	DK
12	OK	61	27379	N	—	90	N	0	95	.29	0	5727401	DK
13	OK	70	27382	N	—	87	N	0	80	.22	0	5727690	DK
14	OK	60	27383	N	—	92	N	0	97	.28	0	5727690	DK
15	OK	56	27384	Y	off	90	Y	off	95	.22	0	5727823	KE
16	—	—										—	—
17	—	—										—	—
18	OK	78	27387	Y	OK	98	Y	6/0	70	.45	130	5728156	DK
19													
20	OK	76	27391	Y	OK	98	Y	6/0	50	.45	163	5728826	DK
21	OK	76	27413	Y	off	85	Y	off	84	.21	off	5731008	KE
22	OK	65	27430	Y	off	84	Y	off	81	.	off	5732403	KE
23	—	—										—	—
24	—	—										—	—
25	OK	76	27488	Y	OK	97	Y	6/0	71	.19	162	5737878	DK
26	OK	62	27496	N	—	91	N	5/0	96	.30	0	5728630	DK
27	OK	80	27498	Y	OK	93	Y	5/0	70	.37	170	5739821	DK
28	OK	67	27517	N	—	89	N	0	95	.25	0	5740739	DK
29	OK	64	27521	Y	off	91	Y	off	75	.27	off	5741235	KE
30	—	—										—	—
31	—	—										—	—

7/1/11

ed 7/26/11

AMPS

1 ____

2 ____

3 ____

NGE

____ Hrs

____ Hrs

NTS: VFD over Temp several times

installed 3 fans in 7-12

251

23,762,000 gal

WELL #4 - Well Room

July, 20 11

DATE	TEMP F°	PNL LT.	BLR HRS 1	BLR HRS 2	PUMP Y/N	PUMP PKNG	HEAD PRESS	FLOW METER GPM	FLOW METER TOTAL	MECH CNTR	CHLORINATOR Y/N	CHLORINATOR Roto	CHLORINATOR Press in	VIBE NOISE ODOR	RESID	INT
01	70	OK	220616	220616	Y	OK	7.3	177	58621587	2936410	Y	8	50	OK	.41	KE
02	—	—													—	—
03	—	—													—	—
04	—	—					4	off	Holiday	July					—	—
05	68	OK	221095	221095	N	—	0	0	64695613	2942928	N	0	0	OK	.28	DK
06	78	OK	221396	221396	Y	OK	7.3	1905	67539566	2945828	Y	9	50	OK	.71	KE
07	76	OK	221399	221399	Y	off	off	off	68631175	2947219	Y	off	off	OK	.45	KE
08	76	OK	221568	221568	Y	OK	7.3	1710	71315885	2949604	Y	8	50	OK	.41	KE
09	—	—														
10	—	—														
11	77	OK	222140	222140	Y	OK	7.1	1540	79180211	2957468	Y	7.5	50	OK	.67	DK
12	76	OK	222337	222337	Y	OK	7.3	2585	81959255	2960947	Y	7	50	OK	.36	KE
13	82	OK	222444	222444	Y	off	off	off	83457056	2961745	Y	off	off	OK	.50	KE
14	75	OK	222572	222572	Y	OK	7.3	2175	85231046	2963519	Y	7	50	OK	.46	KE
15	72	OK	222679	222679	Y	OK	7.4	2507	86734806	2965023	Y	7	50	OK	.35	KE
16	—	—													—	—
17	—	—													—	—
18	84	OK	222991	222991.2	Y	OK	7.4	2555	91109712	2969358	Y	7.8	50	OK	.19	DK
19																
20	72	OK	223240	223240	Y	off	off	off	94662376	2972949	Y	off	off	OK	.29	KE
21	78	OK	223271	223271	Y	off	off	off	95009389	2973297	Y	off	off	OK	.38	KE
22	73	OK	223388	223388	Y	off	off	off	96542535	2974830	Y	off	off	OK	.36	KE
23	—	—													—	—
24	—	—													—	—
25	85	OK	223624	223624	N	—	0	0	99489366	297777	N	0	0	OK	.44	DK
26	79	OK	223732	223732	Y	OK	7.3	2111	101134971	2979422	Y	8	50	OK	.42	KE
27	77	OK	223947	223947	Y	OK	7.3	2185	104179229	2982468	Y	9	50	OK	.35	DK
28	82	OK	224108	224108	Y	off	off	off	106468202	2984786	Y	off	off	OK	.22	KE
29	70	OK	224220	224220	Y	OK	7.4	2430	108835254	2986323	Y	8	50	OK	.38	KE
30	—	—													—	—
31	—	—													—	—

2 / 1 / 11

7 / 26 / 11

AMPS

1 ____

2 ____

3 ____

____ Hrs

____ Hrs

361 Hrs

49,913,672 gal.

WELL #5 July, 2011

DATE	TEMP F°	PNL LT.	HRS	PUMP Y/N	PUMP PKNG	HEAD PRESS	LINE PRESS	FLOW METER GPM	FLOW METER TOTAL	MECH CNTR	CHLORINATOR Y/N	CHLORINATOR FLOW	CHLORINATOR RESID	CHLORINATOR PRESS	SAND FILT IN	SAND FILT OUT	INT
01	73/75	OK	5938	Y	OK	112	105	2830	192768635	9668822	Y	9.3	.71	40	116	106	KE
02	—	—														—	—
03	—	—														—	—
04	—	—														—	—
05	75/75	OK	5995	Y	OK	116	105	3438	204106714	9781208	Y	11.2	.27	40	115	106	DK
06	75/75	OK	6007	Y	OK	114	105	2831	206615258	9807295	Y	9.9	.58	40	112	105	DK
07	80/79	OK	6030	Y	B	115	105	3632	211130619	9852444	Y	11.1	.36	40	115	104	DK
08	78	OK	6034	Y	off	off	95	off	211956438	9860695	Y	off	.33	98	off	off	KE
09	—	—	—														
10	—	—	—														
11	75/75	OK	6050	Y	OK	114	105	2880	214808702	9889225	Y	10.0	.20	40	112	106	DK
12	85/85	OK	6062	Y	OK	113	105	2929	217046788	9911607	Y	10	.40	38	110	105	DK
13	82/81	OK	6079	Y	OK	114	102	3675	220415790	9945700	Y	11.4	.36	38	110	102	DK
14	75/75	OK	6097	Y	OK	113	105	2782	224285940	9983992	Y	9.9	.25	40	112	105	DK
15	75/75	OK	6117	Y	OK	115	105	2844	228186511	0023000	Y	10.5	.23	40	114	106	KE
16	—	—														—	—
17	—	—														—	—
18	85/85	OK	6179	Y	OK	112	105	2647	240742602	10148566	Y	9.7	.31	40	112	105	DK
19	77/77	OK	6224	Y	OK	115	105	3051	249716466	10238305	Y	10.4	.27	40	113	05	DK
20	—	—															DK
21	72/75	OK	6241	Y	off	off	86	off	253152472	0126551	Y	off	.39	88	04	04	KE
22	69/75	OK	6252	Y	off	off	95	off	255980651	0300932	Y	off	.41	85	off	off	KE
23	—	—														—	—
24	—	—														—	—
25	79/82	OK	6305	N	—	0	90	0	265155994	10392690	N	—	.26	91	—	—	DK
26	75/75	OK	6322	Y	OK	113	105	2927	268625523	10427373	Y	9.3	.28	40	112	106	DK
27	76/80	OK	6339	N	—	0	90	0	271804280	10459173	N	0	.18	92	0	0	DK
28	90/90	OK	6354	Y	OK	115	106	3436	274740667	10488549	Y	10.3	.29	38	115	105	DK
29	76/75	OK	6370	Y	OK	111	105	2731	277972397	10520829	Y	8.3	.21	42	111	106	KE
30	—	—														—	—
31	—	—														—	—

1 / 11

Hrs

/ /

/ /

/ /

/ Hrs

Hrs

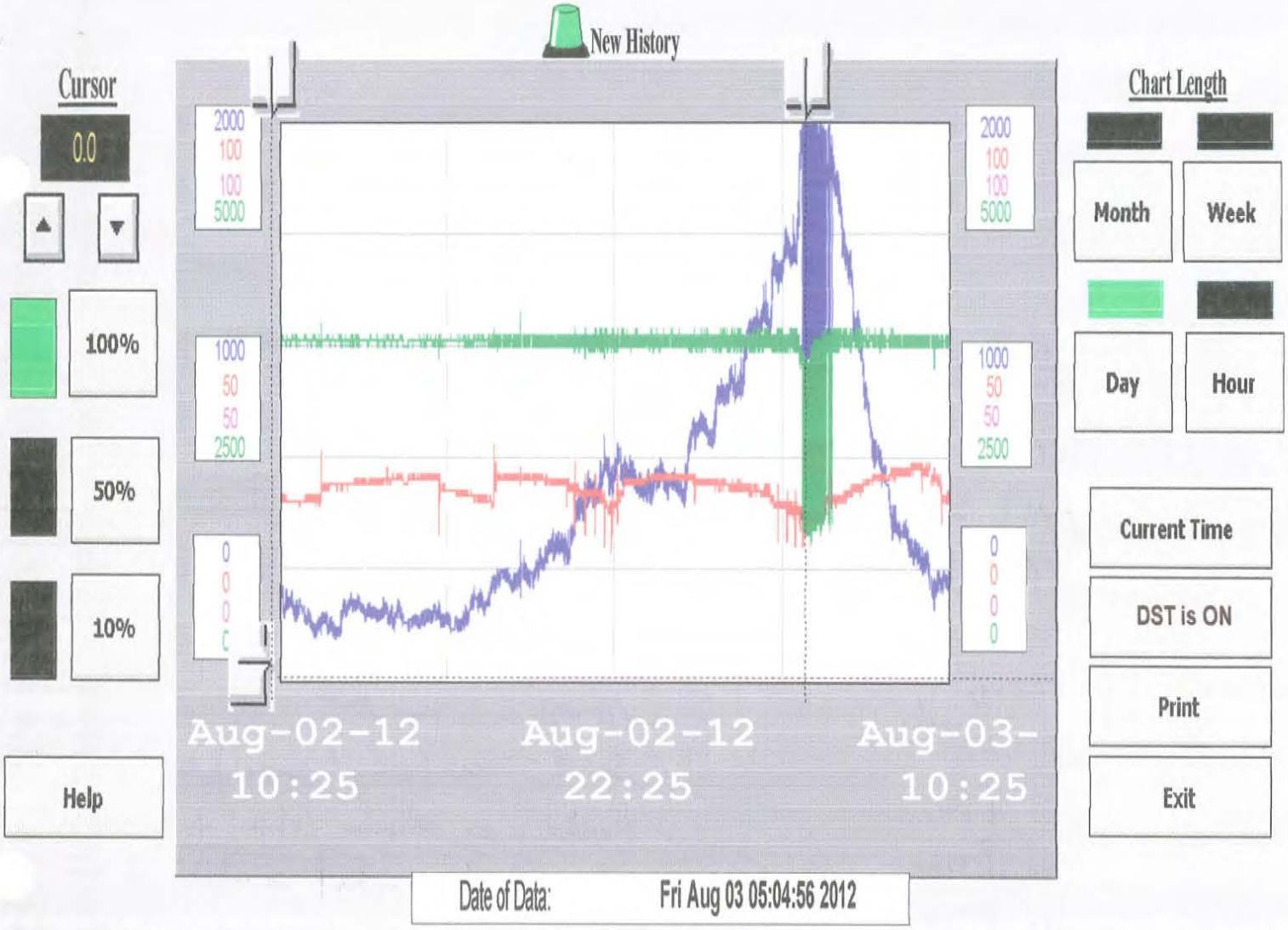
URS

9 7-5

432 Hrs

85,200,700 gal

APPENDIX D WATER MODELING



Date of Data: Fri Aug 03 05:04:56 2012

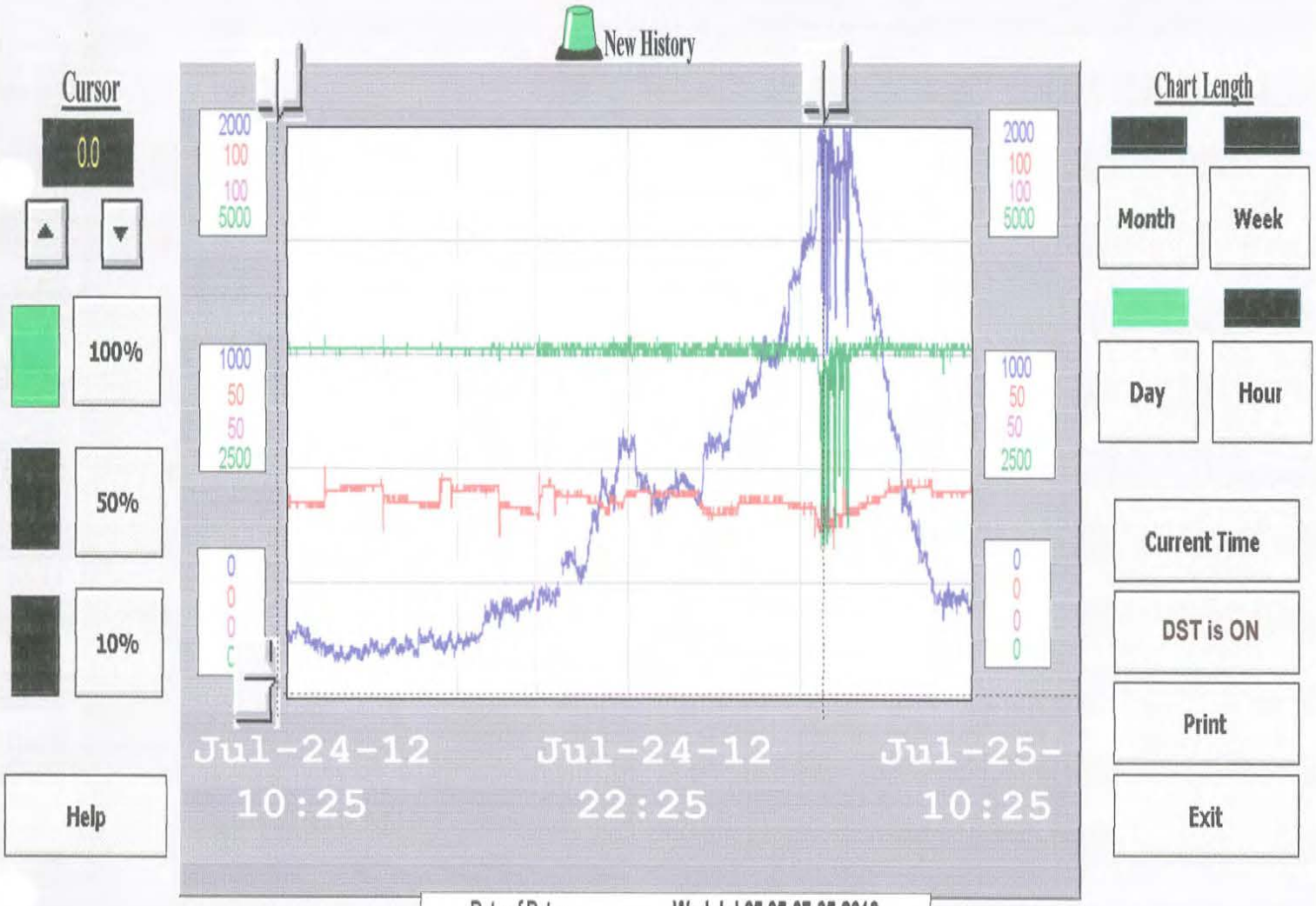
B_BOOSTER_FLOW	1944.4	B_BSTR_DIS_PRESS	59.0
B_BOOSTER_SUC_PRESS	30.4	B_BSTR1_RN	0.0

Time Scroll

Min. Hour Day Week

Save To File | Filename: C:\TREND DATA\BOOSTERJULY.XLS

The Historical Data Manager program must be running in order to save data to a file.
Start this program by going to the Windows Start menu, All Programs, Wonderware, InTouch, HistData



Date of Data: Wed Jul 25 05:07:05 2012

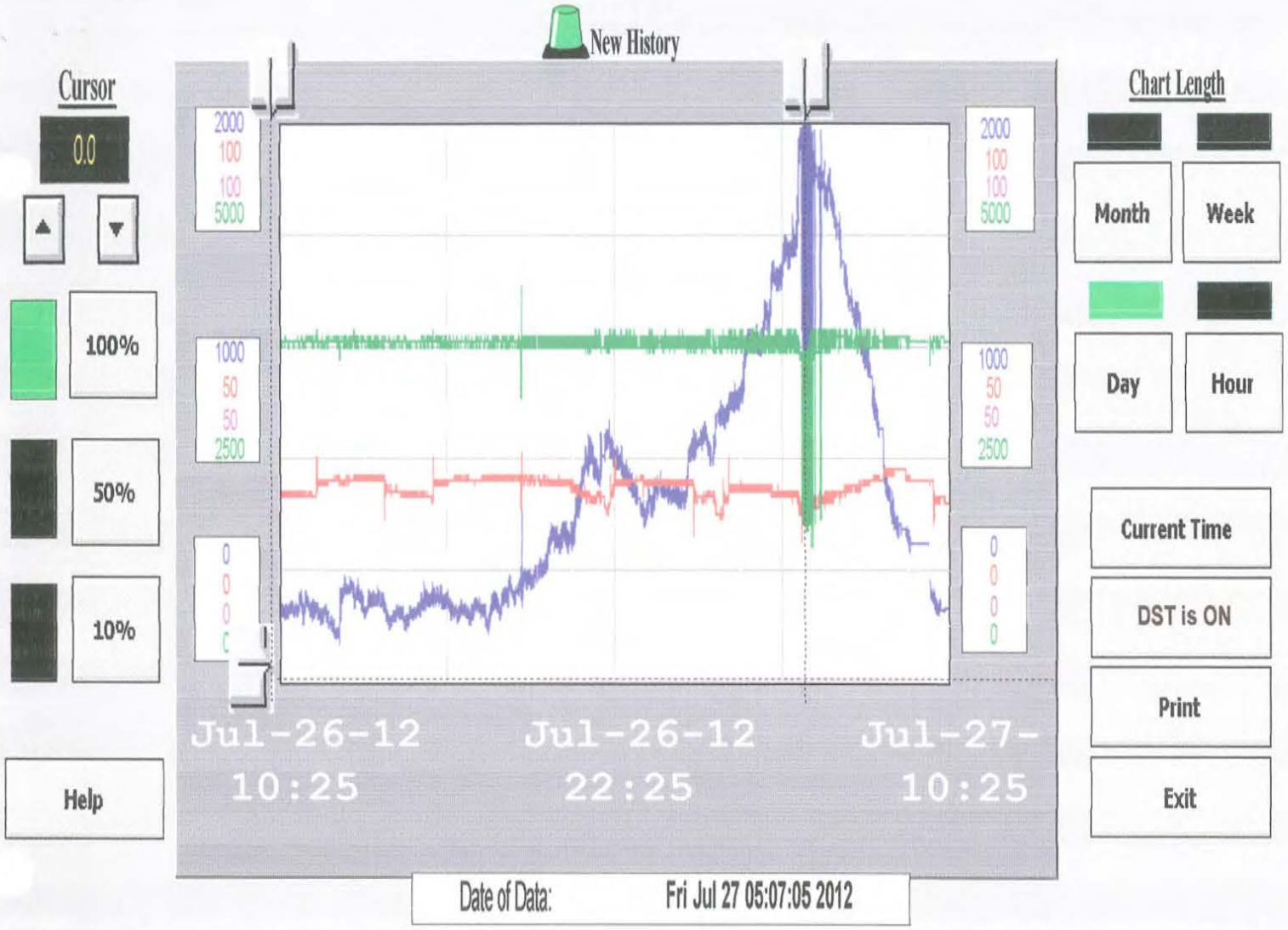
B_BOOSTER_FLOW	1987.0
B_BOOSTER_SUC_PRESS	29.0
B_BSTR_DIS_PRESS	55.0
B_BSTR1_RN	0.0

Time Scroll

Min. Hour Day Week

Save To File Filename: C:\TREND DATA\BOOSTERJULY.XLS

The Historical Data Manager program must be running in order to save data to a file.
Start this program by going to the Windows Start menu, All Programs, Wonderware, InTouch, HistData



Date of Data: Fri Jul 27 05:07:05 2012

B_BOOSTER_FLOW	1956.1	B_BSTR_DIS_PRESS	58.5
B_BOOSTER_SUC_PRESS	31.0	B_BSTR1_RN	0.0

Time Scroll

Min. Hour Day Week

Save To File Filename: C:\TREND DATA\BOOSTERJULY.XLS

The Historical Data Manager program must be running in order to save data to a file.
Start this program by going to the Windows Start menu, All Programs, Wonderware, InTouch, HistData

New History

Cursor

0.0

100%

50%

10%

Help

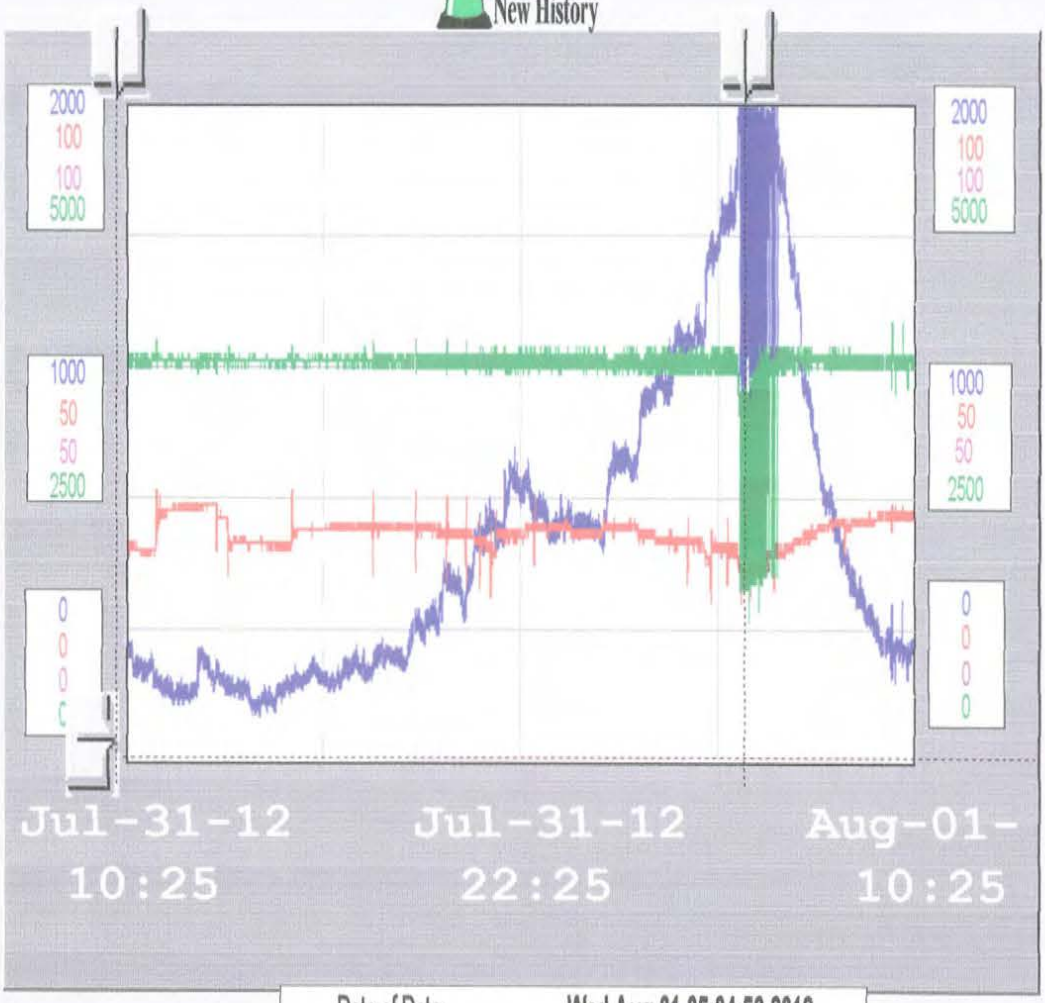


Chart Length

Month

Week

Day

Hour

Current Time

DST is ON

Print

Exit

Date of Data: Wed Aug 01 05:04:56 2012

B_BOOSTER_FLOW	1988.2
B_BOOSTER_SUC_PRESS	29.5
B_BSTR_DIS_PRESS	54.5
B_BSTR1_RN	0.0

Time Scroll

Min. Hour Day Week

Save To File Filename: C:\TREND DATA\BOOSTERJULY.XLS

The Historical Data Manager program must be running in order to save data to a file.
Start this program by going to the Windows Start menu, All Programs, Wonderware, InTouch, HistData

New History

Cursor

0.0

100%

50%

10%

Help

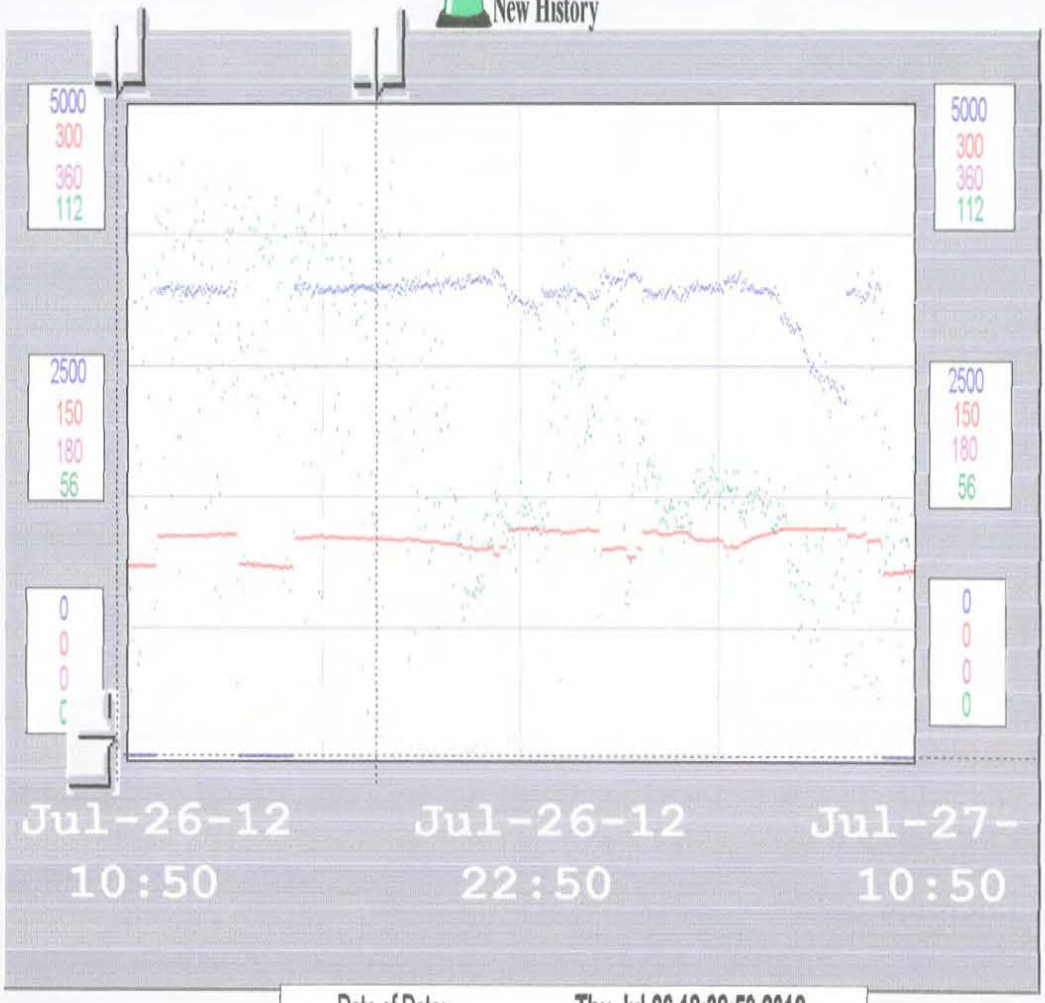


Chart Length

Month

Week

Day

Hour

Current Time

DST is ON

Print

Exit

Date of Data: Thu Jul 26 18:38:59 2012

W5_DIS_FLW	3632.3
W5_DIS_PRES	100.7
W5_WIND_DIR	157.9
W5_WIND_SPD	1.8

Time Scroll

Min. Hour Day Week

Save To File Filename: C:\TREND DATA\BOOSTERJULY.XLS

The Historical Data Manager program must be running in order to save data to a file.
Start this program by going to the Windows Start menu, All Programs, Wonderware, InTouch, HistData

09/21/11 12:04:14 PM

09/21/11 11:57:29 AM

New History

Cursor

50.0

100%

50%

10%

Help

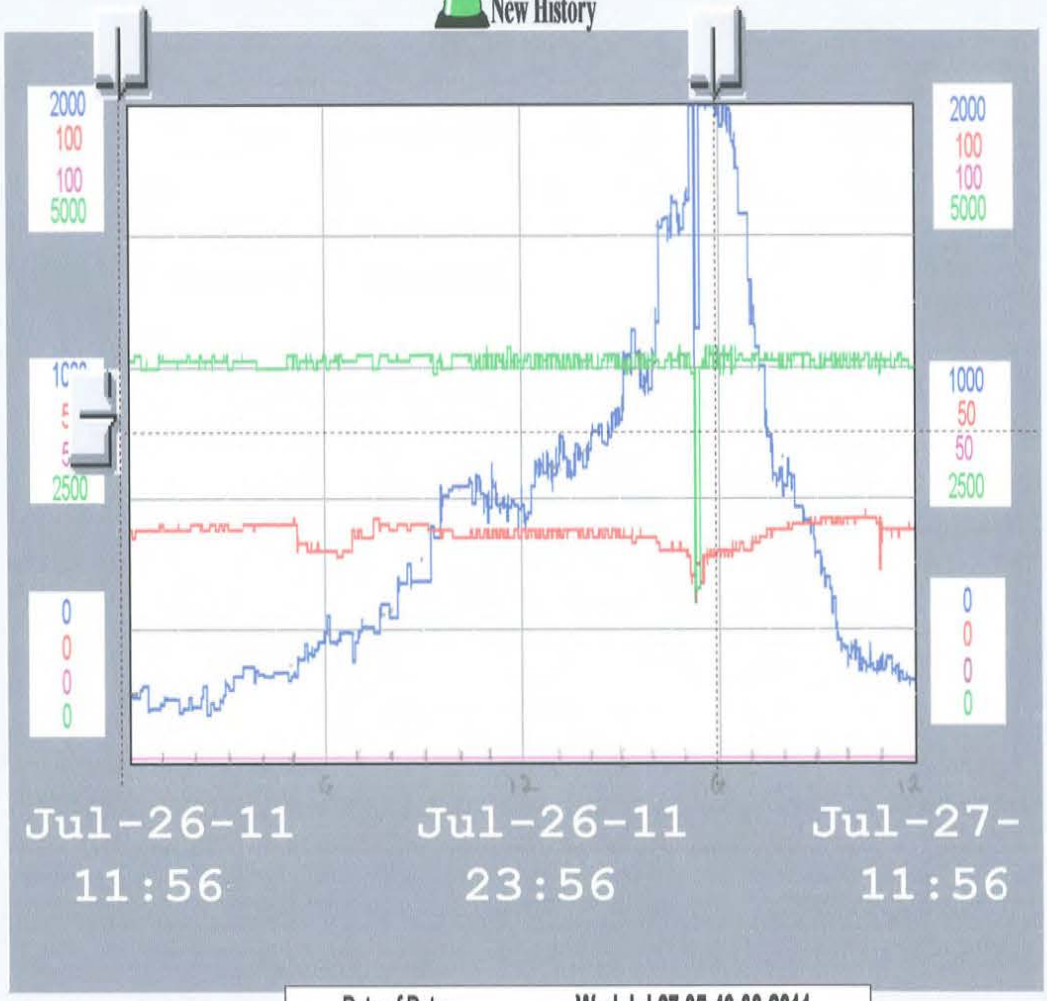


Chart Length

Month

Week

Day

Hour

Current Time

DST is ON

Print

Exit

Date of Data: Wed Jul 27 05:43:00 2011

B_BOOSTER_FLOW	2000.0
B_BOOSTER_SUC_PRESS	31.0
B_BSTR_DIS_PRESS	62.0
B_BSTR1_RN	0.0

Time Scroll

Min. Hour Day Week

Save To File Filename: C:\WELL5JUL11.XLS

The Historical Data Manager program must be running in order to save data to a file.
Start this program by going to the Windows Start menu, All Programs, Wonderware, InTouch, HistData

09/21/11 11:58:21 AM

09/21/11 11:50:25 AM

09/21/11 12:01:42 PM

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-327	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-380	149: Zone-2	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-382	149: Zone-2	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-386	149: Zone-2	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-387	149: Zone-2	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-388	149: Zone-2	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-389	149: Zone-2	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-390	148: Zone-1	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-534	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-535	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-536	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-559	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-578	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-581	<None>	(N/A)	(N/A)	1,500.00	(N/A)	(N/A)	(N/A)	20.0
J-37	148: Zone-1	3	False	1,500.00	544.24	1,500.77	545.01	20.0
J-495	148: Zone-1	3	False	1,500.00	587.04	1,500.77	587.81	20.0
J-36	148: Zone-1	3	False	1,500.00	734.30	1,500.77	735.07	20.0
J-229	148: Zone-1	3	False	1,500.00	856.61	1,501.50	858.11	20.0
J-196	148: Zone-1	3	False	1,500.00	916.94	1,516.49	933.43	20.0
J-217	148: Zone-1	3	False	1,500.00	1,039.49	1,510.80	1,050.29	20.0
J-238	148: Zone-1	3	False	1,500.00	1,072.48	1,504.19	1,076.66	20.0
J-236	148: Zone-1	3	False	1,500.00	1,171.83	1,517.06	1,188.89	20.0
J-576	148: Zone-1	3	False	1,500.00	1,239.88	1,507.67	1,247.55	20.0
J-575	148: Zone-1	3	False	1,500.00	1,244.48	1,507.67	1,252.15	20.0
J-367	148: Zone-1	3	False	1,500.00	1,251.36	1,507.67	1,259.04	20.0
J-154	148: Zone-1	3	False	1,500.00	1,268.85	1,500.00	1,268.85	20.0
J-614	148: Zone-1	3	False	1,500.00	1,293.31	1,503.28	1,296.59	20.0
J-153	148: Zone-1	3	False	1,500.00	1,323.64	1,500.00	1,323.64	20.0
J-574	148: Zone-1	3	False	1,500.00	1,329.66	1,507.67	1,337.33	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-365	148: Zone-1	3	False	1,500.00	1,334.53	1,507.67	1,342.20	20.0
J-451	148: Zone-1	18	False	1,500.00	1,346.76	1,500.00	1,346.76	20.0
J-594	149: Zone-2	3	False	1,500.00	1,348.38	1,508.71	1,357.09	20.0
J-573	148: Zone-1	3	False	1,500.00	1,348.78	1,507.67	1,356.45	20.0
J-518	148: Zone-1	3	False	1,500.00	1,366.57	1,503.45	1,370.02	20.0
J-366	148: Zone-1	3	False	1,500.00	1,367.01	1,507.67	1,374.68	20.0
J-149	148: Zone-1	3	False	1,500.00	1,367.41	1,504.45	1,371.87	20.0
J-199	148: Zone-1	3	False	1,500.00	1,374.94	1,501.28	1,376.22	20.0
J-364	148: Zone-1	3	False	1,500.00	1,379.96	1,507.67	1,387.63	20.0
J-613	148: Zone-1	3	False	1,500.00	1,389.43	1,503.28	1,392.71	20.0
J-336	149: Zone-2	3	False	1,500.00	1,429.94	1,501.94	1,431.88	20.0
J-615	148: Zone-1	3	False	1,500.00	1,450.21	1,503.28	1,453.49	20.0
J-151	148: Zone-1	3	False	1,500.00	1,456.56	1,501.06	1,457.62	20.0
J-150	148: Zone-1	3	False	1,500.00	1,457.57	1,507.41	1,464.98	20.0
J-363	148: Zone-1	3	False	1,500.00	1,457.73	1,507.67	1,465.40	20.0
J-280	149: Zone-2	3	False	1,500.00	1,463.40	1,529.80	1,493.20	20.0
J-483	148: Zone-1	3	False	1,500.00	1,472.14	1,506.90	1,479.04	20.0
J-148	148: Zone-1	3	False	1,500.00	1,474.13	1,504.36	1,478.50	20.0
J-612	148: Zone-1	3	False	1,500.00	1,477.29	1,503.28	1,480.57	20.0
J-152	148: Zone-1	18	False	1,500.00	1,490.93	1,503.57	1,494.50	20.0
J-432	148: Zone-1	18	False	1,500.00	1,494.80	1,500.00	1,494.80	20.0
J-5	148: Zone-1	2	True	1,500.00	1,511.38	1,501.68	1,513.06	20.0
J-200	148: Zone-1	3	True	1,500.00	1,530.82	1,500.00	1,530.82	20.0
J-46	148: Zone-1	3	True	1,500.00	1,555.99	1,500.00	1,555.99	20.0
J-517	148: Zone-1	3	True	1,500.00	1,572.11	1,500.00	1,572.11	20.0
J-553	148: Zone-1	3	True	1,500.00	1,574.62	1,500.00	1,574.62	20.0
J-218	148: Zone-1	3	True	1,500.00	1,575.48	1,503.88	1,579.36	20.0
J-608	148: Zone-1	3	True	1,500.00	1,578.49	1,510.35	1,588.84	20.0
J-215	148: Zone-1	3	True	1,500.00	1,579.64	1,505.29	1,584.93	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-447	148: Zone-1	3	True	1,500.00	1,588.35	1,500.00	1,588.35	20.0
J-237	148: Zone-1	3	True	1,500.00	1,606.24	1,510.18	1,616.43	20.0
J-609	148: Zone-1	3	True	1,500.00	1,624.56	1,510.35	1,634.91	20.0
J-610	148: Zone-1	3	True	1,500.00	1,651.45	1,510.35	1,661.80	20.0
J-664	148: Zone-1	3	True	1,500.00	1,651.80	1,510.35	1,662.15	20.0
J-516	148: Zone-1	3	True	1,500.00	1,693.56	1,500.00	1,693.56	20.0
J-519	148: Zone-1	3	True	1,500.00	1,696.39	1,500.00	1,696.39	20.0
J-431	148: Zone-1	3	True	1,500.00	1,698.11	1,500.00	1,698.11	20.0
J-89	148: Zone-1	3	True	1,500.00	1,707.64	1,519.84	1,727.48	20.0
J-611	148: Zone-1	3	True	1,500.00	1,719.73	1,503.28	1,723.01	20.0
J-147	148: Zone-1	3	True	1,500.00	1,727.54	1,510.67	1,738.21	20.0
J-90	148: Zone-1	3	True	1,500.00	1,731.41	1,517.50	1,748.91	20.0
J-607	148: Zone-1	3	True	1,500.00	1,748.49	1,510.35	1,758.84	20.0
J-284	149: Zone-2	10	True	1,500.00	1,763.91	1,506.66	1,770.56	20.0
J-216	148: Zone-1	3	True	1,500.00	1,768.62	1,507.89	1,776.51	20.0
J-198	148: Zone-1	3	True	1,500.00	1,793.65	1,517.77	1,811.41	20.0
J-256	149: Zone-2	11	True	1,500.00	1,795.82	1,519.18	1,814.99	20.0
J-255	149: Zone-2	11	True	1,500.00	1,802.13	1,519.35	1,821.48	20.0
J-88	148: Zone-1	3	True	1,500.00	1,808.66	1,519.75	1,828.41	20.0
J-356	148: Zone-1	3	True	1,500.00	1,819.07	1,503.96	1,823.03	20.0
J-653	148: Zone-1	3	True	1,500.00	1,843.07	1,502.30	1,845.37	20.0
J-593	149: Zone-2	11	True	1,500.00	1,858.32	1,508.71	1,867.03	20.0
J-71	148: Zone-1	3	True	1,500.00	1,858.84	1,511.51	1,870.35	20.0
J-413	148: Zone-1	3	True	1,500.00	1,859.20	1,503.28	1,862.48	20.0
J-87	148: Zone-1	3	True	1,500.00	1,862.58	1,511.81	1,874.39	20.0
J-400	148: Zone-1	3	True	1,500.00	1,869.51	1,511.91	1,881.42	20.0
J-122	148: Zone-1	3	True	1,500.00	1,894.70	1,504.60	1,899.30	20.0
J-268	149: Zone-2	11	True	1,500.00	1,894.94	1,505.86	1,900.80	20.0
J-592	149: Zone-2	12	True	1,500.00	1,896.37	1,508.71	1,905.08	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-283	149: Zone-2	11	True	1,500.00	1,901.94	1,500.00	1,901.94	20.0
J-399	148: Zone-1	3	True	1,500.00	1,903.02	1,502.98	1,906.01	20.0
J-652	148: Zone-1	3	True	1,500.00	1,905.08	1,502.30	1,907.38	20.0
J-45	148: Zone-1	3	True	1,500.00	1,922.09	1,500.00	1,922.09	20.0
J-182	148: Zone-1	13	True	1,500.00	1,944.51	1,506.66	1,951.16	20.0
J-606	148: Zone-1	3	True	1,500.00	1,950.59	1,510.35	1,960.94	20.0
J-139	148: Zone-1	3	True	1,500.00	1,961.70	1,509.21	1,970.91	20.0
J-458	149: Zone-2	12	True	1,500.00	1,987.85	1,500.00	1,987.85	20.0
J-409	148: Zone-1	3	True	1,500.00	1,995.70	1,502.96	1,998.65	20.0
J-651	148: Zone-1	3	True	1,500.00	2,002.09	1,502.30	2,004.39	20.0
J-311	148: Zone-1	3	True	1,500.00	2,017.37	1,500.75	2,018.12	20.0
J-288	149: Zone-2	12	True	1,500.00	2,018.91	1,513.80	2,032.71	20.0
J-595	149: Zone-2	12	True	1,500.00	2,025.03	1,508.71	2,033.74	20.0
J-508	148: Zone-1	3	True	1,500.00	2,036.53	1,500.00	2,036.53	20.0
J-457	149: Zone-2	12	True	1,500.00	2,046.02	1,513.80	2,059.82	20.0
J-3	148: Zone-1	3	True	1,500.00	2,046.82	1,533.11	2,079.93	20.0
J-269	149: Zone-2	11	True	1,500.00	2,067.29	1,508.38	2,075.66	20.0
J-138	148: Zone-1	3	True	1,500.00	2,073.48	1,504.60	2,078.08	20.0
J-290	149: Zone-2	12	True	1,500.00	2,080.82	1,500.00	2,080.82	20.0
J-450	148: Zone-1	3	True	1,500.00	2,082.06	1,500.00	2,082.06	20.0
J-446	148: Zone-1	3	True	1,500.00	2,092.15	1,500.00	2,092.15	20.0
J-324	148: Zone-1	3	True	1,500.00	2,093.54	1,502.30	2,095.84	20.0
J-289	149: Zone-2	12	True	1,500.00	2,095.96	1,500.00	2,095.96	20.0
J-293	149: Zone-2	12	True	1,500.00	2,115.29	1,508.71	2,124.00	20.0
J-442	148: Zone-1	3	True	1,500.00	2,126.86	1,502.30	2,129.16	20.0
J-115	148: Zone-1	3	True	1,500.00	2,134.87	1,521.16	2,156.03	20.0
J-596	149: Zone-2	12	True	1,500.00	2,138.38	1,508.71	2,147.09	20.0
J-412	148: Zone-1	3	True	1,500.00	2,141.46	1,503.28	2,144.74	20.0
J-291	149: Zone-2	12	True	1,500.00	2,145.32	1,503.75	2,149.07	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-490	148: Zone-1	3	True	1,500.00	2,150.16	1,509.78	2,159.94	20.0
J-343	149: Zone-2	11	True	1,500.00	2,156.55	1,507.80	2,164.35	20.0
J-361	148: Zone-1	3	True	1,500.00	2,156.91	1,500.00	2,156.91	20.0
J-295	149: Zone-2	10	True	1,500.00	2,160.26	1,504.32	2,164.58	20.0
J-591	149: Zone-2	12	True	1,500.00	2,162.41	1,508.71	2,171.12	20.0
J-4	148: Zone-1	3	True	1,500.00	2,166.01	1,508.20	2,174.21	20.0
J-287	149: Zone-2	12	True	1,500.00	2,179.01	1,500.00	2,179.01	20.0
J-350	148: Zone-1	3	True	1,500.00	2,183.00	1,500.00	2,183.00	20.0
J-699	148: Zone-1	3	True	1,500.00	2,186.85	1,500.00	2,186.85	20.0
J-430	148: Zone-1	3	True	1,500.00	2,202.72	1,500.00	2,202.72	20.0
J-411	148: Zone-1	4	True	1,500.00	2,247.22	1,507.75	2,254.97	20.0
J-2	148: Zone-1	3	True	1,500.00	2,251.25	1,500.00	2,251.25	20.0
J-257	149: Zone-2	12	True	1,500.00	2,252.54	1,531.78	2,284.32	20.0
J-267	149: Zone-2	13	True	1,500.00	2,256.55	1,505.33	2,261.88	20.0
J-286	149: Zone-2	12	True	1,500.00	2,257.59	1,500.00	2,257.59	20.0
J-116	148: Zone-1	4	True	1,500.00	2,257.76	1,518.56	2,276.32	20.0
J-454	148: Zone-1	3	True	1,500.00	2,264.39	1,500.00	2,264.39	20.0
J-123	148: Zone-1	3	True	1,500.00	2,269.84	1,504.60	2,274.44	20.0
J-265	149: Zone-2	5	True	1,500.00	2,304.50	1,504.41	2,308.90	20.0
J-292	149: Zone-2	4	True	1,500.00	2,306.63	1,507.80	2,314.44	20.0
J-53	148: Zone-1	3	True	1,500.00	2,311.20	1,503.45	2,314.65	20.0
J-440	148: Zone-1	3	True	1,500.00	2,317.78	1,501.15	2,318.93	20.0
J-184	148: Zone-1	14	True	1,500.00	2,336.69	1,500.00	2,336.69	20.0
J-35	148: Zone-1	3	True	1,500.00	2,342.62	1,519.40	2,362.02	20.0
J-127	148: Zone-1	4	True	1,500.00	2,355.30	1,503.96	2,359.26	20.0
J-285	149: Zone-2	4	True	1,500.00	2,358.39	1,503.09	2,361.47	20.0
J-449	148: Zone-1	3	True	1,500.00	2,364.27	1,500.00	2,364.27	20.0
J-605	148: Zone-1	3	True	1,500.00	2,372.82	1,509.20	2,382.02	20.0
J-49	148: Zone-1	3	True	1,500.00	2,379.60	1,500.00	2,379.60	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-585	148: Zone-1	3	True	1,500.00	2,388.05	1,503.29	2,391.34	20.0
J-482	148: Zone-1	3	True	1,500.00	2,393.33	1,500.00	2,393.33	20.0
J-353	149: Zone-2	6	True	1,500.00	2,416.91	1,500.00	2,416.91	20.0
J-368	149: Zone-2	4	True	1,500.00	2,424.61	1,500.00	2,424.61	20.0
J-707	148: Zone-1	3	True	1,500.00	2,435.13	1,500.00	2,435.13	20.0
J-128	148: Zone-1	4	True	1,500.00	2,441.66	1,503.83	2,445.49	20.0
J-337	149: Zone-2	4	True	1,500.00	2,451.14	1,500.00	2,451.14	20.0
J-258	149: Zone-2	4	True	1,500.00	2,466.09	1,532.05	2,498.14	20.0
J-131	148: Zone-1	4	True	1,500.00	2,475.32	1,501.15	2,476.47	20.0
J-705	148: Zone-1	3	True	1,500.00	2,481.60	1,500.00	2,481.60	20.0
J-262	149: Zone-2	4	True	1,500.00	2,482.38	1,502.12	2,484.49	20.0
J-263	149: Zone-2	4	True	1,500.00	2,487.10	1,501.19	2,488.29	20.0
J-205	148: Zone-1	4	True	1,500.00	2,487.34	1,502.12	2,489.46	20.0
J-254	149: Zone-2	4	True	1,500.00	2,492.70	1,528.04	2,520.73	20.0
J-709	148: Zone-1	3	True	1,500.00	2,497.88	1,500.00	2,497.88	20.0
J-500	148: Zone-1	3	True	1,500.00	2,498.10	1,503.45	2,501.55	20.0
J-181	148: Zone-1	14	True	1,500.00	2,512.84	1,500.00	2,512.84	20.0
J-266	149: Zone-2	4	True	1,500.00	2,515.14	1,504.89	2,520.03	20.0
J-31	148: Zone-1	4	True	1,500.00	2,523.82	1,508.93	2,532.74	20.0
J-443	148: Zone-1	14	True	1,500.00	2,530.00	1,500.00	2,530.00	20.0
J-344	149: Zone-2	4	True	1,500.00	2,544.63	1,507.80	2,552.43	20.0
J-342	149: Zone-2	4	True	1,500.00	2,547.17	1,507.80	2,554.97	20.0
J-206	148: Zone-1	4	True	1,500.00	2,548.12	1,502.10	2,550.22	20.0
J-32	148: Zone-1	4	True	1,500.00	2,563.17	1,506.95	2,570.12	20.0
J-264	149: Zone-2	4	True	1,500.00	2,582.00	1,503.57	2,585.57	20.0
J-173	148: Zone-1	4	True	1,500.00	2,582.66	1,528.04	2,610.70	20.0
J-369	148: Zone-1	14	True	1,500.00	2,584.86	1,500.00	2,584.86	20.0
J-706	148: Zone-1	3	True	1,500.00	2,593.88	1,500.00	2,593.88	20.0
J-183	148: Zone-1	4	True	1,500.00	2,600.62	1,506.61	2,607.24	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-453	148: Zone-1	3	True	1,500.00	2,619.08	1,500.00	2,619.08	20.0
J-420	148: Zone-1	4	True	1,500.00	2,631.57	1,501.64	2,633.20	20.0
J-428	148: Zone-1	3	True	1,500.00	2,640.36	1,506.89	2,647.25	20.0
J-279	149: Zone-2	4	True	1,500.00	2,649.16	1,507.89	2,657.05	20.0
J-488	148: Zone-1	4	True	1,500.00	2,654.34	1,500.00	2,654.34	20.0
J-282	149: Zone-2	4	True	1,500.00	2,659.67	1,503.35	2,663.02	20.0
J-126	148: Zone-1	4	True	1,500.00	2,681.65	1,501.23	2,682.89	20.0
J-129	148: Zone-1	4	True	1,500.00	2,693.61	1,521.03	2,714.64	20.0
J-176	148: Zone-1	4	True	1,500.00	2,695.98	1,532.97	2,728.95	20.0
J-640	148: Zone-1	3	True	1,500.00	2,696.68	1,508.05	2,704.73	20.0
J-303	148: Zone-1	4	True	1,500.00	2,701.94	1,500.00	2,701.94	20.0
J-427	148: Zone-1	3	True	1,500.00	2,705.43	1,510.91	2,716.34	20.0
J-439	148: Zone-1	4	True	1,500.00	2,707.33	1,500.00	2,707.33	20.0
J-358	148: Zone-1	4	True	1,500.00	2,716.00	1,503.96	2,719.96	20.0
J-155	148: Zone-1	15	True	1,500.00	2,719.71	1,500.00	2,719.71	20.0
J-75	148: Zone-1	4	True	1,500.00	2,738.57	1,502.73	2,741.30	20.0
J-357	148: Zone-1	4	True	1,500.00	2,752.82	1,500.00	2,752.82	20.0
J-398	148: Zone-1	4	True	1,500.00	2,758.10	1,508.93	2,767.03	20.0
J-253	149: Zone-2	5	True	1,500.00	2,771.12	1,529.89	2,801.01	20.0
J-434	148: Zone-1	4	True	1,500.00	2,784.59	1,500.00	2,784.59	20.0
J-476	148: Zone-1	3	True	1,500.00	2,791.91	1,500.00	2,791.91	20.0
J-546	149: Zone-2	6	True	1,500.00	2,804.52	1,507.80	2,812.32	20.0
J-487	148: Zone-1	4	True	1,500.00	2,804.65	1,509.20	2,813.85	20.0
J-180	148: Zone-1	4	True	1,500.00	2,806.93	1,517.85	2,824.78	20.0
J-277	149: Zone-2	6	True	1,500.00	2,811.79	1,509.43	2,821.23	20.0
J-44	148: Zone-1	4	True	1,500.00	2,811.93	1,500.00	2,811.93	20.0
J-43	148: Zone-1	4	True	1,500.00	2,814.01	1,500.00	2,814.01	20.0
J-297	148: Zone-1	4	True	1,500.00	2,819.87	1,504.19	2,824.06	20.0
J-491	148: Zone-1	4	True	1,500.00	2,822.07	1,500.00	2,822.07	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-355	148: Zone-1	4	True	1,500.00	2,832.83	1,500.00	2,832.83	20.0
J-310	148: Zone-1	4	True	1,500.00	2,834.18	1,508.90	2,843.09	20.0
J-246	148: Zone-1	4	True	1,500.00	2,838.79	1,518.56	2,857.35	20.0
J-347	149: Zone-2	6	True	1,500.00	2,852.39	1,500.00	2,852.39	20.0
J-156	148: Zone-1	4	True	1,500.00	2,856.31	1,514.15	2,870.46	20.0
J-261	149: Zone-2	6	True	1,500.00	2,858.11	1,503.13	2,861.24	20.0
J-598	148: Zone-1	4	True	1,500.00	2,871.25	1,505.29	2,876.54	20.0
J-170	148: Zone-1	4	True	1,500.00	2,872.24	1,500.79	2,873.04	20.0
J-687	148: Zone-1	4	True	1,500.00	2,874.39	1,500.00	2,874.39	20.0
J-532	148: Zone-1	4	True	1,500.00	2,874.89	1,500.00	2,874.89	20.0
J-604	148: Zone-1	4	True	1,500.00	2,882.10	1,509.20	2,891.30	20.0
J-281	149: Zone-2	6	True	1,500.00	2,885.72	1,507.10	2,892.81	20.0
J-345	149: Zone-2	5	True	1,500.00	2,901.22	1,507.80	2,909.02	20.0
J-429	148: Zone-1	4	True	1,500.00	2,932.54	1,508.93	2,941.47	20.0
J-30	148: Zone-1	4	True	1,500.00	2,951.79	1,509.93	2,961.72	20.0
J-531	148: Zone-1	4	True	1,500.00	2,969.65	1,500.00	2,969.65	20.0
J-686	148: Zone-1	4	True	1,500.00	2,979.34	1,500.00	2,979.34	20.0
J-396	148: Zone-1	4	True	1,500.00	2,988.62	1,508.93	2,997.55	20.0
J-586	148: Zone-1	4	True	1,500.00	2,991.74	1,503.29	2,995.03	20.0
J-543	148: Zone-1	4	True	1,500.00	3,017.79	1,500.00	3,017.79	20.0
J-600	148: Zone-1	4	True	1,500.00	3,019.56	1,505.29	3,024.85	20.0
J-397	148: Zone-1	4	True	1,500.00	3,024.77	1,509.93	3,034.71	20.0
J-33	148: Zone-1	4	True	1,500.00	3,026.60	1,503.70	3,030.30	20.0
J-251	148: Zone-1	4	True	1,500.00	3,039.74	1,516.40	3,056.14	20.0
J-172	148: Zone-1	4	True	1,500.00	3,039.82	1,509.61	3,049.43	20.0
J-41	148: Zone-1	4	True	1,500.00	3,044.80	1,500.00	3,044.80	20.0
J-299	148: Zone-1	4	True	1,500.00	3,047.47	1,504.63	3,052.10	20.0
J-341	148: Zone-1	4	True	1,500.00	3,056.81	1,503.29	3,060.10	20.0
J-708	148: Zone-1	4	True	1,500.00	3,056.87	1,500.00	3,056.87	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

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J-146	148: Zone-1	4	True	1,500.00	3,059.72	1,508.07	3,067.78	20.0
J-456	148: Zone-1	4	True	1,500.00	3,071.02	1,500.00	3,071.02	20.0
J-562	149: Zone-2	4	True	1,500.00	3,086.92	1,507.94	3,094.86	20.0
J-359	148: Zone-1	4	True	1,500.00	3,089.89	1,500.00	3,089.89	20.0
J-334	148: Zone-1	4	True	1,500.00	3,097.54	1,517.25	3,114.79	20.0
J-278	149: Zone-2	5	True	1,500.00	3,098.72	1,508.29	3,107.01	20.0
J-683	148: Zone-1	4	True	1,500.00	3,111.14	1,500.00	3,111.14	20.0
J-276	149: Zone-2	5	True	1,500.00	3,111.87	1,533.24	3,145.11	20.0
J-589	149: Zone-2	5	True	1,500.00	3,120.99	1,507.94	3,128.93	20.0
J-203	148: Zone-1	4	True	1,500.00	3,124.57	1,501.76	3,126.33	20.0
J-171	148: Zone-1	4	True	1,500.00	3,130.23	1,504.01	3,134.24	20.0
J-584	148: Zone-1	4	True	1,500.00	3,130.24	1,503.29	3,133.53	20.0
J-597	148: Zone-1	4	True	1,500.00	3,138.96	1,505.29	3,144.25	20.0
J-329	148: Zone-1	4	True	1,500.00	3,141.85	1,500.00	3,141.85	20.0
J-197	148: Zone-1	4	True	1,500.00	3,147.05	1,528.26	3,175.31	20.0
J-40	148: Zone-1	4	True	1,500.00	3,151.53	1,505.51	3,157.04	20.0
J-204	148: Zone-1	4	True	1,500.00	3,152.51	1,500.00	3,152.51	20.0
J-132	148: Zone-1	4	True	1,500.00	3,162.64	1,515.52	3,178.16	20.0
J-404	148: Zone-1	4	True	1,500.00	3,164.32	1,508.93	3,173.24	20.0
J-685	148: Zone-1	4	True	1,500.00	3,164.34	1,515.00	3,179.34	20.0
J-695	148: Zone-1	4	True	1,500.00	3,183.20	1,500.00	3,183.20	20.0
J-702	148: Zone-1	4	True	1,500.00	3,187.61	1,500.00	3,187.61	20.0
J-119	148: Zone-1	4	True	1,500.00	3,195.03	1,508.82	3,203.84	20.0
J-47	148: Zone-1	4	True	1,500.00	3,201.99	1,501.06	3,203.04	20.0
J-38	148: Zone-1	4	True	1,500.00	3,202.29	1,502.98	3,205.27	20.0
J-693	148: Zone-1	4	True	1,500.00	3,203.88	1,500.00	3,203.88	20.0
J-346	149: Zone-2	5	True	1,500.00	3,204.26	1,500.00	3,204.26	20.0
J-125	148: Zone-1	4	True	1,500.00	3,210.85	1,515.08	3,225.93	20.0
J-684	148: Zone-1	4	True	1,500.00	3,218.48	1,500.00	3,218.48	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-475	148: Zone-1	4	True	1,500.00	3,219.77	1,500.00	3,219.77	20.0
J-101	148: Zone-1	4	True	1,500.00	3,222.82	1,510.32	3,233.14	20.0
J-423	148: Zone-1	4	True	1,500.00	3,225.90	1,505.77	3,231.67	20.0
J-723	148: Zone-1	4	True	1,500.00	3,239.77	1,500.00	3,239.77	20.0
J-70	148: Zone-1	4	True	1,500.00	3,246.13	1,512.87	3,259.00	20.0
J-694	148: Zone-1	4	True	1,500.00	3,248.18	1,515.00	3,263.18	20.0
J-175	148: Zone-1	4	True	1,500.00	3,248.42	1,511.46	3,259.88	20.0
J-130	148: Zone-1	4	True	1,500.00	3,251.05	1,511.55	3,262.60	20.0
J-633	148: Zone-1	4	True	1,500.00	3,251.23	1,500.00	3,251.23	20.0
J-248	148: Zone-1	4	True	1,500.00	3,253.11	1,509.43	3,262.54	20.0
J-304	148: Zone-1	4	True	1,500.00	3,260.09	1,503.53	3,263.62	20.0
J-403	148: Zone-1	4	True	1,500.00	3,261.83	1,510.91	3,272.74	20.0
J-91	148: Zone-1	4	True	1,500.00	3,277.40	1,504.98	3,282.38	20.0
J-621	148: Zone-1	4	True	1,500.00	3,283.92	1,516.86	3,300.78	20.0
J-294	149: Zone-2	5	True	1,500.00	3,285.12	1,501.28	3,286.40	20.0
J-117	148: Zone-1	4	True	1,500.00	3,287.53	1,532.05	3,319.57	20.0
J-599	148: Zone-1	4	True	1,500.00	3,291.44	1,505.29	3,296.73	20.0
J-48	148: Zone-1	4	True	1,500.00	3,292.05	1,501.63	3,293.68	20.0
J-642	148: Zone-1	4	True	1,500.00	3,292.15	1,508.05	3,300.20	20.0
J-677	148: Zone-1	4	True	1,500.00	3,301.58	1,500.00	3,301.58	20.0
J-568	149: Zone-2	5	True	1,500.00	3,304.26	1,500.00	3,304.26	20.0
J-489	148: Zone-1	4	True	1,500.00	3,306.15	1,509.78	3,315.93	20.0
J-486	148: Zone-1	4	True	1,500.00	3,312.97	1,508.05	3,321.02	20.0
J-601	148: Zone-1	4	True	1,500.00	3,314.11	1,505.29	3,319.40	20.0
J-408	148: Zone-1	4	True	1,500.00	3,315.58	1,502.96	3,318.54	20.0
J-275	149: Zone-2	5	True	1,500.00	3,316.07	1,525.44	3,341.51	20.0
J-468	148: Zone-1	4	True	1,500.00	3,317.02	1,502.80	3,319.82	20.0
J-567	149: Zone-2	5	True	1,500.00	3,317.09	1,507.94	3,325.03	20.0
J-145	148: Zone-1	4	True	1,500.00	3,318.19	1,501.50	3,319.69	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-124	148: Zone-1	4	True	1,500.00	3,324.38	1,508.86	3,333.24	20.0
J-530	148: Zone-1	4	True	1,500.00	3,324.70	1,500.00	3,324.70	20.0
J-564	149: Zone-2	5	True	1,500.00	3,329.57	1,507.94	3,337.51	20.0
J-177	148: Zone-1	4	True	1,500.00	3,335.19	1,516.40	3,351.59	20.0
J-179	148: Zone-1	4	True	1,500.00	3,341.76	1,512.08	3,353.84	20.0
J-300	148: Zone-1	4	True	1,500.00	3,366.50	1,500.88	3,367.38	20.0
J-320	148: Zone-1	4	True	1,500.00	3,380.01	1,500.66	3,380.67	20.0
J-590	149: Zone-2	5	True	1,500.00	3,385.29	1,507.94	3,393.23	20.0
J-676	148: Zone-1	4	True	1,500.00	3,388.24	1,500.00	3,388.24	20.0
J-547	148: Zone-1	4	True	1,500.00	3,392.54	1,500.00	3,392.54	20.0
J-688	148: Zone-1	4	True	1,500.00	3,401.41	1,500.00	3,401.41	20.0
J-692	148: Zone-1	4	True	1,500.00	3,402.18	1,500.00	3,402.18	20.0
J-565	149: Zone-2	5	True	1,500.00	3,403.08	1,507.94	3,411.02	20.0
J-137	148: Zone-1	4	True	1,500.00	3,405.28	1,505.64	3,410.92	20.0
J-174	148: Zone-1	4	True	1,500.00	3,428.09	1,500.44	3,428.53	20.0
J-136	148: Zone-1	4	True	1,500.00	3,436.17	1,527.95	3,464.12	20.0
J-202	148: Zone-1	4	True	1,500.00	3,440.75	1,510.01	3,450.76	20.0
J-134	148: Zone-1	4	True	1,500.00	3,442.46	1,503.17	3,445.63	20.0
J-407	148: Zone-1	4	True	1,500.00	3,444.98	1,503.96	3,448.94	20.0
J-92	148: Zone-1	4	True	1,500.00	3,447.11	1,527.99	3,475.10	20.0
J-435	148: Zone-1	4	True	1,500.00	3,447.40	1,500.00	3,447.40	20.0
J-663	148: Zone-1	4	True	1,500.00	3,452.70	1,516.86	3,469.56	20.0
J-301	148: Zone-1	4	True	1,500.00	3,456.40	1,500.25	3,456.64	20.0
J-166	148: Zone-1	4	True	1,500.00	3,456.67	1,525.70	3,482.37	20.0
J-566	149: Zone-2	5	True	1,500.00	3,474.72	1,507.94	3,482.66	20.0
J-68	148: Zone-1	4	True	1,500.00	3,475.67	1,539.81	3,515.47	20.0
J-525	148: Zone-1	4	True	1,500.00	3,484.16	1,500.00	3,484.16	20.0
J-178	148: Zone-1	4	True	1,500.00	3,488.72	1,512.08	3,500.80	20.0
J-587	149: Zone-2	5	True	1,500.00	3,490.76	1,507.94	3,498.70	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-394	148: Zone-1	4	True	1,500.00	3,492.38	1,517.22	3,509.60	20.0
J-406	148: Zone-1	4	True	1,500.00	3,500.14	1,501.72	3,501.86	20.0
J-27	148: Zone-1	4	True	1,500.00	3,501.60	1,505.97	3,507.57	20.0
J-113	148: Zone-1	4	True	1,500.00	3,506.10	1,510.49	3,516.59	20.0
J-313	148: Zone-1	4	True	1,500.00	3,506.39	1,515.34	3,521.73	20.0
J-550	148: Zone-1	4	True	1,500.00	3,508.46	1,511.50	3,519.96	20.0
J-247	148: Zone-1	4	True	1,500.00	3,515.32	1,509.43	3,524.75	20.0
J-67	148: Zone-1	4	True	1,500.00	3,532.30	1,538.04	3,570.35	20.0
J-157	148: Zone-1	4	True	1,500.00	3,532.96	1,525.08	3,558.05	20.0
J-424	148: Zone-1	4	True	1,500.00	3,534.23	1,504.94	3,539.17	20.0
J-603	148: Zone-1	4	True	1,500.00	3,539.52	1,508.05	3,547.57	20.0
J-6	148: Zone-1	4	True	1,500.00	3,547.93	1,550.78	3,598.71	20.0
J-121	148: Zone-1	4	True	1,500.00	3,554.10	1,508.24	3,562.34	20.0
J-405	148: Zone-1	4	True	1,500.00	3,559.86	1,502.96	3,562.82	20.0
J-112	148: Zone-1	4	True	1,500.00	3,563.04	1,511.06	3,574.10	20.0
J-563	149: Zone-2	5	True	1,500.00	3,570.31	1,507.94	3,578.25	20.0
J-69	148: Zone-1	4	True	1,500.00	3,571.93	1,511.11	3,583.04	20.0
J-548	148: Zone-1	4	True	1,500.00	3,575.56	1,500.00	3,575.56	20.0
J-455	148: Zone-1	4	True	1,500.00	3,581.61	1,500.00	3,581.61	20.0
J-106	148: Zone-1	4	True	1,500.00	3,583.78	1,515.16	3,598.94	20.0
J-533	148: Zone-1	4	True	1,500.00	3,587.55	1,500.00	3,587.55	20.0
J-105	148: Zone-1	4	True	1,500.00	3,591.08	1,509.79	3,600.86	20.0
J-654	148: Zone-1	4	True	1,500.00	3,609.25	1,500.00	3,609.25	20.0
J-315	148: Zone-1	4	True	1,500.00	3,612.05	1,510.36	3,622.41	20.0
J-698	148: Zone-1	4	True	1,500.00	3,624.00	1,500.00	3,624.00	20.0
J-395	148: Zone-1	4	True	1,500.00	3,624.07	1,517.22	3,641.29	20.0
J-551	148: Zone-1	4	True	1,500.00	3,624.82	1,500.00	3,624.82	20.0
J-641	148: Zone-1	4	True	1,500.00	3,638.11	1,508.05	3,646.16	20.0
J-214	148: Zone-1	4	True	1,500.00	3,643.64	1,520.01	3,663.66	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-302	148: Zone-1	4	True	1,500.00	3,647.05	1,500.26	3,647.31	20.0
J-689	148: Zone-1	4	True	1,500.00	3,654.12	1,500.00	3,654.12	20.0
J-104	148: Zone-1	4	True	1,500.00	3,655.17	1,510.14	3,665.31	20.0
J-108	148: Zone-1	4	True	1,500.00	3,660.90	1,513.93	3,674.83	20.0
J-298	148: Zone-1	4	True	1,500.00	3,665.94	1,502.78	3,668.72	20.0
J-118	148: Zone-1	4	True	1,500.00	3,678.20	1,509.61	3,687.81	20.0
J-691	148: Zone-1	4	True	1,500.00	3,679.00	1,500.00	3,679.00	20.0
J-635	148: Zone-1	4	True	1,500.00	3,680.55	1,500.00	3,680.55	20.0
J-464	148: Zone-1	4	True	1,500.00	3,680.59	1,503.80	3,684.39	20.0
J-305	148: Zone-1	4	True	1,500.00	3,689.80	1,506.08	3,695.88	20.0
J-661	148: Zone-1	4	True	1,500.00	3,710.84	1,500.00	3,710.84	20.0
J-348	148: Zone-1	4	True	1,500.00	3,720.46	1,500.66	3,721.12	20.0
J-65	148: Zone-1	4	True	1,500.00	3,720.48	1,519.97	3,740.45	20.0
J-314	148: Zone-1	4	True	1,500.00	3,725.27	1,516.49	3,741.75	20.0
J-481	148: Zone-1	4	True	1,500.00	3,736.61	1,500.00	3,736.61	20.0
J-72	148: Zone-1	4	True	1,500.00	3,749.86	1,517.50	3,767.36	20.0
J-309	148: Zone-1	4	True	1,500.00	3,752.14	1,508.99	3,761.14	20.0
J-144	148: Zone-1	4	True	1,500.00	3,763.82	1,500.00	3,763.82	20.0
J-391	149: Zone-2	5	True	1,500.00	3,764.12	1,500.00	3,764.12	20.0
J-107	148: Zone-1	4	True	1,500.00	3,764.17	1,517.32	3,781.50	20.0
J-549	148: Zone-1	4	True	1,500.00	3,766.53	1,500.00	3,766.53	20.0
J-393	149: Zone-2	5	True	1,500.00	3,775.97	1,500.00	3,775.97	20.0
J-626	148: Zone-1	4	True	1,500.00	3,776.30	1,506.90	3,783.20	20.0
J-480	148: Zone-1	4	True	1,500.00	3,795.06	1,500.70	3,795.76	20.0
J-419	148: Zone-1	4	True	1,500.00	3,802.57	1,504.94	3,807.51	20.0
J-100	148: Zone-1	4	True	1,500.00	3,813.72	1,513.97	3,827.69	20.0
J-588	149: Zone-2	5	True	1,500.00	3,828.33	1,507.24	3,835.57	20.0
J-332	148: Zone-1	4	True	1,500.00	3,846.85	1,517.25	3,864.10	20.0
J-39	148: Zone-1	4	True	1,500.00	3,860.08	1,508.02	3,868.10	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-103	148: Zone-1	4	True	1,500.00	3,870.06	1,518.82	3,888.88	20.0
J-657	148: Zone-1	4	True	1,500.00	3,886.12	1,500.00	3,886.12	20.0
J-66	148: Zone-1	4	True	1,500.00	3,896.02	1,514.99	3,911.01	20.0
J-558	149: Zone-2	5	True	1,500.00	3,902.08	1,500.00	3,902.08	20.0
J-158	148: Zone-1	4	True	1,500.00	3,906.29	1,502.91	3,909.20	20.0
J-76	148: Zone-1	4	True	1,500.00	3,917.22	1,500.00	3,917.22	20.0
J-569	149: Zone-2	5	True	1,500.00	3,919.58	1,500.00	3,919.58	20.0
J-259	149: Zone-2	5	True	1,500.00	3,919.98	1,515.38	3,935.36	20.0
J-274	149: Zone-2	5	True	1,500.00	3,923.15	1,523.36	3,946.51	20.0
J-557	149: Zone-2	8	True	1,500.00	3,940.41	1,500.00	3,940.41	20.0
J-271	149: Zone-2	8	True	1,500.00	3,940.47	1,500.00	3,940.47	20.0
J-352	149: Zone-2	8	True	1,500.00	3,940.74	1,506.66	3,947.40	20.0
J-260	149: Zone-2	7	True	1,500.00	3,942.78	1,514.15	3,956.93	20.0
J-272	149: Zone-2	7	True	1,500.00	3,943.23	1,535.97	3,979.20	20.0
J-273	149: Zone-2	7	True	1,500.00	3,947.69	1,513.75	3,961.44	20.0
J-252	149: Zone-2	5	True	1,500.00	3,949.08	1,516.22	3,965.31	20.0
J-99	148: Zone-1	4	True	1,500.00	3,954.74	1,514.28	3,969.02	20.0
J-110	148: Zone-1	4	True	1,500.00	3,964.13	1,516.66	3,980.80	20.0
J-239	148: Zone-1	4	True	1,500.00	3,980.37	1,500.00	3,980.37	20.0
J-690	148: Zone-1	4	True	1,500.00	3,984.46	1,515.00	3,999.46	20.0
J-159	148: Zone-1	4	True	1,500.00	3,994.32	1,501.15	3,995.46	20.0
J-437	148: Zone-1	4	True	1,500.00	3,995.70	1,500.00	3,995.70	20.0
J-469	148: Zone-1	4	True	1,500.00	4,010.30	1,503.80	4,014.10	20.0
J-680	148: Zone-1	4	True	1,500.00	4,032.53	1,500.00	4,032.53	20.0
J-666	148: Zone-1	4	True	1,500.00	4,055.14	1,508.05	4,063.19	20.0
J-190	148: Zone-1	4	True	1,500.00	4,056.20	1,512.43	4,068.63	20.0
J-161	148: Zone-1	4	True	1,500.00	4,059.84	1,504.19	4,064.03	20.0
J-212	148: Zone-1	4	True	1,500.00	4,067.73	1,500.00	4,067.73	20.0
J-160	148: Zone-1	4	True	1,500.00	4,070.78	1,512.08	4,082.85	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-418	148: Zone-1	4	True	1,500.00	4,083.02	1,506.60	4,089.62	20.0
J-335	148: Zone-1	4	True	1,500.00	4,097.87	1,500.00	4,097.87	20.0
J-625	148: Zone-1	4	True	1,500.00	4,119.24	1,500.00	4,119.24	20.0
J-162	148: Zone-1	4	True	1,500.00	4,124.46	1,511.68	4,136.14	20.0
J-168	148: Zone-1	4	True	1,500.00	4,129.46	1,500.00	4,129.46	20.0
J-681	<None>	4	True	1,500.00	4,136.51	1,500.00	4,136.51	20.0
J-26	148: Zone-1	4	True	1,500.00	4,143.50	1,511.42	4,154.92	20.0
J-583	148: Zone-1	4	True	1,500.00	4,143.57	1,500.00	4,143.57	20.0
J-647	148: Zone-1	4	True	1,500.00	4,165.96	1,502.52	4,168.48	20.0
J-169	148: Zone-1	4	True	1,500.00	4,169.13	1,500.00	4,169.13	20.0
J-417	148: Zone-1	4	True	1,500.00	4,193.09	1,502.47	4,195.56	20.0
J-189	148: Zone-1	4	True	1,500.00	4,197.86	1,520.85	4,218.71	20.0
J-194	148: Zone-1	4	True	1,500.00	4,201.47	1,526.10	4,227.56	20.0
J-433	148: Zone-1	4	True	1,500.00	4,211.37	1,508.27	4,219.63	20.0
J-52	148: Zone-1	4	True	1,500.00	4,221.81	1,500.71	4,222.52	20.0
J-135	148: Zone-1	4	True	1,500.00	4,222.83	1,509.61	4,232.44	20.0
J-333	148: Zone-1	4	True	1,500.00	4,224.55	1,505.91	4,230.46	20.0
J-675	148: Zone-1	4	True	1,500.00	4,249.06	1,500.00	4,249.06	20.0
J-213	148: Zone-1	4	True	1,500.00	4,250.77	1,557.35	4,308.12	20.0
J-485	148: Zone-1	4	True	1,500.00	4,274.95	1,500.00	4,274.95	20.0
J-109	148: Zone-1	4	True	1,500.00	4,309.78	1,509.61	4,319.39	20.0
J-306	148: Zone-1	4	True	1,500.00	4,317.13	1,520.67	4,337.80	20.0
J-541	148: Zone-1	4	True	1,500.00	4,319.72	1,500.00	4,319.72	20.0
J-77	148: Zone-1	4	True	1,500.00	4,325.16	1,513.89	4,339.04	20.0
J-426	148: Zone-1	4	True	1,500.00	4,331.33	1,503.96	4,335.29	20.0
J-307	148: Zone-1	4	True	1,500.00	4,331.35	1,509.43	4,340.79	20.0
J-142	148: Zone-1	4	True	1,500.00	4,350.94	1,507.80	4,358.74	20.0
J-133	148: Zone-1	5	True	1,500.00	4,355.37	1,511.95	4,367.31	20.0
J-50	148: Zone-1	4	True	1,500.00	4,366.89	1,504.72	4,371.61	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-98	148: Zone-1	4	True	1,500.00	4,371.63	1,500.00	4,371.63	20.0
J-524	148: Zone-1	4	True	1,500.00	4,391.26	1,500.00	4,391.26	20.0
J-402	148: Zone-1	4	True	1,500.00	4,396.43	1,504.97	4,401.40	20.0
J-163	148: Zone-1	4	True	1,500.00	4,442.64	1,518.87	4,461.51	20.0
J-646	148: Zone-1	4	True	1,500.00	4,451.60	1,502.52	4,454.12	20.0
J-64	148: Zone-1	4	True	1,500.00	4,461.54	1,536.19	4,497.73	20.0
J-210	148: Zone-1	4	True	1,500.00	4,466.07	1,534.16	4,500.23	20.0
J-201	148: Zone-1	4	True	1,500.00	4,473.86	1,524.64	4,498.50	20.0
J-195	148: Zone-1	4	True	1,500.00	4,483.58	1,544.83	4,528.41	20.0
J-682	<None>	4	True	1,500.00	4,496.86	1,500.00	4,496.86	20.0
J-185	148: Zone-1	4	True	1,500.00	4,512.00	1,507.01	4,519.01	20.0
J-114	148: Zone-1	4	True	1,500.00	4,513.41	1,529.18	4,542.59	20.0
J-679	148: Zone-1	4	True	1,500.00	4,528.43	1,500.00	4,528.43	20.0
J-623	148: Zone-1	4	True	1,500.00	4,537.53	1,516.86	4,554.39	20.0
J-240	148: Zone-1	4	True	1,500.00	4,539.72	1,501.63	4,541.35	20.0
J-208	148: Zone-1	4	True	1,500.00	4,541.90	1,512.92	4,554.82	20.0
J-659	148: Zone-1	4	True	1,500.00	4,566.84	1,500.00	4,566.84	20.0
J-97	148: Zone-1	4	True	1,500.00	4,580.70	1,517.37	4,598.07	20.0
J-634	148: Zone-1	4	True	1,500.00	4,600.46	1,500.00	4,600.46	20.0
J-84	148: Zone-1	4	True	1,500.00	4,606.86	1,512.43	4,619.29	20.0
J-697	148: Zone-1	4	True	1,500.00	4,629.08	1,500.00	4,629.08	20.0
J-85	148: Zone-1	4	True	1,500.00	4,635.34	1,512.03	4,647.37	20.0
J-209	148: Zone-1	4	True	1,500.00	4,641.59	1,508.64	4,650.23	20.0
J-331	148: Zone-1	4	True	1,500.00	4,657.71	1,504.97	4,662.68	20.0
J-622	148: Zone-1	4	True	1,500.00	4,660.46	1,516.86	4,677.32	20.0
J-577	148: Zone-1	4	True	1,500.00	4,662.51	1,500.00	4,662.51	20.0
J-220	148: Zone-1	4	True	1,500.00	4,668.74	1,500.93	4,669.67	20.0
J-13	148: Zone-1	4	True	1,500.00	4,731.18	1,500.00	4,731.18	20.0
J-474	148: Zone-1	4	True	1,500.00	4,742.81	1,503.10	4,745.91	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-436	148: Zone-1	4	True	1,500.00	4,758.18	1,500.00	4,758.18	20.0
FH J-31	148: Zone-1	4	True	1,500.00	4,767.21	1,500.00	4,767.21	20.0
j-74	148: Zone-1	4	True	1,500.00	4,790.85	1,520.89	4,811.74	20.0
J-12	148: Zone-1	4	True	1,500.00	4,801.15	1,500.00	4,801.15	20.0
J-143	148: Zone-1	4	True	1,500.00	4,823.88	1,516.75	4,840.63	20.0
J-445	148: Zone-1	4	True	1,500.00	4,837.72	1,500.00	4,837.72	20.0
J-83	148: Zone-1	4	True	1,500.00	4,840.10	1,513.05	4,853.14	20.0
J-674	148: Zone-1	4	True	1,500.00	4,848.25	1,500.00	4,848.25	20.0
J-308	148: Zone-1	4	True	1,500.00	4,886.31	1,507.98	4,894.29	20.0
J-86	148: Zone-1	4	True	1,500.00	4,901.50	1,514.86	4,916.35	20.0
J-231	148: Zone-1	4	True	1,500.00	4,924.13	1,550.21	4,974.34	20.0
J-441	148: Zone-1	4	True	1,500.00	4,966.32	1,500.00	4,966.32	20.0
J-111	148: Zone-1	4	True	1,500.00	4,967.88	1,513.49	4,981.37	20.0
J-211	148: Zone-1	4	True	1,500.00	4,989.76	1,555.68	5,045.43	20.0
J-649	148: Zone-1	4	True	1,500.00	4,993.42	1,502.52	4,995.94	20.0
J-678	148: Zone-1	4	True	1,500.00	5,009.74	1,500.00	5,009.74	20.0
J-102	148: Zone-1	4	True	1,500.00	5,034.59	1,517.06	5,051.65	20.0
J-96	148: Zone-1	4	True	1,500.00	5,079.43	1,524.16	5,103.58	20.0
J-141	148: Zone-1	4	True	1,500.00	5,089.33	1,506.44	5,095.76	20.0
J-222	148: Zone-1	4	True	1,500.00	5,102.06	1,538.17	5,140.23	20.0
J-207	148: Zone-1	4	True	1,500.00	5,200.34	1,504.28	5,204.62	20.0
J-221	148: Zone-1	4	True	1,500.00	5,237.65	1,508.51	5,246.16	20.0
J-120	148: Zone-1	4	True	1,500.00	5,280.29	1,507.14	5,287.43	20.0
J-620	148: Zone-1	4	True	1,500.00	5,281.35	1,516.86	5,298.21	20.0
J-140	148: Zone-1	4	True	1,500.00	5,283.67	1,512.61	5,296.27	20.0
J-655	148: Zone-1	4	True	1,500.00	5,317.43	1,500.00	5,317.43	20.0
J-219	148: Zone-1	4	True	1,500.00	5,327.84	1,510.09	5,337.93	20.0
J-223	148: Zone-1	4	True	1,500.00	5,357.95	1,520.01	5,377.96	20.0
J-73	148: Zone-1	4	True	1,500.00	5,384.46	1,511.24	5,395.70	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-711	148: Zone-1	4	True	1,500.00	5,417.32	1,500.00	5,417.32	20.0
J-7	148: Zone-1	4	True	1,500.00	5,431.49	1,753.30	5,684.79	20.0
J-234	148: Zone-1	4	True	1,500.00	5,443.12	1,558.10	5,501.22	20.0
J-191	148: Zone-1	5	True	1,500.00	5,465.17	1,506.92	5,472.09	20.0
J-650	148: Zone-1	4	True	1,500.00	5,480.43	1,500.00	5,480.43	20.0
J-187	148: Zone-1	5	True	1,500.00	5,492.83	1,500.00	5,492.83	20.0
J-523	148: Zone-1	4	True	1,500.00	5,524.98	1,500.00	5,524.98	20.0
J-639	148: Zone-1	4	True	1,500.00	5,539.23	1,500.00	5,539.23	20.0
J-340	148: Zone-1	4	True	1,500.00	5,559.64	1,503.29	5,562.93	20.0
J-700	148: Zone-1	4	True	1,500.00	5,584.94	1,500.00	5,584.94	20.0
J-81	148: Zone-1	4	True	1,500.00	5,591.33	1,526.85	5,618.18	20.0
J-701	148: Zone-1	4	True	1,500.00	5,604.79	1,500.00	5,604.79	20.0
J-638	148: Zone-1	4	True	1,500.00	5,617.04	1,500.00	5,617.04	20.0
J-648	148: Zone-1	4	True	1,500.00	5,621.96	1,502.52	5,624.48	20.0
J-415	148: Zone-1	4	True	1,500.00	5,625.16	1,500.00	5,625.16	20.0
J-22	148: Zone-1	4	True	1,500.00	5,628.87	1,518.87	5,647.73	20.0
J-94	148: Zone-1	4	True	1,500.00	5,633.96	1,513.44	5,647.41	20.0
J-619	148: Zone-1	4	True	1,500.00	5,641.84	1,516.86	5,658.70	20.0
J-95	148: Zone-1	4	True	1,500.00	5,642.15	1,512.43	5,654.58	20.0
J-703	148: Zone-1	4	True	1,500.00	5,647.56	1,500.00	5,647.56	20.0
J-414	148: Zone-1	4	True	1,500.00	5,677.29	1,500.00	5,677.29	20.0
J-93	148: Zone-1	4	True	1,500.00	5,677.30	1,517.99	5,695.28	20.0
J-704	148: Zone-1	4	True	1,500.00	5,683.26	1,500.00	5,683.26	20.0
J-165	148: Zone-1	4	True	1,500.00	5,691.12	1,511.28	5,702.40	20.0
J-656	148: Zone-1	4	True	1,500.00	5,695.46	1,505.75	5,701.21	20.0
J-416	148: Zone-1	4	True	1,500.00	5,695.95	1,500.00	5,695.95	20.0
J-618	148: Zone-1	4	True	1,500.00	5,714.55	1,500.00	5,714.55	20.0
J-186	148: Zone-1	4	True	1,500.00	5,715.85	1,504.94	5,720.78	20.0
J-636	148: Zone-1	4	True	1,500.00	5,734.61	1,500.00	5,734.61	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-80	148: Zone-1	4	True	1,500.00	5,772.64	1,523.89	5,796.54	20.0
J-624	148: Zone-1	4	True	1,500.00	5,779.59	1,500.00	5,779.59	20.0
J-617	148: Zone-1	4	True	1,500.00	5,785.51	1,500.00	5,785.51	20.0
J-82	148: Zone-1	4	True	1,500.00	5,796.23	1,509.26	5,805.48	20.0
J-673	148: Zone-1	4	True	1,500.00	5,796.67	1,500.00	5,796.67	20.0
J-522	148: Zone-1	4	True	1,500.00	5,802.28	1,505.75	5,808.03	20.0
J-164	148: Zone-1	4	True	1,500.00	5,848.17	1,515.96	5,864.13	20.0
J-58	148: Zone-1	4	True	1,500.00	5,884.27	1,503.88	5,888.15	20.0
J-323	148: Zone-1	4	True	1,500.00	5,890.03	1,500.00	5,890.03	20.0
J-59	148: Zone-1	4	True	1,500.00	5,920.17	1,507.05	5,927.23	20.0
J-339	148: Zone-1	4	True	1,500.00	5,938.77	1,503.29	5,942.06	20.0
J-8	148: Zone-1	4	True	1,500.00	5,955.53	1,554.26	6,009.79	20.0
J-1	148: Zone-1	3	True	1,500.00	6,000.00	1,500.53	6,000.53	20.0
J-9	148: Zone-1	3	True	1,500.00	6,000.00	1,526.01	6,026.01	20.0
J-10	148: Zone-1	3	True	1,500.00	6,000.00	1,500.79	6,000.79	20.0
J-14	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-15	148: Zone-1	3	True	1,500.00	6,000.00	1,523.94	6,023.94	20.0
J-16	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-17	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-18	148: Zone-1	3	True	1,500.00	6,000.00	1,505.11	6,005.11	20.0
J-19	148: Zone-1	3	True	1,500.00	6,000.00	1,567.97	6,067.97	20.0
J-20	148: Zone-1	3	True	1,500.00	6,000.00	1,501.72	6,001.72	20.0
J-21	148: Zone-1	3	True	1,500.00	6,000.00	1,521.20	6,021.20	20.0
J-23	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-24	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-25	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-42	148: Zone-1	3	True	1,500.00	6,000.00	1,517.15	6,017.15	20.0
J-51	148: Zone-1	3	True	1,500.00	6,000.00	1,507.23	6,007.23	20.0
J-54	148: Zone-1	3	True	1,500.00	6,000.00	1,513.40	6,013.40	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-55	148: Zone-1	3	True	1,500.00	6,000.00	1,502.69	6,002.69	20.0
J-56	148: Zone-1	3	True	1,500.00	6,000.00	1,507.14	6,007.14	20.0
J-57	148: Zone-1	4	True	1,500.00	6,000.00	1,514.28	6,014.28	20.0
J-60	148: Zone-1	3	True	1,500.00	6,000.00	1,506.52	6,006.52	20.0
J-61	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-62	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-63	148: Zone-1	3	True	1,500.00	6,000.00	1,504.45	6,004.45	20.0
J-79	148: Zone-1	3	True	1,500.00	6,000.00	1,526.14	6,026.14	20.0
J-192	148: Zone-1	2	True	1,500.00	6,000.00	1,573.35	6,073.35	20.0
J-224	148: Zone-1	2	True	1,500.00	6,000.00	1,514.41	6,014.41	20.0
J-225	148: Zone-1	3	True	1,500.00	6,000.00	1,502.20	6,002.20	20.0
J-226	148: Zone-1	3	True	1,500.00	6,000.00	1,523.94	6,023.94	20.0
J-227	148: Zone-1	3	True	1,500.00	6,000.00	1,558.19	6,058.19	20.0
J-228	148: Zone-1	3	True	1,500.00	6,000.00	1,501.10	6,001.10	20.0
J-232	148: Zone-1	3	True	1,500.00	6,000.00	1,541.04	6,041.04	20.0
J-233	148: Zone-1	3	True	1,500.00	6,000.00	1,508.64	6,008.64	20.0
J-235	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-241	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-242	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-243	148: Zone-1	2	True	1,500.00	6,000.00	1,504.32	6,004.32	20.0
J-244	148: Zone-1	3	True	1,500.00	6,000.00	1,533.85	6,033.85	20.0
J-245	148: Zone-1	2	True	1,500.00	6,000.00	1,539.01	6,039.01	20.0
J-249	148: Zone-1	3	True	1,500.00	6,000.00	1,501.70	6,001.70	20.0
J-270	148: Zone-1	2	True	1,500.00	6,000.00	1,507.49	6,007.49	20.0
J-312	148: Zone-1	2	True	1,500.00	6,000.00	1,520.15	6,020.15	20.0
J-317	148: Zone-1	2	True	1,500.00	6,000.00	1,527.07	6,027.07	20.0
J-318	148: Zone-1	2	True	1,500.00	6,000.00	1,507.14	6,007.14	20.0
J-325	148: Zone-1	2	True	1,500.00	6,000.00	1,504.72	6,004.72	20.0
J-328	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-330	148: Zone-1	3	True	1,500.00	6,000.00	1,513.44	6,013.44	20.0
J-338	148: Zone-1	3	True	1,500.00	6,000.00	1,503.29	6,003.29	20.0
J-349	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-351	148: Zone-1	3	True	1,500.00	6,000.00	1,512.52	6,012.52	20.0
J-354	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-360	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
FH X-4	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
FH G-5	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
FH J-1	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-401	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-425	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-444	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-459	148: Zone-1	3	True	1,500.00	6,000.00	1,503.10	6,003.10	20.0
J-460	148: Zone-1	3	True	1,500.00	6,000.00	1,501.00	6,001.00	20.0
J-461	148: Zone-1	3	True	1,500.00	6,000.00	1,501.30	6,001.30	20.0
J-462	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-463	148: Zone-1	3	True	1,500.00	6,000.00	1,503.70	6,003.70	20.0
J-467	148: Zone-1	3	True	1,500.00	6,000.00	1,503.10	6,003.10	20.0
J-470	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-471	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-472	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-478	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-492	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-493	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-496	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-498	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-499	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-501	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-503	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)
J-505	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-506	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-511	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-513	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-514	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-515	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-520	148: Zone-1	3	True	1,500.00	6,000.00	1,505.75	6,005.75	20.0
J-521	148: Zone-1	3	True	1,500.00	6,000.00	1,505.75	6,005.75	20.0
J-526	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-527	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-528	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-529	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-537	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-538	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-539	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-540	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-542	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-544	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-545	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-552	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-554	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-555	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-556	149: Zone-2	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-579	149: Zone-2	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-582	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-602	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-616	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-643	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0
J-644	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Label	Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
J-658	148: Zone-1	4	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-660	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-662	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-667	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-671	148: Zone-1	2	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-672	<None>	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-696	148: Zone-1	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-712	<None>	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-716	<None>	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-717	<None>	3	True	1,500.00	6,000.00	1,500.00	6,000.00	20.0	(N/A)	5.0	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	31.8	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	19.8	1288: J-495	(N/A)	6.0	466: J-327	True
20.0	5.0	31.2	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	31.1	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	30.8	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	30.7	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	30.5	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.5	1477: J-573	(N/A)	6.0	466: J-327	True
20.0	5.0	27.6	1479: J-574	(N/A)	6.0	466: J-327	True
20.0	5.0	29.9	505: J-366	(N/A)	6.0	466: J-327	True
20.0	5.0	28.5	296: J-149	(N/A)	6.0	466: J-327	True
20.0	5.0	30.2	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	30.1	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	1483: J-575	(N/A)	6.0	466: J-327	True
20.0	5.0	26.3	506: J-367	(N/A)	6.0	466: J-327	True
20.1	5.0	30.1	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.0	520: J-382	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	1485: J-576	(N/A)	6.0	466: J-327	True
20.0	5.0	30.0	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	19.9	506: J-367	(N/A)	6.0	466: J-327	True
20.0	5.0	21.5	301: J-154	(N/A)	6.0	466: J-327	True
20.0	5.0	30.0	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	21.8	504: J-365	(N/A)	6.0	466: J-327	True
20.0	5.0	27.3	1613: J-614	(N/A)	6.0	466: J-327	True
20.0	5.0	28.8	520: J-382	(N/A)	6.0	466: J-327	True
20.0	5.0	29.7	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	300: J-153	(N/A)	6.0	466: J-327	True
20.0	5.0	22.6	296: J-149	(N/A)	6.0	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	19.9	506: J-367	(N/A)	6.0	466: J-327	True
20.0	5.0	28.6	520: J-382	(N/A)	6.0	466: J-327	True
20.0	5.0	29.7	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	21.3	296: J-149	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	1613: J-614	(N/A)	6.0	466: J-327	True
20.0	5.0	23.2	300: J-153	(N/A)	6.0	466: J-327	True
20.1	5.0	29.6	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.6	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.5	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.4	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	19.5	1350: J-518	(N/A)	6.0	466: J-327	True
20.0	5.0	29.3	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.4	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.4	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	506: J-367	(N/A)	6.0	466: J-327	True
20.0	5.0	29.3	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	20.1	381: J-238	(N/A)	6.0	466: J-327	True
20.0	5.0	29.2	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	28.2	1601: J-609	(N/A)	6.0	466: J-327	True
20.0	5.0	29.2	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.0	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.0	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.0	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	29.0	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	1615: J-615	(N/A)	6.0	466: J-327	True
20.0	5.0	20.3	299: J-152	(N/A)	6.0	466: J-327	True
20.0	5.0	28.9	528: J-390	(N/A)	6.0	466: J-327	True
20.0	5.0	20.0	1598: J-608	(N/A)	6.0	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.1	5.0	27.6	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	17.7	361: J-217	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	344: J-200	(N/A)	5.9	466: J-327	True
20.1	5.0	27.4	520: J-382	(N/A)	5.9	466: J-327	True
20.1	5.0	27.4	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	28.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	28.6	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	28.5	528: J-390	(N/A)	5.9	466: J-327	True
20.1	5.0	15.7	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	28.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1615: J-615	(N/A)	5.9	466: J-327	True
20.0	5.0	28.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.4	584: J-447	(N/A)	5.9	466: J-327	True
20.0	5.0	28.4	528: J-390	(N/A)	5.9	466: J-327	True
20.1	5.0	27.0	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	25.7	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	27.0	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	26.5	538: J-400	(N/A)	5.9	466: J-327	True
20.0	5.0	26.6	1717: J-653	(N/A)	5.9	466: J-327	True
20.0	5.0	20.3	193: J-46	(N/A)	5.9	466: J-327	True
20.0	5.0	28.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1598: J-608	(N/A)	5.9	466: J-327	True
20.0	5.0	28.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.6	594: J-457	(N/A)	5.9	466: J-327	True
20.0	5.0	28.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1717: J-653	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1435: J-553	(N/A)	5.9	466: J-327	True
20.0	5.0	26.5	520: J-382	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	13.7	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	20.4	1346: J-516	(N/A)	5.9	466: J-327	True
20.0	5.0	26.4	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	19.5	1350: J-518	(N/A)	5.9	466: J-327	True
20.1	5.0	26.3	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	27.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.5	594: J-457	(N/A)	5.9	466: J-327	True
20.0	5.0	27.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	27.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	27.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.1	594: J-457	(N/A)	5.9	466: J-327	True
20.0	5.0	22.5	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	27.6	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	27.6	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	17.8	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	20.3	1615: J-615	(N/A)	5.9	466: J-327	True
20.0	5.0	22.8	432: J-290	(N/A)	5.9	466: J-327	True
20.0	5.0	27.5	528: J-390	(N/A)	5.9	466: J-327	True
20.1	5.0	26.0	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	27.4	528: J-390	(N/A)	5.9	466: J-327	True
20.1	5.0	26.0	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	14.4	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	19.7	155: J-5	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	431: J-289	(N/A)	5.9	466: J-327	True
20.0	5.0	27.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	27.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.8	568: J-431	(N/A)	5.9	466: J-327	True
20.0	5.0	27.2	528: J-390	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	27.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	12.9	398: J-256	(N/A)	5.9	466: J-327	True
20.0	5.0	25.5	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	15.2	432: J-290	(N/A)	5.9	466: J-327	True
20.0	5.0	27.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	27.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	27.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.3	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	15.2	433: J-291	(N/A)	5.9	466: J-327	True
20.0	5.0	26.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.1	1288: J-495	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	495: J-356	(N/A)	5.9	466: J-327	True
20.0	5.0	12.9	432: J-290	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	587: J-450	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1886: J-699	(N/A)	5.9	466: J-327	True
20.0	5.0	26.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.6	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	14.4	340: J-196	(N/A)	5.9	466: J-327	True
24.4	5.0	5.0	475: J-336	(N/A)	5.0	475: J-336	True
20.0	5.0	24.8	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	26.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	583: J-446	(N/A)	5.9	466: J-327	True
20.0	5.0	17.5	475: J-336	(N/A)	5.9	466: J-327	True
20.0	5.0	24.6	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	26.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.9	1902: J-706	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	17.1	410: J-268	(N/A)	5.9	466: J-327	True
20.0	5.0	24.5	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	26.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	6.5	397: J-255	(N/A)	5.9	466: J-327	True
20.0	5.0	26.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.9	328: J-182	(N/A)	5.9	466: J-327	True
20.0	5.0	24.4	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	26.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.2	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	19.7	482: J-343	(N/A)	5.9	466: J-327	True
20.0	5.0	26.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.1	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	26.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	26.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1900: J-705	(N/A)	5.9	466: J-327	True
20.0	5.0	25.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.2	591: J-454	(N/A)	5.9	466: J-327	True
20.0	5.0	25.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.7	567: J-430	(N/A)	5.9	466: J-327	True
20.0	5.0	7.6	433: J-291	(N/A)	5.9	466: J-327	True
20.0	5.0	18.7	1598: J-608	(N/A)	5.9	466: J-327	True
20.0	5.0	21.8	425: J-283	(N/A)	5.9	466: J-327	True
20.0	5.0	23.7	495: J-356	(N/A)	5.9	466: J-327	True
20.0	5.0	25.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.0	327: J-181	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	25.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.6	590: J-453	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	577: J-440	(N/A)	5.9	466: J-327	True
20.0	5.0	21.6	549: J-411	(N/A)	5.9	466: J-327	True
20.0	5.0	19.8	580: J-443	(N/A)	5.9	466: J-327	True
20.0	5.0	25.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.1	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	25.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	25.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.1	483: J-344	(N/A)	5.9	466: J-327	True
20.0	5.0	25.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.2	329: J-183	(N/A)	5.9	466: J-327	True
20.0	5.0	17.1	422: J-280	(N/A)	5.9	466: J-327	True
20.0	5.0	21.5	1275: J-491	(N/A)	5.9	466: J-327	True
20.0	5.0	24.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.9	191: J-44	(N/A)	5.9	466: J-327	True
20.0	5.0	24.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1435: J-553	(N/A)	5.9	466: J-327	True
20.0	5.0	24.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.7	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	20.4	580: J-443	(N/A)	5.9	466: J-327	True
20.0	5.0	17.5	411: J-269	(N/A)	5.9	466: J-327	True
20.0	5.0	24.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.9	528: J-390	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	24.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.6	1590: J-605	(N/A)	5.9	466: J-327	True
20.0	5.0	22.6	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	17.1	483: J-344	(N/A)	5.9	466: J-327	True
20.0	5.0	24.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	24.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1902: J-706	(N/A)	5.9	466: J-327	True
20.0	5.0	23.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	21.5	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	23.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	15.7	432: J-290	(N/A)	5.9	466: J-327	True
20.0	5.0	22.6	293: J-146	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	21.4	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	21.3	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	23.6	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.1	330: J-184	(N/A)	5.9	466: J-327	True
20.0	5.0	20.4	1544: J-585	(N/A)	5.9	466: J-327	True
20.0	5.0	23.6	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.4	344: J-200	(N/A)	5.9	466: J-327	True
20.0	5.0	23.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.8	350: J-206	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	285: J-138	(N/A)	5.9	466: J-327	True
20.0	5.0	23.5	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1851: J-686	(N/A)	5.9	466: J-327	True
20.0	5.0	23.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.1	489: J-350	(N/A)	5.9	466: J-327	True
20.0	5.0	22.5	537: J-399	(N/A)	5.9	466: J-327	True
20.0	5.0	23.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	18.1	486: J-347	(N/A)	5.9	466: J-327	True
20.0	5.0	23.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	21.3	1845: J-683	(N/A)	5.9	466: J-327	True
20.0	5.0	23.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.8	218: J-71	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	293: J-146	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	23.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	23.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.1	468: J-329	(N/A)	5.9	466: J-327	True
20.0	5.0	21.7	444: J-303	(N/A)	5.9	466: J-327	True
20.0	5.0	23.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	483: J-344	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	196: J-49	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	8.7	1564: J-594	(N/A)	5.9	466: J-327	True
20.0	5.0	19.7	1273: J-490	(N/A)	5.9	466: J-327	True
20.0	5.0	22.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.8	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.2	547: J-409	(N/A)	5.9	466: J-327	True
20.0	5.0	20.2	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	611: J-476	(N/A)	5.9	466: J-327	True
20.0	5.0	20.2	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	22.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.7	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.2	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	22.9	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.8	528: J-390	(N/A)	5.9	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	22.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.9	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	22.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	20.0	1874: J-695	(N/A)	5.9	466: J-327	True
20.0	5.0	22.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.8	520: J-382	(N/A)	5.9	466: J-327	True
20.0	5.0	22.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.4	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.7	286: J-139	(N/A)	5.9	466: J-327	True
20.0	5.0	18.9	1598: J-608	(N/A)	5.9	466: J-327	True
20.0	5.0	22.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.1	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	22.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	21.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	22.3	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	9.2	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	22.0	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	21.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	22.2	528: J-390	(N/A)	5.9	466: J-327	True
20.0	5.0	19.2	520: J-382	(N/A)	5.8	466: J-327	True
20.0	5.0	21.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.9	528: J-390	(N/A)	5.8	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	21.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.4	391: J-248	(N/A)	5.8	466: J-327	True
20.0	5.0	21.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.7	303: J-156	(N/A)	5.8	466: J-327	True
20.0	5.0	21.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.7	269: J-122	(N/A)	5.8	466: J-327	True
20.0	5.0	21.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.9	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	21.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.8	593: J-456	(N/A)	5.8	466: J-327	True
20.0	5.0	21.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.3	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.4	438: J-297	(N/A)	5.8	466: J-327	True
20.0	5.0	19.1	1677: J-640	(N/A)	5.8	466: J-327	True
20.0	5.0	20.4	506: J-367	(N/A)	5.8	466: J-327	True
20.0	5.0	19.7	444: J-303	(N/A)	5.8	466: J-327	True
20.0	5.0	20.0	1866: J-692	(N/A)	5.8	466: J-327	True
20.0	5.0	21.1	528: J-390	(N/A)	5.8	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	21.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	21.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.9	222: J-75	(N/A)	5.8	466: J-327	True
20.0	5.0	20.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.9	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	20.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.7	487: J-348	(N/A)	5.8	466: J-327	True
20.0	5.0	17.6	520: J-382	(N/A)	5.8	466: J-327	True
20.0	5.0	20.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.3	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	14.6	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	20.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	20.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.9	528: J-390	(N/A)	5.8	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	19.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	6.8	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	20.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	7.9	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	6.8	1564: J-594	(N/A)	5.8	466: J-327	True
20.0	5.0	6.6	1564: J-594	(N/A)	5.8	466: J-327	True
41.9	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
41.7	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
40.2	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
24.3	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
23.5	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
20.4	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
20.0	5.0	5.0	1564: J-594	(N/A)	5.0	1564: J-594	True
20.0	5.0	19.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.3	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.3	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.1	528: J-390	(N/A)	5.8	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	18.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	19.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	5.8	466: J-327	(N/A)	5.8	466: J-327	True
20.0	5.0	18.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	13.2	340: J-196	(N/A)	5.8	466: J-327	True
20.0	5.0	18.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	18.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.4	528: J-390	(N/A)	5.8	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	17.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.3	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	17.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	5.8	466: J-327	(N/A)	5.8	466: J-327	True
20.0	5.0	17.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.3	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.5	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.4	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.2	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	16.0	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.9	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.8	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.6	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.7	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.2	528: J-390	(N/A)	5.8	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	15.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.1	528: J-390	(N/A)	5.8	466: J-327	True
20.0	5.0	15.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	15.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.5	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.4	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.1	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.3	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	14.1	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.6	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.5	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	13.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	12.5	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	12.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	12.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	12.1	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.6	528: J-390	(N/A)	5.7	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	11.4	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.4	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.6	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	11.4	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.3	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.5	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.4	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.6	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.1	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.4	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.5	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.0	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	10.0	528: J-390	(N/A)	5.7	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
20.0	5.0	9.3	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	9.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.7	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.8	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.6	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.2	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.5	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.9	528: J-390	(N/A)	5.7	466: J-327	True
20.0	5.0	8.1	528: J-390	(N/A)	5.6	466: J-327	True
20.0	5.0	7.8	528: J-390	(N/A)	5.6	466: J-327	True
20.0	5.0	7.8	528: J-390	(N/A)	5.6	466: J-327	True
20.0	5.0	7.5	528: J-390	(N/A)	5.6	466: J-327	True
20.0	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
27.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
30.7	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
28.9	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
32.4	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
32.6	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
32.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
35.9	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
36.4	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
23.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
36.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
34.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
33.5	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
35.1	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
41.1	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
38.2	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
36.7	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
21.4	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
29.1	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
21.0	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
20.5	5.0	7.3	528: J-390	(N/A)	5.6	466: J-327	True
25.3	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
28.9	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
28.8	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
28.3	5.0	7.3	528: J-390	(N/A)	5.6	466: J-327	True
23.8	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
39.2	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
42.8	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
26.5	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
25.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
24.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
39.3	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
37.5	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
33.9	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
24.4	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
41.7	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
40.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
38.6	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
34.6	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
56.1	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
27.6	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
48.2	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
53.6	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
46.8	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
41.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
43.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
26.7	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
22.2	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
22.6	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
39.9	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
28.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
36.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
49.5	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
41.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
33.6	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
26.1	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
26.1	5.0	7.3	528: J-390	(N/A)	5.6	466: J-327	True
27.7	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
31.8	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
26.1	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
29.9	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
32.0	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
38.8	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
31.3	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
24.2	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
48.1	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
48.1	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
42.6	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
36.7	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
39.1	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

Current Time: 0.000 hours

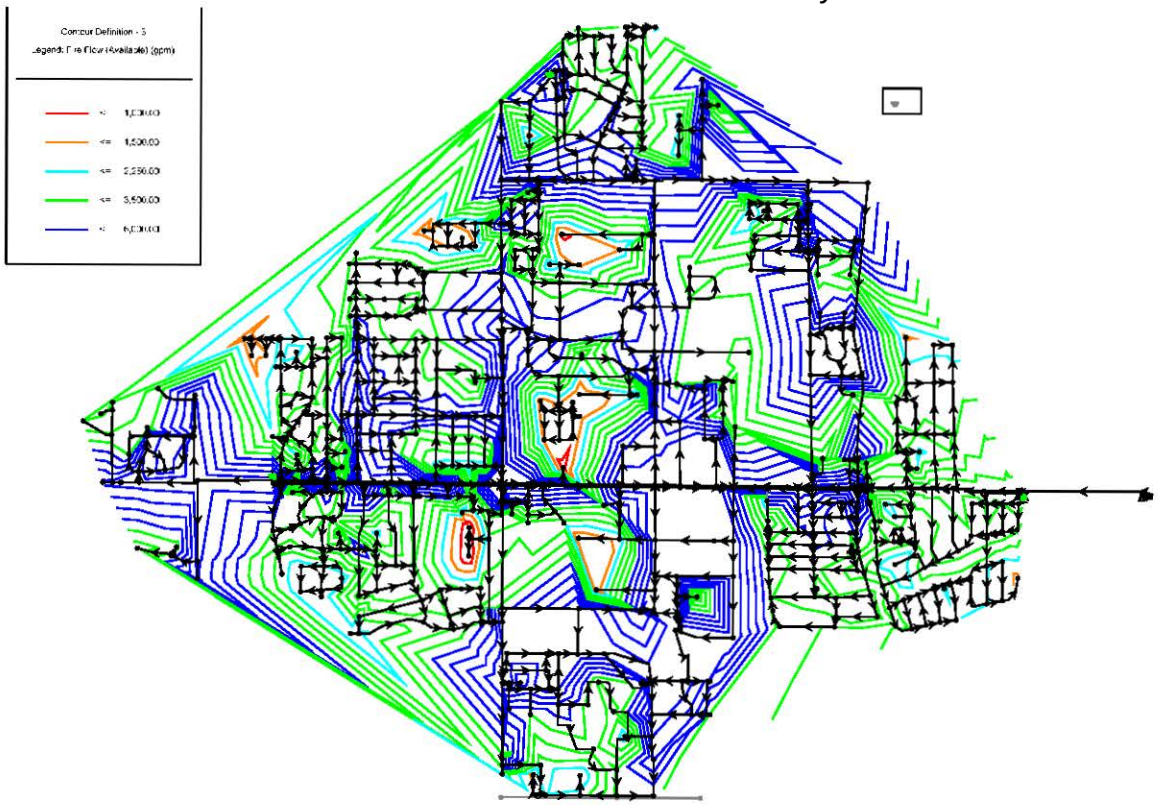
Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
33.9	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
39.5	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
42.7	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
46.8	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
44.0	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
42.7	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
39.6	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
23.5	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
36.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
37.3	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
37.1	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
39.5	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
32.8	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
30.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
27.5	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
30.8	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
30.9	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
30.6	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
54.7	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
53.8	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
47.4	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True
51.9	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True
44.5	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True
44.2	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True
48.2	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True
48.3	5.0	7.0	528: J-390	(N/A)	5.6	466: J-327	True
36.2	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
48.2	5.0	6.8	528: J-390	(N/A)	5.6	466: J-327	True

Fire Flow Node FlexTable: Fire Flow Report

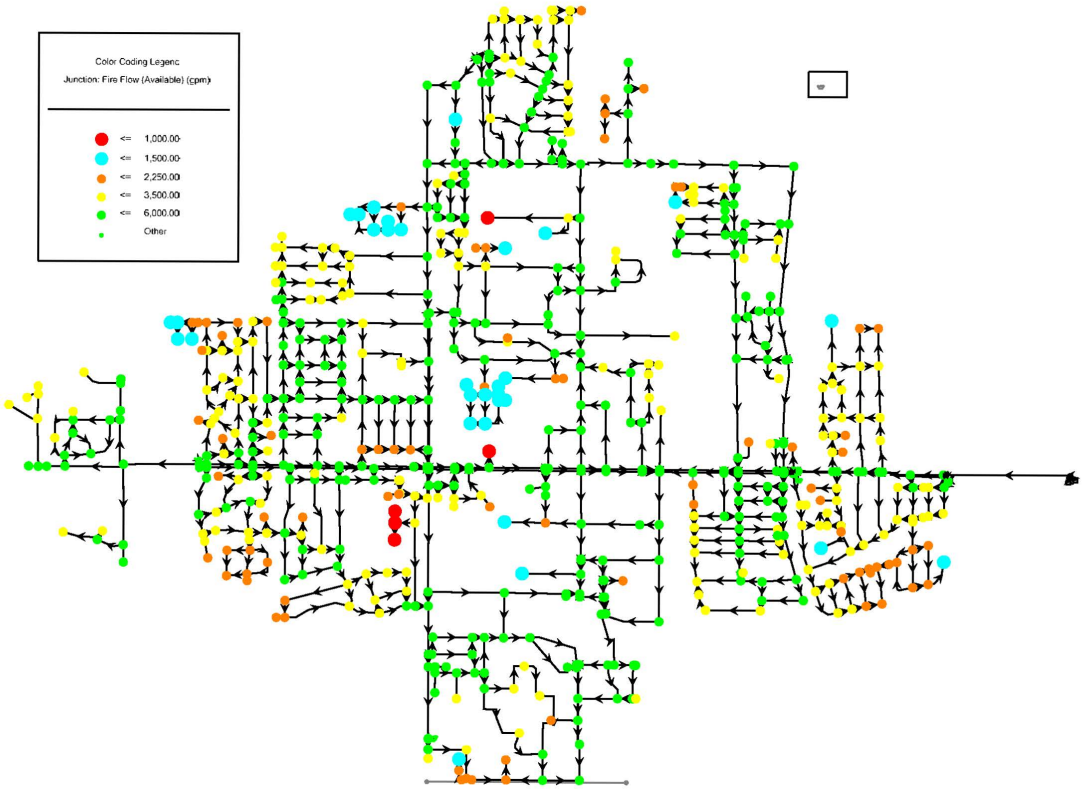
Current Time: 0.000 hours

Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (System Lower Limit) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Is Fire Flow Run Balanced?
43.8	5.0	6.2	520: J-382	(N/A)	5.6	466: J-327	True
44.6	5.0	6.2	520: J-382	(N/A)	5.6	466: J-327	True
27.5	5.0	7.2	528: J-390	(N/A)	5.6	466: J-327	True
28.3	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
21.1	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
46.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
27.2	5.0	7.4	528: J-390	(N/A)	5.6	466: J-327	True
20.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
35.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
29.1	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
37.9	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
44.1	5.0	6.9	528: J-390	(N/A)	5.6	466: J-327	True
27.7	5.0	5.6	466: J-327	(N/A)	5.6	466: J-327	True
38.2	5.0	7.1	528: J-390	(N/A)	5.6	466: J-327	True
30.6	5.0	5.6	466: J-327	(N/A)	5.6	466: J-327	True
35.9	5.0	5.6	466: J-327	(N/A)	5.6	466: J-327	True
31.4	5.0	5.6	466: J-327	(N/A)	5.6	466: J-327	True

Scenario: 2012 Max Day



Scenario: 2012 Max Day



Flow Hydrant Record Sheet

Test No.	Hydrant Location	Time of Residual Reading	Port 1 Pitot Pressure (psi)	Port 1 Pitot Flow (gpm)	Port 2 Pitot Pressure (psi)	Port 2 Pitot Flow (gpm)
1	5 Good & Independence	3:32	62	1322		
2	Lariat & Sorrel	4:02	69	1394		
3	Lucky Dr	4:30	68	1384		
4	Pheasant Ridge/Eagle	5:08	75	1454		
5	Sand Canterbury	5:29	64	1343		
6	Washburn/Leatherman	6:01	69	1394		
7						
8						

Flow Values for Pitot Readings on 2.5" Port

Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)
1	168	14	628	27	872	40	1062	53	1222	66	1364
2	237	15	650	28	888	41	1075	54	1233	67	1374
3	291	16	671	29	904	42	1088	55	1245	68	1384
4	336	17	692	30	919	43	1101	56	1256	69	1394
5	375	18	712	31	935	44	1113	57	1267	70	1404
6	411	19	732	32	950	45	1126	58	1278	71	1414
7	444	20	751	33	964	46	1138	59	1289	72	1424
8	475	21	769	34	979	47	1151	60	1300	73	1434
9	504	22	787	35	993	48	1163	61	1311	74	1444
10	531	23	805	36	1007	49	1175	62	1322	75	1454
11	557	24	822	37	1021	50	1187	63	1332	76	1464
12	581	25	839	38	1035	51	1199	64	1343	77	1474
13	605	26	856	39	1048	52	1210	65	1353	78	1484

Doyle - 243-2721
Kurt 317-8042

Flow Values for Pitot Readings on 4.5" Steamer Port

Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)	Pitot Pressure (psi)	Pitot Flow (gpm)
1	544	7	1439	13	1961	19	2371	25	2719	31	3028
2	769	8	1538	14	2035	20	2432	26	2773	32	3076
3	942	9	1632	15	2106	21	2492	27	2826	33	3124
4	1088	10	1720	16	2175	22	2551	28	2878	34	3171
5	1216	11	1804	17	2242	23	2608	29	2929	35	3217
6	1332	12	1884	18	2307	24	2664	30	2979	36	3263

20 Sept 2011

Pressure Hydrant A

Test No.	Hydrant Location or ID number	Time of Static Reading	Static Pressure	Time of Residual Reading	Residual Pressure	Pressure Drop (static minus residual)
1	W Chubbuck/Galena	3:32 4	92	3:42 87		5
2	W Chubbuck/Galena	4:01	92	4:06 87		5
3	W Chubbuck/Galena	4 25	90	430 87		3
4	Chubbuck Rd (Cavers)	5:03	89	5:08	86	3
5	Chubbuck Rd	5:24	92	5:29	92	0
6	Bruridge @ Park	5:57	75	5:59	74	1
7						
8						
9						
10						
11						
12						
13						
14						
15						

Notes:

1 Take pressures to the nearest 1 psi
2 Aim for a pressure drop of about 10 psi from static to residual
3 Wait until the gauge needle settles on a fixed range before taking a residual pressure reading
4 Once the gauge has settled on a fixed range, take the average value if the needle is bouncing

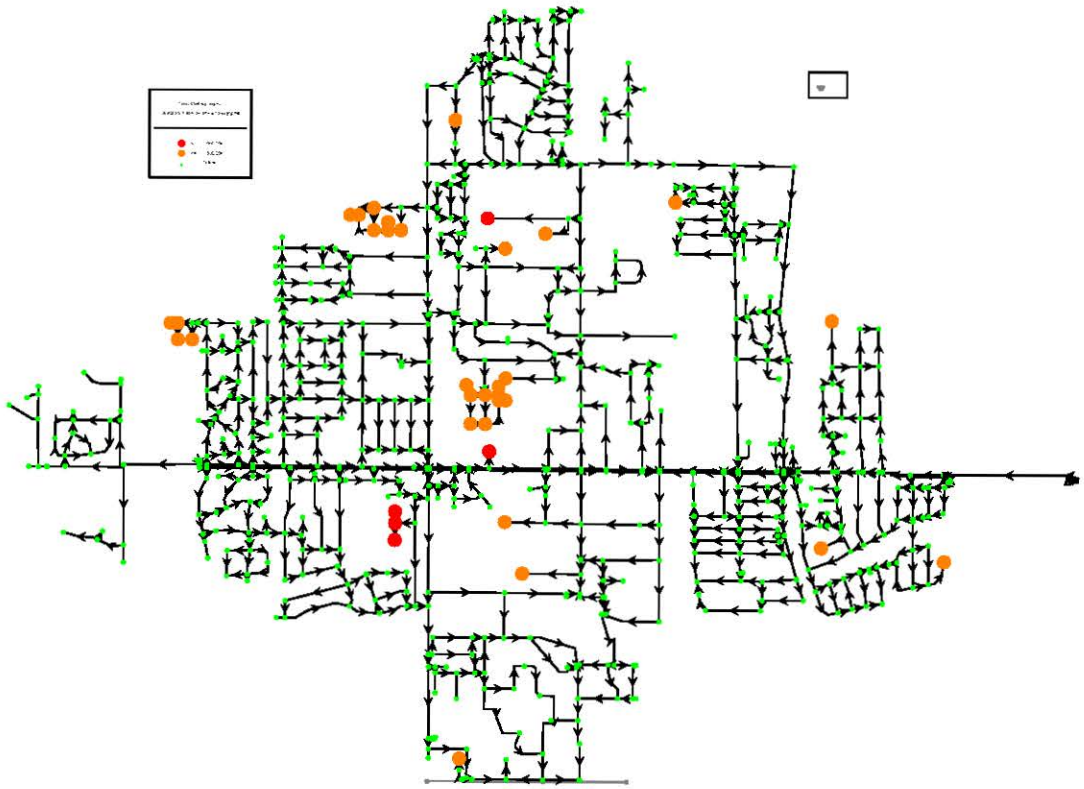
Pressure Hydrant B

Test No.	Hydrant Location or ID number	Time of Static Reading	Static Pressure	Time of Residual Reading	Residual Pressure	Pressure Drop (static minus residual)
1	583 [illegible]	332pm	91	342 ~~335~~	80	11
2	5556 Sorrel	401pm	87	406pm	81	6
3	James & Harry	425pm	90	430pm	84	6
4	Pheasant Ridge/Whitaker	5:03	91	5:08	84	7
5	Taylor Rd	5:24	91	5:29	78	13
6	Washburn/Teewinot	5:57	76	6:01	70 Low 43	6
7						
8						
9						
~~10~~ 6	BBS	6:05	Q - 310 P_i = 36 P_o = 62	6:09	Q = 1183 P_i = 35 P_o = 43	
11						
12						
13						
14						
15						

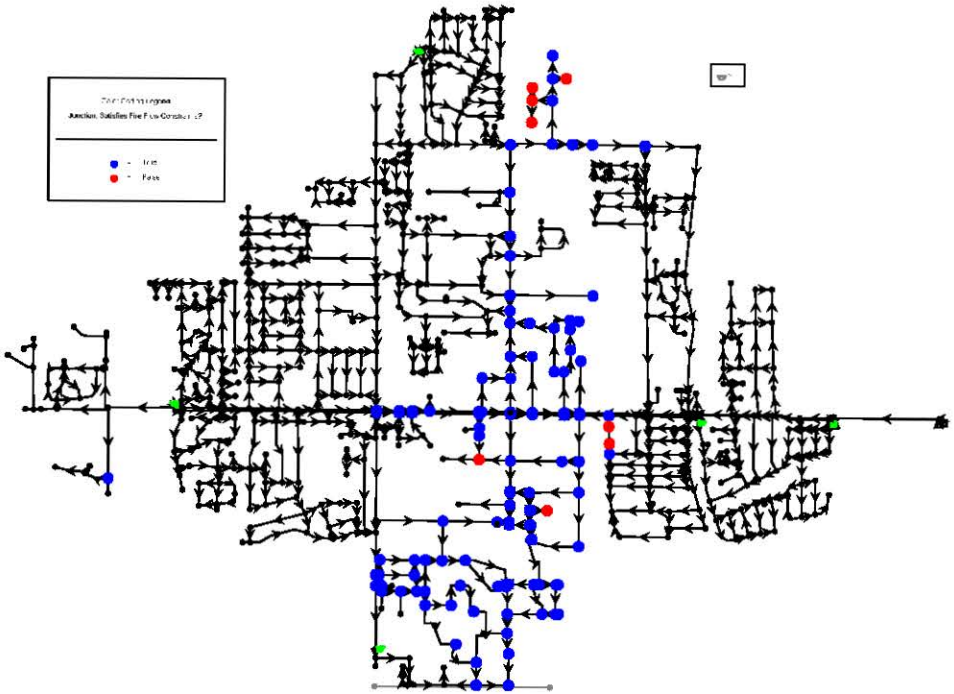
Notes:

1 Take pressures to the nearest 1 psi
2 Aim for a pressure drop of about 10 psi from static to residual
3 Wait until the gauge needle settles on a fixed range before taking a residual pressure reading
4 Once the gauge has settled on a fixed range, take the average value if the needle is bouncing

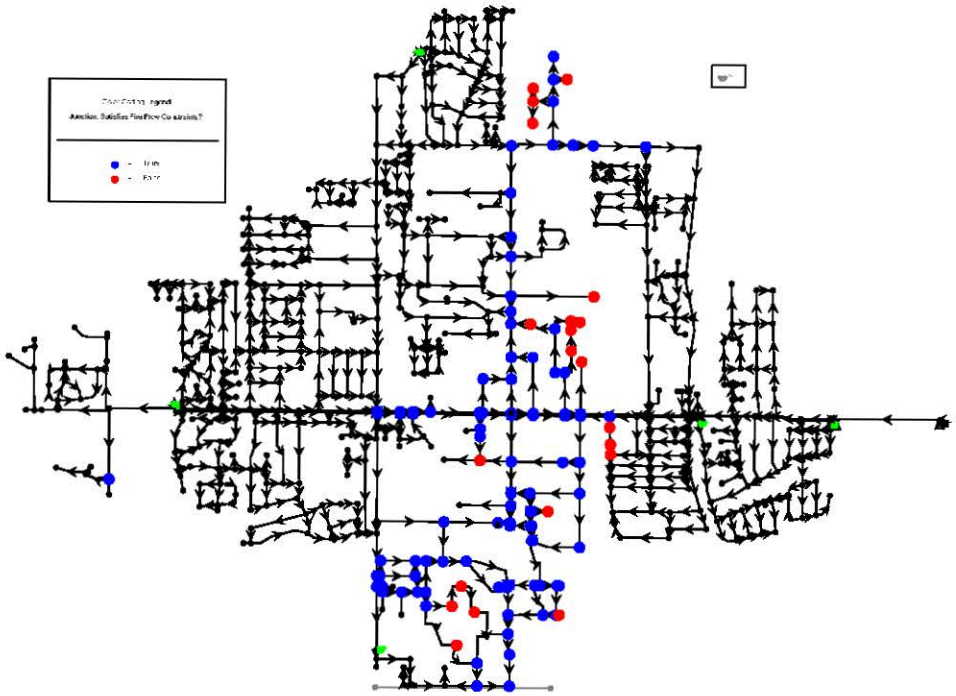
Scenario: 2012 Max Day



Scenario: 2015 Max Day



Scenario: 2015 Max Day



Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-569	149: Zone-2	True	2,983.50	1,500.00	25.0
J-587	149: Zone-2	True	2,921.50	1,507.24	25.0
J-590	149: Zone-2	True	2,857.63	1,507.24	25.0
J-589	149: Zone-2	True	2,693.13	1,507.24	35.8
J-588	149: Zone-2	True	3,021.22	1,507.24	25.0
J-292	149: Zone-2	True	2,293.49	1,507.11	25.0
J-291	149: Zone-2	True	2,135.76	1,503.42	28.4
J-290	149: Zone-2	True	2,038.81	1,500.00	28.8
J-457	149: Zone-2	True	1,987.47	1,512.58	31.5
J-289	149: Zone-2	True	2,119.28	1,500.00	28.5
J-293	149: Zone-2	True	2,273.20	1,507.94	30.5
J-596	149: Zone-2	True	2,399.66	1,507.94	27.9
J-591	149: Zone-2	True	2,434.75	1,507.94	25.0
J-592	149: Zone-2	True	1,957.96	1,507.94	26.8
J-593	149: Zone-2	True	1,825.04	1,507.94	25.0
J-594	149: Zone-2	True	1,565.54	1,507.94	26.2
J-595	149: Zone-2	True	2,137.48	1,507.94	25.0
J-252	149: Zone-2	True	2,969.87	1,514.79	25.0
J-253	149: Zone-2	True	2,476.35	1,527.25	28.3
J-254	149: Zone-2	True	2,119.22	1,525.56	25.0
J-255	149: Zone-2	True	1,510.49	1,517.64	31.5
J-256	149: Zone-2	True	1,501.14	1,517.48	32.3
J-257	149: Zone-2	True	2,009.23	1,528.98	25.0
J-258	149: Zone-2	True	2,326.32	1,529.22	38.9
J-259	149: Zone-2	True	2,973.64	1,514.03	25.0
J-260	149: Zone-2	True	2,967.98	1,512.90	25.0
J-261	149: Zone-2	True	2,513.67	1,502.85	25.0
J-262	149: Zone-2	True	2,289.90	1,501.93	25.0
J-263	149: Zone-2	True	2,365.99	1,501.09	29.9
J-264	149: Zone-2	True	2,416.24	1,503.26	30.9
J-265	149: Zone-2	True	2,227.49	1,504.02	28.9
J-266	149: Zone-2	True	2,375.55	1,504.46	32.7
J-267	149: Zone-2	True	2,169.68	1,504.86	30.7
J-268	149: Zone-2	True	1,615.59	1,505.35	50.8
J-269	149: Zone-2	True	1,846.62	1,507.64	52.1
J-271	149: Zone-2	True	2,967.61	1,500.00	25.0
J-272	149: Zone-2	True	2,968.14	1,532.80	25.0
J-273	149: Zone-2	True	2,969.63	1,512.54	25.0
J-274	149: Zone-2	True	2,972.72	1,521.30	25.0
J-275	149: Zone-2	True	2,867.03	1,523.19	25.5
J-276	149: Zone-2	True	2,733.25	1,530.30	32.3
J-277	149: Zone-2	True	2,496.54	1,508.60	25.0
J-278	149: Zone-2	True	2,746.85	1,507.56	25.0
J-279	149: Zone-2	True	2,411.26	1,507.19	25.0

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-281	149: Zone-2	True	2,563.14	1,506.47	31.2
J-282	149: Zone-2	True	2,447.37	1,503.05	26.8
J-283	149: Zone-2	True	1,655.12	1,500.00	52.0
J-285	149: Zone-2	True	2,311.03	1,502.81	25.0
J-286	149: Zone-2	True	2,259.89	1,500.00	25.0
J-287	149: Zone-2	True	2,224.36	1,500.00	25.7
J-288	149: Zone-2	True	1,943.32	1,512.58	33.5
J-294	149: Zone-2	True	2,887.93	1,501.17	25.0
J-295	149: Zone-2	True	2,031.92	1,503.94	51.8
J-337	149: Zone-2	True	2,201.32	1,500.00	25.0
J-342	149: Zone-2	True	2,393.84	1,507.11	25.0
J-343	149: Zone-2	True	1,996.79	1,507.11	42.1
J-344	149: Zone-2	True	2,404.36	1,507.11	37.1
J-345	149: Zone-2	True	2,577.04	1,507.11	25.0
J-346	149: Zone-2	True	2,826.36	1,500.00	25.0
J-347	149: Zone-2	True	2,581.16	1,500.00	41.1
J-352	149: Zone-2	True	2,967.70	1,506.07	25.0
J-353	149: Zone-2	True	2,122.78	1,500.00	25.0
J-368	149: Zone-2	True	2,279.88	1,500.00	42.1
J-380	149: Zone-2	True	3,032.77	1,500.00	25.0
J-386	149: Zone-2	True	3,047.47	1,500.00	25.0
J-387	149: Zone-2	True	3,040.06	1,500.00	25.0
J-391	149: Zone-2	True	3,005.61	1,500.00	25.0
J-393	149: Zone-2	True	3,033.34	1,500.00	25.0
J-458	149: Zone-2	True	1,897.10	1,500.00	28.4
J-546	149: Zone-2	True	2,533.91	1,507.11	26.6
J-556	149: Zone-2	True	5,000.00	1,500.00	54.0
J-557	149: Zone-2	True	2,967.59	1,500.00	25.0
J-558	149: Zone-2	True	2,967.24	1,500.00	25.0
J-562	149: Zone-2	True	2,681.53	1,507.24	33.3
J-563	149: Zone-2	True	2,885.74	1,507.24	25.0
J-564	149: Zone-2	True	2,823.13	1,507.24	29.0
J-565	149: Zone-2	True	2,824.28	1,507.24	25.0
J-566	149: Zone-2	True	2,709.49	1,507.24	25.0
J-567	149: Zone-2	True	2,811.13	1,507.24	25.0
J-568	149: Zone-2	True	2,675.58	1,500.00	25.0
J-579	149: Zone-2	True	5,000.00	1,500.00	54.0
J-738	149: Zone-2	True	1,791.44	1,500.00	25.4
J-739	149: Zone-2	True	1,849.43	1,500.00	25.0
J-280	149: Zone-2	False	1,178.73	1,527.17	51.7
J-284	149: Zone-2	False	1,493.24	1,506.07	52.4
J-336	149: Zone-2	False	1,351.32	1,501.77	52.8
J-736	149: Zone-2	False	1,370.29	1,500.00	32.3

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-569	149: Zone-2	True	2,977.80	1,500.00	25.0
J-587	149: Zone-2	True	2,923.80	1,507.24	25.0
J-590	149: Zone-2	True	2,864.54	1,507.24	25.0
J-589	149: Zone-2	True	2,692.57	1,507.24	35.9
J-588	149: Zone-2	True	3,021.34	1,507.24	25.0
J-292	149: Zone-2	True	2,081.85	1,507.11	25.0
J-291	149: Zone-2	True	1,963.94	1,503.42	26.7
J-290	149: Zone-2	True	1,849.53	1,500.00	27.4
J-457	149: Zone-2	True	1,790.12	1,512.58	29.8
J-289	149: Zone-2	True	1,855.83	1,500.00	28.6
J-293	149: Zone-2	True	1,879.54	1,507.94	25.2
J-596	149: Zone-2	True	1,799.73	1,507.94	25.0
J-591	149: Zone-2	True	1,740.86	1,507.94	25.0
J-592	149: Zone-2	True	1,531.11	1,507.94	25.1
J-595	149: Zone-2	True	1,582.80	1,507.94	25.0
J-252	149: Zone-2	True	2,958.33	1,514.79	25.0
J-253	149: Zone-2	True	2,475.38	1,527.25	28.3
J-254	149: Zone-2	True	2,085.40	1,525.56	25.0
J-255	149: Zone-2	True	1,501.01	1,517.64	31.5
J-257	149: Zone-2	True	1,987.53	1,528.98	25.0
J-258	149: Zone-2	True	2,333.85	1,529.22	38.7
J-259	149: Zone-2	True	2,963.69	1,514.03	25.0
J-260	149: Zone-2	True	2,954.16	1,512.90	25.0
J-261	149: Zone-2	True	2,511.54	1,502.85	25.0
J-262	149: Zone-2	True	2,294.81	1,501.93	25.0
J-263	149: Zone-2	True	2,361.51	1,501.09	30.0
J-264	149: Zone-2	True	2,408.43	1,503.26	31.6
J-265	149: Zone-2	True	2,212.17	1,504.02	31.6
J-266	149: Zone-2	True	2,370.60	1,504.46	33.8
J-267	149: Zone-2	True	2,155.15	1,504.86	33.3
J-268	149: Zone-2	True	1,620.86	1,505.35	50.9
J-269	149: Zone-2	True	1,853.33	1,507.64	52.2
J-271	149: Zone-2	True	2,953.07	1,500.00	25.0
J-272	149: Zone-2	True	2,954.43	1,532.80	25.0
J-273	149: Zone-2	True	2,957.23	1,512.54	25.0
J-274	149: Zone-2	True	2,962.39	1,521.30	25.0
J-275	149: Zone-2	True	2,866.23	1,523.19	25.0
J-276	149: Zone-2	True	2,729.21	1,530.30	30.7
J-277	149: Zone-2	True	2,487.97	1,508.60	25.0
J-278	149: Zone-2	True	2,612.33	1,507.56	25.0
J-279	149: Zone-2	True	2,215.39	1,507.19	25.0
J-281	149: Zone-2	True	2,561.39	1,506.47	31.2
J-282	149: Zone-2	True	2,445.21	1,503.05	26.8
J-283	149: Zone-2	True	1,660.23	1,500.00	51.6

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-285	149: Zone-2	True	2,073.29	1,502.81	25.0
J-286	149: Zone-2	True	2,027.51	1,500.00	25.0
J-287	149: Zone-2	True	1,988.66	1,500.00	25.0
J-288	149: Zone-2	True	1,787.81	1,512.58	30.5
J-294	149: Zone-2	True	2,845.33	1,501.17	25.0
J-295	149: Zone-2	True	2,037.71	1,503.94	51.7
J-337	149: Zone-2	True	2,274.13	1,500.00	25.0
J-342	149: Zone-2	True	2,390.24	1,507.11	25.0
J-343	149: Zone-2	True	2,000.81	1,507.11	42.1
J-344	149: Zone-2	True	2,399.97	1,507.11	37.0
J-345	149: Zone-2	True	2,571.89	1,507.11	25.0
J-346	149: Zone-2	True	2,821.50	1,500.00	25.0
J-347	149: Zone-2	True	2,577.17	1,500.00	39.2
J-352	149: Zone-2	True	2,953.24	1,506.07	25.0
J-353	149: Zone-2	True	2,005.24	1,500.00	25.0
J-368	149: Zone-2	True	2,289.58	1,500.00	42.2
J-380	149: Zone-2	True	3,030.24	1,500.00	25.0
J-386	149: Zone-2	True	3,045.44	1,500.00	25.0
J-387	149: Zone-2	True	3,038.55	1,500.00	25.0
J-391	149: Zone-2	True	3,001.31	1,500.00	25.0
J-393	149: Zone-2	True	3,032.27	1,500.00	25.0
J-458	149: Zone-2	True	1,749.98	1,500.00	26.7
J-546	149: Zone-2	True	2,529.15	1,507.11	26.7
J-556	149: Zone-2	True	5,000.00	1,500.00	54.3
J-557	149: Zone-2	True	2,953.04	1,500.00	25.0
J-558	149: Zone-2	True	2,952.68	1,500.00	25.0
J-562	149: Zone-2	True	2,680.98	1,507.24	33.4
J-563	149: Zone-2	True	2,888.60	1,507.24	25.0
J-564	149: Zone-2	True	2,822.54	1,507.24	29.1
J-565	149: Zone-2	True	2,825.38	1,507.24	25.0
J-566	149: Zone-2	True	2,726.54	1,507.24	25.0
J-567	149: Zone-2	True	2,821.26	1,507.24	25.0
J-568	149: Zone-2	True	2,611.34	1,500.00	25.0
J-579	149: Zone-2	True	5,000.00	1,500.00	54.3
J-593	149: Zone-2	False	1,437.08	1,507.94	25.0
J-594	149: Zone-2	False	1,295.65	1,507.94	25.9
J-256	149: Zone-2	False	1,492.26	1,517.48	32.2
J-280	149: Zone-2	False	1,181.03	1,527.17	51.1
J-284	149: Zone-2	False	1,498.25	1,506.07	52.2
J-336	149: Zone-2	False	1,118.02	1,501.77	48.8
J-736	149: Zone-2	False	1,175.63	1,500.00	30.5
J-738	149: Zone-2	False	1,426.90	1,500.00	25.0
J-739	149: Zone-2	False	1,361.78	1,500.00	25.0

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-7	148: Zone-1	True	4,111.27	3,730.94	25.0
J-8	148: Zone-1	True	4,887.21	3,549.48	26.2
J-9	148: Zone-1	True	6,000.00	3,523.71	31.2
J-10	148: Zone-1	True	6,000.00	3,500.72	31.3
J-12	148: Zone-1	True	4,086.75	3,500.00	38.8
J-14	148: Zone-1	True	6,000.00	3,500.00	31.9
J-15	148: Zone-1	True	6,000.00	3,521.82	32.0
J-16	148: Zone-1	True	6,000.00	3,500.00	31.7
J-19	148: Zone-1	True	6,000.00	3,561.98	30.1
J-21	148: Zone-1	True	6,000.00	3,519.33	37.8
J-22	148: Zone-1	True	5,506.41	3,517.20	25.0
J-192	148: Zone-1	True	5,597.88	3,566.88	25.0
J-194	148: Zone-1	True	3,697.55	3,523.79	25.0
J-195	148: Zone-1	True	4,129.71	3,540.88	33.5
J-211	148: Zone-1	True	4,322.38	3,550.76	25.0
J-219	148: Zone-1	True	4,845.61	3,509.20	29.6
J-220	148: Zone-1	True	4,165.67	3,500.84	25.0
J-221	148: Zone-1	True	5,038.66	3,507.76	34.2
J-222	148: Zone-1	True	5,917.53	3,534.81	34.5
J-223	148: Zone-1	True	6,000.00	3,518.25	34.0
J-224	148: Zone-1	True	6,000.00	3,513.14	41.8
J-225	148: Zone-1	True	6,000.00	3,502.01	34.6
J-226	148: Zone-1	True	6,000.00	3,521.82	35.0
J-231	148: Zone-1	True	5,783.67	3,545.78	38.8
J-232	148: Zone-1	True	6,000.00	3,537.42	39.6
J-233	148: Zone-1	True	6,000.00	3,507.88	37.3
J-234	148: Zone-1	True	5,342.60	3,552.97	25.0
J-235	148: Zone-1	True	6,000.00	3,500.00	28.2
J-240	148: Zone-1	True	3,968.65	3,501.49	32.4
J-241	148: Zone-1	True	5,415.44	3,500.00	25.0
J-242	148: Zone-1	True	5,257.26	3,500.00	25.0
J-317	148: Zone-1	True	6,000.00	3,524.68	42.5
J-325	148: Zone-1	True	6,000.00	3,504.30	39.5
J-338	148: Zone-1	True	6,000.00	3,503.00	25.2
J-339	148: Zone-1	True	5,831.62	3,503.00	28.9
J-340	148: Zone-1	True	5,462.24	3,503.00	29.7
FH X-4	148: Zone-1	True	5,334.46	3,500.00	25.0
J-441	148: Zone-1	True	4,216.43	3,500.00	25.0
J-470	148: Zone-1	True	6,000.00	3,500.00	42.5
J-472	148: Zone-1	True	6,000.00	3,500.00	38.1
J-506	148: Zone-1	True	6,000.00	3,500.00	30.1
J-513	148: Zone-1	True	6,000.00	3,500.00	36.0
J-514	148: Zone-1	True	6,000.00	3,500.00	37.1
J-515	148: Zone-1	True	6,000.00	3,500.00	36.9

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-520	148: Zone-1	True	6,000.00	3,505.24	33.7
J-521	148: Zone-1	True	6,000.00	3,505.24	33.3
J-522	148: Zone-1	True	5,742.60	3,505.24	31.5
J-523	148: Zone-1	True	5,532.07	3,500.00	28.8
J-524	148: Zone-1	True	4,569.71	3,500.00	27.3
J-526	148: Zone-1	True	6,000.00	3,500.00	33.5
J-527	148: Zone-1	True	6,000.00	3,500.00	33.3
J-528	148: Zone-1	True	6,000.00	3,500.00	33.3
J-529	148: Zone-1	True	6,000.00	3,500.00	31.2
J-533	148: Zone-1	True	3,825.69	3,500.00	35.7
J-634	148: Zone-1	True	5,834.95	3,500.00	34.2
J-643	148: Zone-1	True	6,000.00	3,500.00	39.5
J-644	148: Zone-1	True	5,314.94	3,500.00	25.0
J-650	148: Zone-1	True	4,552.88	3,500.00	25.0
J-655	148: Zone-1	True	5,239.77	3,500.00	25.2
J-656	148: Zone-1	True	5,605.26	3,505.24	25.0
J-657	148: Zone-1	True	3,815.65	3,500.00	57.6
J-658	148: Zone-1	True	5,888.54	3,500.00	25.0
J-659	148: Zone-1	True	4,486.80	3,500.00	50.1
J-660	148: Zone-1	True	6,000.00	3,500.00	33.7
J-661	148: Zone-1	True	3,638.25	3,500.00	60.8
J-662	148: Zone-1	True	6,000.00	3,500.00	33.2
J-667	148: Zone-1	True	6,000.00	3,500.00	36.4
J-717	148: Zone-1	True	6,000.00	3,500.00	33.6
J-757	148: Zone-1	True	4,966.04	3,500.00	35.8
J-758	148: Zone-1	True	3,915.62	3,500.00	34.6
J-765	148: Zone-1	True	5,021.68	3,500.00	25.0
J-785	148: Zone-1	True	3,803.90	3,500.00	25.0
J-787	148: Zone-1	True	6,000.00	3,500.00	28.5
J-13	148: Zone-1	False	3,185.57	3,500.00	26.3
J-218	148: Zone-1	False	1,406.90	3,503.54	33.6
J-236	148: Zone-1	False	1,138.88	3,515.55	50.0
J-237	148: Zone-1	False	1,521.07	3,509.28	25.1
J-238	148: Zone-1	False	1,027.99	3,503.82	57.8
J-320	148: Zone-1	False	3,303.75	3,500.60	67.4
J-324	148: Zone-1	False	2,555.37	3,502.10	71.3
J-341	148: Zone-1	False	2,995.93	3,503.00	44.4
J-500	148: Zone-1	False	2,442.43	3,503.15	72.0
J-519	148: Zone-1	False	3,335.44	3,500.00	38.4
J-530	148: Zone-1	False	3,496.02	3,500.00	32.0
J-531	148: Zone-1	False	3,175.07	3,500.00	40.0
J-532	148: Zone-1	False	3,231.33	3,500.00	38.3
J-584	148: Zone-1	False	3,068.42	3,503.00	25.4
J-585	148: Zone-1	False	2,336.96	3,503.00	52.5

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-586	148: Zone-1	False	2,931.78	3,503.00	39.1
J-651	148: Zone-1	False	2,753.05	3,502.10	32.8
J-652	148: Zone-1	False	2,807.92	3,502.10	39.1
J-653	148: Zone-1	False	2,927.73	3,502.10	42.3
J-733	148: Zone-1	False	1,507.70	3,500.00	25.1
J-767	148: Zone-1	False	3,165.90	3,500.00	25.2
J-768	148: Zone-1	False	3,403.48	3,500.00	25.1
J-769	148: Zone-1	False	2,930.42	3,500.00	25.1
J-770	148: Zone-1	False	2,682.24	3,500.00	35.7
J-1	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-2	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-3	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-4	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-5	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-6	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-17	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-18	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-20	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-23	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-24	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-25	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-26	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-27	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-30	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-31	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-32	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-33	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-35	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-36	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-37	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-38	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-39	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-40	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-41	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-42	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-43	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-44	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-45	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-46	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-47	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-48	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-49	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-50	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-51	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-52	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-53	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-54	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-55	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-56	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-57	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-58	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-59	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-60	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-61	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-62	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-63	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-64	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-65	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-66	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-67	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-68	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-69	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-70	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-71	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-72	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-73	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
j-74	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-75	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-76	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-77	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-79	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-80	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-81	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-82	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-83	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-84	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-85	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-86	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-87	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-88	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-89	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-90	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-91	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-92	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-93	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-94	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-95	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-96	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-97	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-98	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-99	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-100	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-101	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-102	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-103	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-104	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-105	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-106	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-107	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-108	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-109	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-110	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-111	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-112	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-113	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-114	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-115	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-116	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-117	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-118	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-119	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-120	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-121	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-122	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-123	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-124	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-125	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-126	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-127	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-128	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-129	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-130	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-131	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-132	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-133	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-134	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-135	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-136	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-137	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-138	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-139	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-140	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-141	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-142	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-143	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-144	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-145	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-146	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-147	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-148	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-149	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-150	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-151	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-152	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-153	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-154	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-155	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-156	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-157	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-158	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-159	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-160	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-161	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-162	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-163	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-164	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-165	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-166	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-168	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-169	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-170	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-171	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-172	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-173	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-174	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-175	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-176	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-177	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-178	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-179	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-180	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-181	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-182	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-183	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-184	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-185	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-186	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-187	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-189	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-190	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-191	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-196	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-197	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-198	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-199	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-200	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-201	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-202	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-203	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-204	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-205	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-206	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-207	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-208	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-209	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-210	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-212	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-213	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-214	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-215	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-216	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-217	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-227	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-228	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-229	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-239	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-243	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-244	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-245	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-246	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-247	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-248	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-249	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-251	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-252	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-253	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-254	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-255	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-256	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-257	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-258	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-259	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-260	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-261	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-262	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-263	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-264	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-265	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-266	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-267	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-268	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-269	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-270	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-271	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-272	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-273	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-274	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-275	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-276	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-277	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-278	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-279	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-280	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-281	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-282	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-283	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-284	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-285	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-286	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-287	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-288	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-289	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-290	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-291	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-292	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-293	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-294	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-295	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-297	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-298	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-299	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-300	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-301	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-302	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-303	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-304	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-305	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-306	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-307	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-308	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-309	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-310	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-311	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-312	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-313	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-314	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-315	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-318	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-323	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-327	1972: Zone - Transmission, Suction	(N/A)	(N/A)	(N/A)	(N/A)
J-328	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-329	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-330	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-331	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-332	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-333	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-334	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-335	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-336	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-337	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-342	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-343	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-344	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-345	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-346	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-347	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-348	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-349	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-350	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-352	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-351	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-353	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-354	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-355	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-356	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-357	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-358	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-359	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-360	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-361	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-363	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-364	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-365	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-366	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-367	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-368	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-369	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
FH J-31	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
FH G-5	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
FH J-1	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-380	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-382	1972: Zone - Transmission, Suction	(N/A)	(N/A)	(N/A)	(N/A)
J-386	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-387	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-388	1972: Zone - Transmission, Suction	(N/A)	(N/A)	(N/A)	(N/A)
J-389	1972: Zone - Transmission, Suction	(N/A)	(N/A)	(N/A)	(N/A)
J-390	1972: Zone - Transmission, Suction	(N/A)	(N/A)	(N/A)	(N/A)
J-391	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-392	1972: Zone - Transmission, Suction	(N/A)	(N/A)	(N/A)	(N/A)
J-393	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-394	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-395	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-396	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-397	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-398	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-399	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-400	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-401	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-402	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-403	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-404	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-405	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-406	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-407	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-408	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-409	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-411	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-412	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-413	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-414	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-415	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-416	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-417	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-418	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-419	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-420	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-423	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-424	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-425	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-426	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-427	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-428	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-429	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-430	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-431	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-433	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-434	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-435	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-436	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-437	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-439	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-440	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-442	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-443	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-444	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-445	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-446	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-447	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-449	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-450	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-451	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-453	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-454	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-455	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-456	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-457	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-458	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-459	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-460	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-461	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-462	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-463	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-464	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-467	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-468	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-469	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-471	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-474	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-475	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-476	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-477	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-478	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-480	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-481	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-482	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-483	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-485	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-486	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-487	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-488	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-489	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-490	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-491	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-492	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-493	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-495	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-496	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-498	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-499	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-501	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-503	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-505	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-508	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-511	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-516	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-517	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-518	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-525	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-534	<None>	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-535	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-536	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-537	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-538	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-539	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-540	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-541	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-542	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-543	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-544	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-545	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-546	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-547	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-548	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-549	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-550	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-551	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-552	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-553	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-554	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-555	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-556	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-557	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-558	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-559	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-561	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-562	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-563	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-564	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-565	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-566	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-567	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-568	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-569	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-571	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-573	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-574	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-575	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-576	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-577	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-578	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-579	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-580	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-581	<None>	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-582	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-583	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-587	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-588	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-589	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-590	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-591	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-592	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-593	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-594	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-595	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-596	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-597	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-598	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-599	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-600	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-601	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-602	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-603	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-604	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-605	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-606	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-607	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-608	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-609	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-610	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-611	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-612	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-613	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-614	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-615	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-616	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-617	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-618	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-619	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-620	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-621	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-622	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-623	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-624	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-625	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-626	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-633	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-635	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-636	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-638	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-639	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-640	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-641	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-642	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-646	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-647	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-648	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-649	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-654	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-663	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-664	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-666	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-671	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-672	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-673	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-674	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-675	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-676	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-677	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-678	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-679	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-680	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-681	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-682	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-683	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-684	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-685	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-686	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-687	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-688	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-689	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-690	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-691	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-692	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-693	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-694	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-695	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-696	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-697	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-698	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-699	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-700	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-701	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-702	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-703	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-704	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-705	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-706	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-707	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-708	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-709	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-711	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-712	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-713	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-714	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-715	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-716	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-718	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-719	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-720	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-721	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-722	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-723	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-724	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-725	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-726	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-727	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-728	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-729	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-730	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-731	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-732	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-734	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-735	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-736	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-737	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-738	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-739	149: Zone-2	(N/A)	(N/A)	(N/A)	(N/A)
J-740	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-741	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-742	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-743	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-744	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-745	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-746	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-747	<None>	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-748	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-749	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-750	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-751	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-752	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-753	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-754	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-755	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-756	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-759	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-760	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-761	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-762	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-763	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-764	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-766	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-771	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-772	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-773	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-774	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-775	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-776	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-777	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-778	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-779	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-780	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-781	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-782	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-784	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-786	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-789	<None>	(N/A)	(N/A)	(N/A)	(N/A)
J-791	<None>	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-320	148: Zone-1	True	5,191.19	3,500.60	47.3
J-340	148: Zone-1	True	6,000.00	3,503.00	38.2
J-584	148: Zone-1	True	5,355.39	3,503.00	26.3
J-585	148: Zone-1	True	4,983.00	3,503.00	36.2
J-586	148: Zone-1	True	4,774.00	3,503.00	40.6
J-341	148: Zone-1	True	3,562.14	3,503.00	65.2
J-644	148: Zone-1	True	5,653.18	3,500.00	25.0
J-651	148: Zone-1	True	5,030.41	3,502.10	28.4
J-652	148: Zone-1	True	3,802.97	3,502.10	50.0
J-653	148: Zone-1	True	3,718.72	3,502.10	52.1
J-650	148: Zone-1	True	5,288.99	3,500.00	25.0
J-441	148: Zone-1	True	4,789.61	3,500.00	25.0
J-240	148: Zone-1	True	4,430.58	3,501.49	34.4
J-634	148: Zone-1	True	5,964.57	3,500.00	35.3
J-643	148: Zone-1	True	6,000.00	3,500.00	40.9
J-655	148: Zone-1	True	5,395.56	3,500.00	25.2
J-659	148: Zone-1	True	4,553.45	3,500.00	50.8
J-658	148: Zone-1	True	6,000.00	3,500.00	25.8
J-660	148: Zone-1	True	6,000.00	3,500.00	35.9
J-656	148: Zone-1	True	5,741.88	3,505.24	25.0
J-657	148: Zone-1	True	3,858.77	3,500.00	58.2
J-661	148: Zone-1	True	3,664.63	3,500.00	61.5
J-662	148: Zone-1	True	6,000.00	3,500.00	35.2
J-667	148: Zone-1	True	6,000.00	3,500.00	38.2
J-7	148: Zone-1	True	4,466.20	3,730.94	25.0
J-8	148: Zone-1	True	5,202.97	3,549.48	27.6
J-9	148: Zone-1	True	6,000.00	3,523.71	33.7
J-10	148: Zone-1	True	6,000.00	3,500.72	33.8
J-12	148: Zone-1	True	4,718.86	3,500.00	36.8
J-13	148: Zone-1	True	4,684.10	3,500.00	26.3
J-14	148: Zone-1	True	6,000.00	3,500.00	34.1
J-15	148: Zone-1	True	6,000.00	3,521.82	34.2
J-16	148: Zone-1	True	6,000.00	3,500.00	34.0
J-19	148: Zone-1	True	6,000.00	3,561.98	32.5
J-21	148: Zone-1	True	6,000.00	3,519.33	39.4
J-22	148: Zone-1	True	6,000.00	3,517.20	32.8
J-192	148: Zone-1	True	6,000.00	3,566.88	27.2
J-194	148: Zone-1	True	4,717.53	3,523.79	25.0
J-195	148: Zone-1	True	4,581.56	3,540.88	34.1
J-211	148: Zone-1	True	4,629.97	3,550.76	25.0
J-218	148: Zone-1	True	4,563.66	3,503.54	25.0
J-219	148: Zone-1	True	5,307.15	3,509.20	29.9
J-220	148: Zone-1	True	4,488.65	3,500.84	25.0
J-221	148: Zone-1	True	5,697.82	3,507.76	33.0

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-222	148: Zone-1	True	6,000.00	3,534.81	36.3
J-223	148: Zone-1	True	6,000.00	3,518.25	35.6
J-224	148: Zone-1	True	6,000.00	3,513.14	42.9
J-225	148: Zone-1	True	6,000.00	3,502.01	36.1
J-226	148: Zone-1	True	6,000.00	3,521.82	36.5
J-231	148: Zone-1	True	5,856.81	3,545.78	39.2
J-232	148: Zone-1	True	6,000.00	3,537.42	41.1
J-233	148: Zone-1	True	6,000.00	3,507.88	38.9
J-234	148: Zone-1	True	5,445.19	3,552.97	25.0
J-235	148: Zone-1	True	6,000.00	3,500.00	35.9
J-236	148: Zone-1	True	4,620.57	3,515.55	38.8
J-237	148: Zone-1	True	5,557.61	3,509.28	39.6
J-238	148: Zone-1	True	4,542.04	3,503.82	56.2
J-241	148: Zone-1	True	5,968.08	3,500.00	25.0
J-242	148: Zone-1	True	5,776.41	3,500.00	25.0
J-317	148: Zone-1	True	6,000.00	3,524.68	43.6
J-325	148: Zone-1	True	6,000.00	3,504.30	40.9
J-338	148: Zone-1	True	6,000.00	3,503.00	36.9
J-339	148: Zone-1	True	6,000.00	3,503.00	37.6
FH X-4	148: Zone-1	True	5,870.37	3,500.00	25.0
J-470	148: Zone-1	True	6,000.00	3,500.00	43.6
J-472	148: Zone-1	True	6,000.00	3,500.00	39.7
J-500	148: Zone-1	True	4,293.82	3,503.15	55.2
J-506	148: Zone-1	True	6,000.00	3,500.00	32.6
J-513	148: Zone-1	True	6,000.00	3,500.00	37.8
J-514	148: Zone-1	True	6,000.00	3,500.00	38.7
J-515	148: Zone-1	True	6,000.00	3,500.00	38.6
J-519	148: Zone-1	True	3,733.79	3,500.00	41.4
J-520	148: Zone-1	True	6,000.00	3,505.24	35.8
J-521	148: Zone-1	True	6,000.00	3,505.24	35.3
J-522	148: Zone-1	True	6,000.00	3,505.24	32.6
J-523	148: Zone-1	True	6,000.00	3,500.00	31.9
J-524	148: Zone-1	True	6,000.00	3,500.00	26.4
J-526	148: Zone-1	True	6,000.00	3,500.00	35.6
J-527	148: Zone-1	True	6,000.00	3,500.00	35.2
J-528	148: Zone-1	True	6,000.00	3,500.00	35.0
J-529	148: Zone-1	True	6,000.00	3,500.00	33.7
J-530	148: Zone-1	True	3,937.08	3,500.00	33.4
J-532	148: Zone-1	True	3,550.39	3,500.00	40.7
J-533	148: Zone-1	True	4,116.12	3,500.00	35.2
J-717	148: Zone-1	True	6,000.00	3,500.00	35.5
J-733	148: Zone-1	True	4,446.07	3,500.00	42.5
J-767	148: Zone-1	True	4,803.74	3,500.00	25.3
J-768	148: Zone-1	True	4,817.63	3,500.00	25.5

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-769	148: Zone-1	True	4,869.58	3,500.00	25.2
J-770	148: Zone-1	True	3,976.89	3,500.00	47.4
J-757	148: Zone-1	True	5,586.53	3,500.00	25.7
J-758	148: Zone-1	True	4,676.20	3,500.00	25.8
J-765	148: Zone-1	True	5,622.10	3,500.00	25.3
J-784	148: Zone-1	True	5,623.98	3,500.00	25.0
J-785	148: Zone-1	True	4,418.40	3,500.00	25.0
J-786	148: Zone-1	True	6,000.00	3,500.00	29.5
J-787	148: Zone-1	True	6,000.00	3,500.00	35.8
J-531	148: Zone-1	False	3,486.65	3,500.00	42.4
J-323	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-583	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-213	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-154	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-598	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-599	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-600	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-601	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-597	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-603	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-604	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-487	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-605	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-606	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-610	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-609	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-607	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-608	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-549	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-614	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-613	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-612	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-615	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-611	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-413	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-616	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-617	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-618	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-621	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-620	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-623	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-624	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-619	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-622	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-602	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-636	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-633	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-646	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-647	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-649	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-648	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-626	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-625	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-635	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-638	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-639	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-641	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-640	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-642	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-654	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-663	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-664	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-666	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-701	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-704	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-706	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-708	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-711	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-671	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-672	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-683	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-693	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-690	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-703	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-705	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-707	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-709	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-700	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-702	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-679	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-680	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-694	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-684	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-685	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-687	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-686	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-695	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-688	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-692	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-689	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-691	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-677	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-547	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-676	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-698	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-699	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-1	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-2	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-3	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-4	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-5	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-6	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-17	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-18	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-20	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-23	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-24	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-25	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-26	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-27	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-30	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-31	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-32	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-33	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-35	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-36	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-37	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-38	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-39	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-40	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-41	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-42	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-43	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-44	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-45	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-46	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-47	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-48	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-49	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-50	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-51	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-52	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-53	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-54	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-55	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-56	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-57	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-58	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-59	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-60	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-61	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-62	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-63	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-64	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-65	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-66	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-67	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-68	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-69	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-70	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-71	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-72	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-73	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
j-74	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-75	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-76	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-77	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-79	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-80	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-81	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-82	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-83	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-84	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-85	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-86	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-87	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-88	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-89	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-90	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-91	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-92	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-93	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-94	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-95	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-96	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-97	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-98	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-99	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-100	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-101	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-102	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-103	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-104	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-105	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-106	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-107	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-108	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-109	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-110	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-111	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-112	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-113	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-114	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-115	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-116	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-117	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-118	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-119	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-120	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-121	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-122	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-123	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-124	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-125	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-126	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-127	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-128	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-129	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-130	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-131	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-132	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-133	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-134	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-135	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-136	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-137	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-138	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-139	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-140	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-141	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-142	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-143	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-144	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-145	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-146	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-147	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-148	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-149	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-150	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-151	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-152	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-153	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-155	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-156	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-157	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-158	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-159	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-160	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-161	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-162	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-163	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-164	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-165	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-166	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-168	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-169	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-170	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-171	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-172	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-173	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-174	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-175	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-176	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-177	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-178	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-179	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-180	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-181	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-182	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-183	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-184	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-185	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-186	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-187	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-189	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-190	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-191	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-196	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-197	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-198	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-199	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-200	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-201	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-202	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-203	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-204	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-205	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-206	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-207	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-208	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-209	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-210	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-212	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-214	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-215	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-216	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-217	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-227	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-228	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-229	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-239	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-243	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-244	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-245	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-246	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-247	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-248	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-249	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-251	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-270	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-297	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-298	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-299	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-300	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-301	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-302	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-303	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-304	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-305	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-306	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-307	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-308	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-309	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-310	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-311	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-312	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-313	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-314	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-315	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-318	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-324	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-328	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-329	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-330	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-331	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-332	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-333	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-334	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-335	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-348	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-349	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-350	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-351	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-354	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-355	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-356	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-357	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-358	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-359	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-360	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-361	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-363	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-364	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-365	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-366	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-367	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-369	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
FH J-31	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
FH G-5	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
FH J-1	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-394	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-395	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-396	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-397	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-398	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-399	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-400	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-401	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-402	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-403	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-404	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-405	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-406	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-407	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-408	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-409	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-411	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-412	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-414	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-415	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-416	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-417	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-418	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-419	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-420	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-423	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-424	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-425	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-426	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-427	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-428	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-429	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-430	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-431	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-433	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-434	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-435	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-436	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-437	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-439	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-440	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-442	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-443	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-444	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-445	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-446	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-447	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-449	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-450	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-451	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-453	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-454	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-455	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-456	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-459	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-460	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-461	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-462	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-463	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-464	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-467	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-468	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-469	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-471	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-474	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-475	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-476	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-478	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-480	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-481	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-482	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-483	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-485	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-486	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-488	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-489	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-490	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-491	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-492	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-493	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-495	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-496	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-498	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-499	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-501	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-503	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-505	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-508	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-511	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-516	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-517	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-518	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-525	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-537	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-538	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-539	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-540	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-541	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-542	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-543	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-544	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-545	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-548	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-550	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-551	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-552	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-553	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-554	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-555	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-573	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-574	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-575	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-576	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-577	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-582	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-673	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-674	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-675	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-678	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-696	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-697	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-716	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-681	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-682	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-718	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-719	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-721	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-720	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-728	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-727	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-726	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-725	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-724	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-723	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-722	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-732	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-731	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-730	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-734	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-759	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-764	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-763	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-762	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-761	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-760	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-775	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-777	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-778	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-776	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-782	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-766	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-323	148: Zone-1	True	5,000.00	1,500.00	50.0
J-583	148: Zone-1	True	4,272.81	1,500.00	34.1
J-213	148: Zone-1	True	4,005.16	1,552.29	42.7
J-320	148: Zone-1	True	5,000.00	1,500.60	50.1
J-340	148: Zone-1	True	5,000.00	1,503.00	53.1
J-584	148: Zone-1	True	5,000.00	1,503.00	34.3
J-585	148: Zone-1	True	4,983.22	1,503.00	36.2
J-586	148: Zone-1	True	4,774.14	1,503.00	40.6
J-341	148: Zone-1	True	3,562.13	1,503.00	65.2
J-154	148: Zone-1	True	3,132.40	1,500.00	31.2
J-598	148: Zone-1	True	3,049.67	1,504.82	45.1
J-599	148: Zone-1	True	3,420.03	1,504.82	31.0
J-600	148: Zone-1	True	3,242.41	1,504.82	44.9
J-601	148: Zone-1	True	3,663.77	1,504.82	31.7
J-597	148: Zone-1	True	3,523.90	1,504.82	42.0
J-603	148: Zone-1	True	3,977.76	1,507.34	38.7
J-604	148: Zone-1	True	3,839.34	1,508.39	26.5
J-487	148: Zone-1	True	3,269.72	1,508.39	49.2
J-605	148: Zone-1	True	3,754.73	1,508.39	29.8
J-606	148: Zone-1	True	3,738.87	1,509.44	26.6
J-610	148: Zone-1	True	3,308.38	1,509.44	33.4
J-609	148: Zone-1	True	3,328.32	1,509.44	32.6
J-607	148: Zone-1	True	3,755.88	1,509.44	26.2
J-608	148: Zone-1	True	3,805.85	1,509.44	27.8
J-549	148: Zone-1	True	3,625.01	1,500.00	26.9
J-614	148: Zone-1	True	1,918.60	1,502.99	26.4
J-613	148: Zone-1	True	1,881.20	1,502.99	28.1
J-612	148: Zone-1	True	1,933.04	1,502.99	25.0
J-615	148: Zone-1	True	1,922.92	1,502.99	26.5
J-611	148: Zone-1	True	1,978.46	1,502.99	25.0
J-413	148: Zone-1	True	2,028.41	1,502.99	25.0
J-616	148: Zone-1	True	5,000.00	1,500.00	46.1
J-617	148: Zone-1	True	5,000.00	1,500.00	44.3
J-618	148: Zone-1	True	5,000.00	1,500.00	43.4
J-621	148: Zone-1	True	5,000.00	1,515.37	40.5
J-620	148: Zone-1	True	5,000.00	1,515.37	40.5
J-623	148: Zone-1	True	5,000.00	1,515.37	43.5
J-624	148: Zone-1	True	5,000.00	1,500.00	43.5
J-619	148: Zone-1	True	5,000.00	1,515.37	43.3
J-622	148: Zone-1	True	5,000.00	1,515.37	43.1
J-602	148: Zone-1	True	5,000.00	1,500.00	51.6
J-636	148: Zone-1	True	5,000.00	1,500.00	42.7
J-633	148: Zone-1	True	3,346.16	1,500.00	29.5
J-646	148: Zone-1	True	2,273.05	1,502.30	39.9

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-647	148: Zone-1	True	3,920.89	1,502.30	50.7
J-649	148: Zone-1	True	2,611.73	1,502.30	25.9
J-648	148: Zone-1	True	5,000.00	1,502.30	27.4
J-644	148: Zone-1	True	5,000.00	1,500.00	38.6
J-651	148: Zone-1	True	5,000.00	1,502.10	29.1
J-652	148: Zone-1	True	3,802.81	1,502.10	50.0
J-653	148: Zone-1	True	3,718.55	1,502.10	52.1
J-650	148: Zone-1	True	5,000.00	1,500.00	31.9
J-441	148: Zone-1	True	4,789.62	1,500.00	25.0
J-240	148: Zone-1	True	4,430.29	1,501.49	34.4
J-626	148: Zone-1	True	2,802.55	1,506.29	52.5
J-625	148: Zone-1	True	5,000.00	1,500.00	36.6
J-634	148: Zone-1	True	5,000.00	1,500.00	50.5
J-643	148: Zone-1	True	5,000.00	1,500.00	52.1
J-635	148: Zone-1	True	3,341.03	1,500.00	35.3
J-638	148: Zone-1	True	5,000.00	1,500.00	39.1
J-639	148: Zone-1	True	5,000.00	1,500.00	39.1
J-641	148: Zone-1	True	3,581.33	1,507.34	25.0
J-640	148: Zone-1	True	2,655.54	1,507.34	55.6
J-642	148: Zone-1	True	3,254.73	1,507.34	36.4
J-655	148: Zone-1	True	5,000.00	1,500.00	33.3
J-659	148: Zone-1	True	4,553.57	1,500.00	50.8
J-658	148: Zone-1	True	5,000.00	1,500.00	43.4
J-660	148: Zone-1	True	5,000.00	1,500.00	48.4
J-656	148: Zone-1	True	5,000.00	1,505.24	39.4
J-657	148: Zone-1	True	3,858.78	1,500.00	58.2
J-661	148: Zone-1	True	3,664.63	1,500.00	61.5
J-662	148: Zone-1	True	5,000.00	1,500.00	47.9
J-654	148: Zone-1	True	3,746.14	1,500.00	34.3
J-663	148: Zone-1	True	3,474.52	1,515.37	65.7
J-664	148: Zone-1	True	3,331.68	1,509.44	39.0
J-666	148: Zone-1	True	4,106.35	1,507.34	57.4
J-667	148: Zone-1	True	5,000.00	1,500.00	50.0
J-701	148: Zone-1	True	5,000.00	1,500.00	40.2
J-704	148: Zone-1	True	5,000.00	1,500.00	42.8
J-706	148: Zone-1	True	4,692.71	1,500.00	25.0
J-708	148: Zone-1	True	4,998.08	1,500.00	25.0
J-711	148: Zone-1	True	5,000.00	1,500.00	41.7
J-671	148: Zone-1	True	5,000.00	1,500.00	49.5
J-683	148: Zone-1	True	3,928.94	1,500.00	27.2
J-693	148: Zone-1	True	1,734.15	1,500.00	74.7
J-690	148: Zone-1	True	4,608.58	1,513.68	25.0
J-703	148: Zone-1	True	5,000.00	1,500.00	42.6
J-705	148: Zone-1	True	4,604.24	1,500.00	27.6

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-707	148: Zone-1	True	3,928.88	1,500.00	45.6
J-709	148: Zone-1	True	3,288.26	1,500.00	64.4
J-700	148: Zone-1	True	5,000.00	1,500.00	40.2
J-702	148: Zone-1	True	4,996.82	1,500.00	40.3
J-679	148: Zone-1	True	3,085.94	1,500.00	32.6
J-680	148: Zone-1	True	2,068.66	1,500.00	66.2
J-694	148: Zone-1	True	3,919.08	1,513.68	30.2
J-684	148: Zone-1	True	4,011.82	1,500.00	27.2
J-685	148: Zone-1	True	3,756.84	1,513.68	25.0
J-687	148: Zone-1	True	3,289.72	1,500.00	38.6
J-686	148: Zone-1	True	3,453.34	1,500.00	34.0
J-695	148: Zone-1	True	3,738.15	1,500.00	35.1
J-688	148: Zone-1	True	4,111.74	1,500.00	25.0
J-692	148: Zone-1	True	3,925.66	1,500.00	35.4
J-689	148: Zone-1	True	4,334.95	1,500.00	25.0
J-691	148: Zone-1	True	4,146.57	1,500.00	36.1
J-677	148: Zone-1	True	3,361.84	1,500.00	33.2
J-547	148: Zone-1	True	3,485.44	1,500.00	28.3
J-676	148: Zone-1	True	3,382.68	1,500.00	30.0
J-698	148: Zone-1	True	2,527.83	1,500.00	71.7
J-699	148: Zone-1	True	3,666.96	1,500.00	33.2
J-1	148: Zone-1	True	5,000.00	1,500.48	48.2
J-2	148: Zone-1	True	2,210.69	1,500.00	32.1
J-3	148: Zone-1	True	2,001.07	1,530.18	25.0
J-4	148: Zone-1	True	2,129.24	1,507.48	25.0
J-6	148: Zone-1	True	3,006.88	1,546.30	43.1
J-7	148: Zone-1	True	4,466.19	1,730.94	25.0
J-8	148: Zone-1	True	5,000.00	1,549.48	31.2
J-9	148: Zone-1	True	5,000.00	1,523.71	46.7
J-10	148: Zone-1	True	5,000.00	1,500.72	46.8
J-12	148: Zone-1	True	4,719.18	1,500.00	36.8
J-13	148: Zone-1	True	4,684.34	1,500.00	26.3
J-14	148: Zone-1	True	5,000.00	1,500.00	47.1
J-15	148: Zone-1	True	5,000.00	1,521.82	47.1
J-16	148: Zone-1	True	5,000.00	1,500.00	47.0
J-17	148: Zone-1	True	5,000.00	1,500.00	49.4
J-18	148: Zone-1	True	5,000.00	1,504.66	49.5
J-19	148: Zone-1	True	5,000.00	1,561.98	47.4
J-20	148: Zone-1	True	5,000.00	1,501.57	49.7
J-21	148: Zone-1	True	5,000.00	1,519.33	50.9
J-22	148: Zone-1	True	5,000.00	1,517.20	47.8
J-23	148: Zone-1	True	5,000.00	1,500.00	48.5
J-24	148: Zone-1	True	5,000.00	1,500.00	49.4
J-25	148: Zone-1	True	5,000.00	1,500.00	51.2

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-26	148: Zone-1	True	4,525.50	1,510.41	33.6
J-27	148: Zone-1	True	3,990.83	1,505.44	33.7
J-30	148: Zone-1	True	3,443.16	1,509.05	39.3
J-31	148: Zone-1	True	3,153.44	1,508.14	45.0
J-32	148: Zone-1	True	3,232.30	1,506.33	42.9
J-33	148: Zone-1	True	3,558.22	1,503.38	38.2
J-35	148: Zone-1	True	3,981.75	1,517.68	47.3
J-36	148: Zone-1	True	3,706.63	1,500.70	36.2
J-37	148: Zone-1	True	3,044.72	1,500.70	57.3
J-38	148: Zone-1	True	3,559.43	1,502.72	28.1
J-39	148: Zone-1	True	4,135.52	1,507.31	43.4
J-40	148: Zone-1	True	3,742.94	1,505.02	38.1
J-41	148: Zone-1	True	3,266.02	1,500.00	52.6
J-42	148: Zone-1	True	5,000.00	1,515.63	51.5
J-43	148: Zone-1	True	3,379.27	1,500.00	52.9
J-44	148: Zone-1	True	4,235.56	1,500.00	30.3
J-45	148: Zone-1	True	3,277.30	1,500.00	25.3
J-46	148: Zone-1	True	2,057.52	1,500.00	62.5
J-47	148: Zone-1	True	3,148.61	1,500.96	25.1
J-48	148: Zone-1	True	3,234.77	1,501.49	25.0
J-49	148: Zone-1	True	2,330.42	1,500.00	54.0
J-50	148: Zone-1	True	4,319.15	1,504.30	34.5
J-51	148: Zone-1	True	5,000.00	1,506.59	51.8
J-52	148: Zone-1	True	4,171.92	1,500.64	25.0
J-53	148: Zone-1	True	2,262.69	1,503.15	67.8
J-54	148: Zone-1	True	5,000.00	1,512.22	51.6
J-55	148: Zone-1	True	5,000.00	1,502.45	51.6
J-56	148: Zone-1	True	5,000.00	1,506.51	51.0
J-57	148: Zone-1	True	5,000.00	1,513.02	48.6
J-58	148: Zone-1	True	5,000.00	1,503.54	43.0
J-59	148: Zone-1	True	5,000.00	1,506.43	46.8
J-60	148: Zone-1	True	5,000.00	1,505.95	49.3
J-61	148: Zone-1	True	5,000.00	1,500.00	51.5
J-62	148: Zone-1	True	5,000.00	1,500.00	51.6
J-63	148: Zone-1	True	5,000.00	1,504.06	51.5
J-64	148: Zone-1	True	4,653.28	1,533.00	32.4
J-65	148: Zone-1	True	4,434.27	1,518.21	34.7
J-66	148: Zone-1	True	4,350.13	1,513.67	37.1
J-67	148: Zone-1	True	3,644.54	1,534.69	48.1
J-68	148: Zone-1	True	3,579.10	1,536.29	49.3
J-69	148: Zone-1	True	3,705.08	1,510.13	39.7
J-70	148: Zone-1	True	3,320.74	1,511.74	25.0
J-71	148: Zone-1	True	1,845.38	1,510.49	68.9
J-72	148: Zone-1	True	5,000.00	1,515.96	26.7

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-73	148: Zone-1	True	5,000.00	1,510.25	46.3
j-74	148: Zone-1	True	5,000.00	1,519.05	38.7
J-75	148: Zone-1	True	3,132.61	1,502.49	63.6
J-76	148: Zone-1	True	5,000.00	1,500.00	39.9
J-77	148: Zone-1	True	5,000.00	1,512.66	36.6
J-79	148: Zone-1	True	5,000.00	1,523.83	49.3
J-80	148: Zone-1	True	5,000.00	1,521.78	42.6
J-81	148: Zone-1	True	5,000.00	1,524.48	40.2
J-82	148: Zone-1	True	5,000.00	1,508.44	46.6
J-83	148: Zone-1	True	4,814.18	1,511.90	33.9
J-84	148: Zone-1	True	4,584.41	1,511.33	36.7
J-85	148: Zone-1	True	4,623.34	1,510.97	35.2
J-86	148: Zone-1	True	4,915.68	1,513.54	33.3
J-87	148: Zone-1	True	1,822.78	1,510.77	60.9
J-88	148: Zone-1	True	1,768.04	1,518.01	60.2
J-89	148: Zone-1	True	1,669.18	1,518.09	62.1
J-90	148: Zone-1	True	1,693.53	1,515.96	59.8
J-91	148: Zone-1	True	3,238.35	1,504.54	53.2
J-92	148: Zone-1	True	3,417.94	1,525.52	53.7
J-93	148: Zone-1	True	5,000.00	1,516.40	44.2
J-94	148: Zone-1	True	5,000.00	1,512.26	44.6
J-95	148: Zone-1	True	5,000.00	1,511.33	42.5
J-96	148: Zone-1	True	5,000.00	1,522.03	35.0
J-97	148: Zone-1	True	5,000.00	1,515.84	26.8
J-98	148: Zone-1	True	4,857.03	1,500.00	29.6
J-99	148: Zone-1	True	3,945.12	1,513.02	48.1
J-100	148: Zone-1	True	3,808.38	1,512.74	46.3
J-101	148: Zone-1	True	3,201.21	1,509.40	60.1
J-102	148: Zone-1	True	5,000.00	1,515.55	36.1
J-103	148: Zone-1	True	3,891.79	1,517.16	44.8
J-104	148: Zone-1	True	3,673.85	1,509.24	43.1
J-105	148: Zone-1	True	3,606.39	1,508.92	43.2
J-106	148: Zone-1	True	3,586.43	1,513.83	47.1
J-107	148: Zone-1	True	3,836.75	1,515.80	45.0
J-108	148: Zone-1	True	3,698.21	1,512.70	46.7
J-109	148: Zone-1	True	4,397.48	1,508.76	38.3
J-110	148: Zone-1	True	3,998.75	1,515.19	50.6
J-111	148: Zone-1	True	5,000.00	1,512.30	37.8
J-112	148: Zone-1	True	3,582.65	1,510.09	45.3
J-113	148: Zone-1	True	3,523.42	1,509.57	45.0
J-114	148: Zone-1	True	4,556.18	1,526.61	38.9
J-115	148: Zone-1	True	2,099.90	1,519.29	39.7
J-116	148: Zone-1	True	2,222.65	1,516.92	32.7
J-117	148: Zone-1	True	3,260.69	1,529.22	42.2

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-118	148: Zone-1	True	3,659.49	1,508.76	38.6
J-119	148: Zone-1	True	3,168.86	1,508.04	52.8
J-120	148: Zone-1	True	5,000.00	1,506.51	31.6
J-121	148: Zone-1	True	3,520.02	1,507.52	25.0
J-122	148: Zone-1	True	1,857.33	1,504.19	70.9
J-123	148: Zone-1	True	2,229.79	1,504.19	73.0
J-124	148: Zone-1	True	3,297.40	1,508.08	34.9
J-125	148: Zone-1	True	3,182.14	1,513.75	33.5
J-126	148: Zone-1	True	2,648.06	1,501.13	28.6
J-127	148: Zone-1	True	2,316.74	1,503.61	25.0
J-128	148: Zone-1	True	2,406.65	1,503.50	25.0
J-129	148: Zone-1	True	2,659.64	1,519.17	36.5
J-130	148: Zone-1	True	3,222.20	1,510.53	34.5
J-131	148: Zone-1	True	2,439.44	1,501.05	45.3
J-132	148: Zone-1	True	3,128.44	1,514.15	25.0
J-133	148: Zone-1	True	4,340.98	1,510.89	37.6
J-134	148: Zone-1	True	3,400.59	1,502.89	25.0
J-135	148: Zone-1	True	4,207.65	1,508.76	37.1
J-136	148: Zone-1	True	3,408.30	1,525.48	45.1
J-137	148: Zone-1	True	3,377.67	1,505.14	31.4
J-138	148: Zone-1	True	2,035.64	1,504.19	60.9
J-139	148: Zone-1	True	1,923.10	1,508.40	68.5
J-140	148: Zone-1	True	4,930.50	1,511.49	26.9
J-141	148: Zone-1	True	5,000.00	1,505.87	41.5
J-142	148: Zone-1	True	4,503.41	1,507.11	50.4
J-143	148: Zone-1	True	5,000.00	1,515.27	36.8
J-144	148: Zone-1	True	3,760.78	1,500.00	48.1
J-145	148: Zone-1	True	3,202.42	1,501.37	38.9
J-146	148: Zone-1	True	3,640.08	1,507.35	34.6
J-147	148: Zone-1	True	2,817.91	1,509.73	30.4
J-148	148: Zone-1	True	2,648.64	1,503.98	36.2
J-149	148: Zone-1	True	2,862.06	1,504.06	32.5
J-150	148: Zone-1	True	2,548.06	1,506.75	30.7
J-151	148: Zone-1	True	2,276.90	1,500.96	25.0
J-152	148: Zone-1	True	2,256.09	1,503.26	35.3
J-153	148: Zone-1	True	1,848.60	1,500.00	44.8
J-155	148: Zone-1	True	2,688.62	1,500.00	25.0
J-156	148: Zone-1	True	2,831.78	1,512.90	25.4
J-157	148: Zone-1	True	3,530.77	1,522.87	26.7
J-158	148: Zone-1	True	3,911.71	1,502.65	27.9
J-159	148: Zone-1	True	3,994.67	1,501.04	27.6
J-160	148: Zone-1	True	4,065.51	1,511.01	29.0
J-161	148: Zone-1	True	4,042.79	1,503.82	30.3
J-162	148: Zone-1	True	4,086.95	1,510.65	32.7

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-163	148: Zone-1	True	4,379.22	1,517.20	29.4
J-164	148: Zone-1	True	5,000.00	1,514.55	40.9
J-165	148: Zone-1	True	5,000.00	1,510.29	40.3
J-166	148: Zone-1	True	3,385.27	1,523.43	63.5
J-168	148: Zone-1	True	4,429.49	1,500.00	33.7
J-169	148: Zone-1	True	4,724.14	1,500.00	28.8
J-170	148: Zone-1	True	2,933.55	1,500.72	45.3
J-171	148: Zone-1	True	3,196.34	1,503.66	25.1
J-172	148: Zone-1	True	3,069.96	1,508.76	35.4
J-173	148: Zone-1	True	2,572.27	1,525.56	46.0
J-174	148: Zone-1	True	3,521.33	1,500.40	40.2
J-175	148: Zone-1	True	3,282.11	1,510.45	46.2
J-176	148: Zone-1	True	2,668.58	1,530.06	30.0
J-177	148: Zone-1	True	3,308.20	1,514.95	46.1
J-178	148: Zone-1	True	3,456.66	1,511.01	41.2
J-179	148: Zone-1	True	3,300.13	1,511.01	33.8
J-180	148: Zone-1	True	2,759.80	1,516.28	25.2
J-181	148: Zone-1	True	2,483.38	1,500.00	25.9
J-182	148: Zone-1	True	1,910.88	1,506.07	52.4
J-183	148: Zone-1	True	2,554.05	1,506.03	34.5
J-184	148: Zone-1	True	2,339.31	1,500.00	54.0
J-185	148: Zone-1	True	4,451.43	1,506.39	35.3
J-186	148: Zone-1	True	5,000.00	1,504.50	38.3
J-187	148: Zone-1	True	5,000.00	1,500.00	36.9
J-189	148: Zone-1	True	4,342.21	1,519.01	31.3
J-190	148: Zone-1	True	4,232.72	1,511.33	36.3
J-191	148: Zone-1	True	5,000.00	1,506.31	35.5
J-192	148: Zone-1	True	5,000.00	1,566.88	44.0
J-194	148: Zone-1	True	4,717.53	1,523.79	25.0
J-195	148: Zone-1	True	4,581.64	1,540.88	34.1
J-196	148: Zone-1	True	2,799.91	1,515.03	64.7
J-197	148: Zone-1	True	3,709.16	1,525.76	36.4
J-198	148: Zone-1	True	2,879.14	1,516.20	25.0
J-199	148: Zone-1	True	3,103.43	1,501.17	42.5
J-200	148: Zone-1	True	2,058.68	1,500.00	53.7
J-201	148: Zone-1	True	3,398.93	1,522.47	45.1
J-202	148: Zone-1	True	3,529.23	1,509.12	39.0
J-203	148: Zone-1	True	3,164.42	1,501.61	29.7
J-204	148: Zone-1	True	3,214.56	1,500.00	27.8
J-205	148: Zone-1	True	2,489.14	1,501.93	41.1
J-206	148: Zone-1	True	2,554.59	1,501.91	38.6
J-207	148: Zone-1	True	4,547.62	1,503.90	27.5
J-208	148: Zone-1	True	3,393.89	1,511.78	29.1
J-209	148: Zone-1	True	3,589.39	1,507.88	39.4

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-210	148: Zone-1	True	3,327.85	1,531.15	37.0
J-211	148: Zone-1	True	4,629.96	1,550.76	25.0
J-212	148: Zone-1	True	3,199.51	1,500.00	28.4
J-214	148: Zone-1	True	2,802.30	1,518.25	25.5
J-215	148: Zone-1	True	2,194.76	1,504.82	25.0
J-216	148: Zone-1	True	4,186.44	1,507.19	25.0
J-217	148: Zone-1	True	1,617.54	1,509.85	66.2
J-218	148: Zone-1	True	4,563.67	1,503.54	25.0
J-219	148: Zone-1	True	5,000.00	1,509.20	36.0
J-220	148: Zone-1	True	4,488.67	1,500.84	25.0
J-221	148: Zone-1	True	5,000.00	1,507.76	44.9
J-222	148: Zone-1	True	5,000.00	1,534.81	52.4
J-223	148: Zone-1	True	5,000.00	1,518.25	51.0
J-224	148: Zone-1	True	5,000.00	1,513.14	53.6
J-225	148: Zone-1	True	5,000.00	1,502.01	51.3
J-226	148: Zone-1	True	5,000.00	1,521.82	51.6
J-227	148: Zone-1	True	5,000.00	1,553.05	46.7
J-228	148: Zone-1	True	5,000.00	1,501.00	51.5
J-229	148: Zone-1	True	2,235.40	1,501.37	72.9
J-231	148: Zone-1	True	5,000.00	1,545.78	52.1
J-232	148: Zone-1	True	5,000.00	1,537.42	52.2
J-233	148: Zone-1	True	5,000.00	1,507.88	50.6
J-234	148: Zone-1	True	5,000.00	1,552.97	33.7
J-235	148: Zone-1	True	5,000.00	1,500.00	49.8
J-236	148: Zone-1	True	4,620.71	1,515.55	38.8
J-237	148: Zone-1	True	5,000.00	1,509.28	48.2
J-238	148: Zone-1	True	4,542.15	1,503.82	56.2
J-239	148: Zone-1	True	5,000.00	1,500.00	42.4
J-241	148: Zone-1	True	5,000.00	1,500.00	42.0
J-242	148: Zone-1	True	5,000.00	1,500.00	39.2
J-243	148: Zone-1	True	5,000.00	1,503.94	40.7
J-244	148: Zone-1	True	5,000.00	1,530.87	43.5
J-245	148: Zone-1	True	5,000.00	1,535.57	56.9
J-246	148: Zone-1	True	2,756.90	1,516.92	68.2
J-247	148: Zone-1	True	3,411.28	1,508.60	25.4
J-248	148: Zone-1	True	3,266.11	1,508.60	25.1
J-249	148: Zone-1	True	4,262.71	1,501.55	25.0
J-270	148: Zone-1	True	5,000.00	1,506.83	57.5
J-297	148: Zone-1	True	3,344.27	1,503.82	45.2
J-298	148: Zone-1	True	4,333.74	1,502.53	30.1
J-299	148: Zone-1	True	3,955.35	1,504.22	40.9
J-300	148: Zone-1	True	3,761.02	1,500.80	37.4
J-301	148: Zone-1	True	3,700.67	1,500.22	32.8
J-302	148: Zone-1	True	3,833.11	1,500.24	28.9

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-303	148: Zone-1	True	2,824.49	1,500.00	48.9
J-304	148: Zone-1	True	3,545.87	1,503.22	27.1
J-305	148: Zone-1	True	4,037.36	1,505.55	27.8
J-306	148: Zone-1	True	4,824.00	1,518.85	34.6
J-307	148: Zone-1	True	4,503.88	1,508.60	48.9
J-308	148: Zone-1	True	4,883.43	1,507.27	48.0
J-309	148: Zone-1	True	4,117.04	1,508.20	49.6
J-310	148: Zone-1	True	4,074.16	1,508.12	40.0
J-311	148: Zone-1	True	3,561.15	1,500.68	52.9
J-312	148: Zone-1	True	5,000.00	1,518.37	57.2
J-313	148: Zone-1	True	4,537.84	1,513.99	46.8
J-314	148: Zone-1	True	4,593.96	1,515.03	47.8
J-315	148: Zone-1	True	3,832.73	1,509.44	44.8
J-317	148: Zone-1	True	5,000.00	1,524.68	54.0
J-318	148: Zone-1	True	5,000.00	1,506.51	53.8
J-324	148: Zone-1	True	2,663.76	1,502.10	70.9
J-325	148: Zone-1	True	5,000.00	1,504.30	52.0
J-328	148: Zone-1	True	5,000.00	1,500.00	48.1
J-329	148: Zone-1	True	3,149.29	1,500.00	29.5
J-330	148: Zone-1	True	5,000.00	1,512.26	35.0
J-331	148: Zone-1	True	4,384.77	1,504.53	37.1
J-332	148: Zone-1	True	3,242.12	1,515.73	36.1
J-333	148: Zone-1	True	4,097.92	1,505.39	38.9
J-334	148: Zone-1	True	2,842.58	1,515.73	50.5
J-335	148: Zone-1	True	4,217.59	1,500.00	37.1
J-338	148: Zone-1	True	5,000.00	1,503.00	52.2
J-339	148: Zone-1	True	5,000.00	1,503.00	52.7
J-348	148: Zone-1	True	4,158.85	1,500.60	29.3
J-349	148: Zone-1	True	5,000.00	1,500.00	52.0
J-350	148: Zone-1	True	2,135.93	1,500.00	57.9
J-351	148: Zone-1	True	5,000.00	1,511.41	48.2
J-354	148: Zone-1	True	5,000.00	1,500.00	52.1
J-355	148: Zone-1	True	2,799.69	1,500.00	31.1
J-356	148: Zone-1	True	1,783.81	1,503.61	49.5
J-357	148: Zone-1	True	2,720.14	1,500.00	33.2
J-358	148: Zone-1	True	2,682.97	1,503.61	26.6
J-359	148: Zone-1	True	3,073.48	1,500.00	61.0
J-360	148: Zone-1	True	5,000.00	1,500.00	54.8
J-361	148: Zone-1	True	2,094.63	1,500.00	73.3
J-363	148: Zone-1	True	2,110.64	1,506.99	25.0
J-364	148: Zone-1	True	2,004.80	1,506.99	26.7
J-365	148: Zone-1	True	1,822.87	1,506.99	34.7
J-366	148: Zone-1	True	1,872.66	1,506.99	25.0
J-367	148: Zone-1	True	1,607.71	1,506.99	40.7

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-369	148: Zone-1	True	2,566.73	1,500.00	45.9
FH X-4	148: Zone-1	True	5,000.00	1,500.00	40.6
FH J-31	148: Zone-1	True	5,000.00	1,500.00	32.4
FH G-5	148: Zone-1	True	5,000.00	1,500.00	51.4
FH J-1	148: Zone-1	True	5,000.00	1,500.00	51.5
J-394	148: Zone-1	True	3,643.52	1,515.70	30.6
J-395	148: Zone-1	True	3,663.86	1,515.70	26.3
J-396	148: Zone-1	True	3,420.67	1,508.14	37.2
J-397	148: Zone-1	True	3,398.02	1,509.05	38.9
J-398	148: Zone-1	True	2,997.62	1,508.14	39.0
J-399	148: Zone-1	True	1,948.36	1,502.72	31.8
J-400	148: Zone-1	True	1,911.43	1,510.86	25.4
J-401	148: Zone-1	True	5,000.00	1,500.00	50.8
J-402	148: Zone-1	True	4,496.73	1,504.53	29.1
J-403	148: Zone-1	True	3,310.78	1,509.94	49.0
J-404	148: Zone-1	True	3,258.89	1,508.14	46.1
J-405	148: Zone-1	True	3,754.82	1,502.70	35.8
J-406	148: Zone-1	True	3,705.15	1,501.57	31.0
J-407	148: Zone-1	True	4,157.85	1,503.61	31.0
J-408	148: Zone-1	True	3,370.38	1,502.70	25.2
J-409	148: Zone-1	True	1,975.71	1,502.70	67.1
J-411	148: Zone-1	True	2,211.18	1,507.07	36.0
J-412	148: Zone-1	True	2,106.06	1,502.99	25.3
J-414	148: Zone-1	True	5,000.00	1,500.00	37.7
J-415	148: Zone-1	True	5,000.00	1,500.00	37.9
J-416	148: Zone-1	True	5,000.00	1,500.00	37.8
J-417	148: Zone-1	True	4,215.11	1,502.25	25.0
J-418	148: Zone-1	True	4,189.92	1,506.02	37.8
J-419	148: Zone-1	True	3,973.32	1,504.50	35.9
J-420	148: Zone-1	True	2,585.95	1,501.49	62.7
J-423	148: Zone-1	True	3,261.41	1,505.26	48.9
J-424	148: Zone-1	True	3,611.94	1,504.50	45.6
J-425	148: Zone-1	True	5,000.00	1,500.00	37.3
J-426	148: Zone-1	True	4,932.12	1,503.61	25.0
J-427	148: Zone-1	True	2,774.27	1,509.94	30.2
J-428	148: Zone-1	True	2,680.32	1,506.28	25.1
J-429	148: Zone-1	True	3,060.70	1,508.14	41.3
J-430	148: Zone-1	True	2,038.85	1,500.00	25.0
J-431	148: Zone-1	True	1,860.09	1,500.00	35.4
J-433	148: Zone-1	True	4,230.47	1,507.54	32.3
J-434	148: Zone-1	True	2,740.65	1,500.00	69.7
J-435	148: Zone-1	True	3,394.11	1,500.00	52.8
J-436	148: Zone-1	True	4,737.54	1,500.00	50.2
J-437	148: Zone-1	True	3,959.23	1,500.00	51.7

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-439	148: Zone-1	True	2,654.69	1,500.00	25.0
J-440	148: Zone-1	True	2,270.87	1,501.05	40.9
J-442	148: Zone-1	True	3,374.54	1,502.10	59.6
J-443	148: Zone-1	True	2,500.37	1,500.00	34.0
J-444	148: Zone-1	True	5,000.00	1,500.00	37.9
J-445	148: Zone-1	True	4,358.07	1,500.00	48.0
J-446	148: Zone-1	True	2,056.26	1,500.00	41.1
J-447	148: Zone-1	True	1,603.02	1,500.00	43.1
J-449	148: Zone-1	True	2,279.66	1,500.00	25.0
J-450	148: Zone-1	True	2,012.69	1,500.00	38.2
J-451	148: Zone-1	True	3,055.79	1,500.00	62.6
J-453	148: Zone-1	True	2,701.52	1,500.00	25.2
J-454	148: Zone-1	True	2,301.96	1,500.00	41.7
J-455	148: Zone-1	True	3,562.20	1,500.00	25.0
J-456	148: Zone-1	True	3,041.83	1,500.00	41.1
J-459	148: Zone-1	True	3,929.57	1,502.83	39.2
J-460	148: Zone-1	True	4,284.17	1,500.91	26.6
J-461	148: Zone-1	True	5,000.00	1,501.19	39.4
J-462	148: Zone-1	True	2,350.72	1,500.00	55.1
J-463	148: Zone-1	True	3,508.46	1,503.37	25.0
J-464	148: Zone-1	True	3,035.99	1,503.46	34.2
J-467	148: Zone-1	True	3,510.79	1,502.83	34.9
J-468	148: Zone-1	True	3,113.36	1,502.55	28.1
J-469	148: Zone-1	True	3,433.59	1,503.46	25.0
J-470	148: Zone-1	True	5,000.00	1,500.00	54.0
J-471	148: Zone-1	True	5,000.00	1,500.00	54.1
J-472	148: Zone-1	True	5,000.00	1,500.00	51.1
J-474	148: Zone-1	True	2,596.10	1,502.83	25.0
J-475	148: Zone-1	True	2,054.82	1,500.00	61.9
J-476	148: Zone-1	True	2,966.67	1,500.00	37.5
J-478	148: Zone-1	True	2,099.85	1,500.00	48.0
J-480	148: Zone-1	True	4,226.17	1,500.64	32.4
J-481	148: Zone-1	True	3,837.74	1,500.00	32.4
J-482	148: Zone-1	True	4,031.49	1,500.00	25.8
J-483	148: Zone-1	True	2,881.97	1,506.29	45.1
J-485	148: Zone-1	True	4,127.47	1,500.00	45.3
J-486	148: Zone-1	True	3,516.10	1,507.34	43.5
J-488	148: Zone-1	True	3,802.65	1,500.00	28.9
J-489	148: Zone-1	True	3,421.80	1,508.92	25.0
J-490	148: Zone-1	True	2,155.26	1,508.92	63.3
J-491	148: Zone-1	True	4,387.32	1,500.00	25.6
J-492	148: Zone-1	True	5,000.00	1,500.00	51.4
J-493	148: Zone-1	True	5,000.00	1,500.00	51.5
J-495	148: Zone-1	True	3,222.28	1,500.70	43.5

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-496	148: Zone-1	True	5,000.00	1,500.00	51.4
J-498	148: Zone-1	True	5,000.00	1,500.00	53.8
J-499	148: Zone-1	True	5,000.00	1,500.00	54.0
J-500	148: Zone-1	True	4,293.87	1,503.15	55.2
J-501	148: Zone-1	True	5,000.00	1,500.00	53.5
J-503	148: Zone-1	True	5,000.00	1,500.00	53.6
J-505	148: Zone-1	True	5,000.00	1,500.00	51.8
J-506	148: Zone-1	True	5,000.00	1,500.00	47.4
J-508	148: Zone-1	True	2,000.42	1,500.00	25.4
J-511	148: Zone-1	True	5,000.00	1,500.00	49.5
J-513	148: Zone-1	True	5,000.00	1,500.00	49.8
J-514	148: Zone-1	True	5,000.00	1,500.00	50.4
J-515	148: Zone-1	True	5,000.00	1,500.00	50.4
J-516	148: Zone-1	True	1,657.94	1,500.00	44.2
J-517	148: Zone-1	True	1,529.95	1,500.00	25.0
J-519	148: Zone-1	True	3,733.80	1,500.00	41.4
J-520	148: Zone-1	True	5,000.00	1,505.24	48.3
J-521	148: Zone-1	True	5,000.00	1,505.24	48.0
J-522	148: Zone-1	True	5,000.00	1,505.24	47.1
J-523	148: Zone-1	True	5,000.00	1,500.00	45.5
J-524	148: Zone-1	True	5,000.00	1,500.00	43.2
J-525	148: Zone-1	True	3,462.50	1,500.00	60.1
J-526	148: Zone-1	True	5,000.00	1,500.00	48.1
J-527	148: Zone-1	True	5,000.00	1,500.00	47.9
J-528	148: Zone-1	True	5,000.00	1,500.00	47.7
J-529	148: Zone-1	True	5,000.00	1,500.00	46.8
J-530	148: Zone-1	True	3,937.10	1,500.00	33.4
J-531	148: Zone-1	True	3,487.15	1,500.00	42.4
J-532	148: Zone-1	True	3,550.38	1,500.00	40.7
J-533	148: Zone-1	True	4,116.23	1,500.00	35.2
J-537	148: Zone-1	True	5,000.00	1,500.00	57.5
J-538	148: Zone-1	True	5,000.00	1,500.00	57.0
J-539	148: Zone-1	True	5,000.00	1,500.00	57.9
J-540	148: Zone-1	True	5,000.00	1,500.00	57.6
J-541	148: Zone-1	True	4,203.24	1,500.00	27.1
J-542	148: Zone-1	True	5,000.00	1,500.00	54.9
J-543	148: Zone-1	True	2,930.73	1,500.00	52.1
J-544	148: Zone-1	True	5,000.00	1,500.00	55.0
J-545	148: Zone-1	True	5,000.00	1,500.00	57.5
J-548	148: Zone-1	True	3,588.36	1,500.00	29.2
J-550	148: Zone-1	True	3,480.03	1,510.48	27.6
J-551	148: Zone-1	True	4,097.41	1,500.00	27.0
J-552	148: Zone-1	True	5,000.00	1,500.00	56.8
J-553	148: Zone-1	True	3,877.77	1,500.00	45.4

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-554	148: Zone-1	True	5,000.00	1,500.00	53.1
J-555	148: Zone-1	True	5,000.00	1,500.00	57.5
J-573	148: Zone-1	True	1,830.60	1,506.99	25.0
J-574	148: Zone-1	True	1,788.86	1,506.99	25.0
J-575	148: Zone-1	True	1,596.07	1,506.99	37.0
J-576	148: Zone-1	True	1,583.24	1,506.99	39.9
J-577	148: Zone-1	True	3,843.82	1,500.00	25.0
J-582	148: Zone-1	True	5,000.00	1,500.00	48.0
J-673	148: Zone-1	True	5,000.00	1,500.00	43.6
J-674	148: Zone-1	True	5,000.00	1,500.00	35.4
J-675	148: Zone-1	True	4,665.15	1,500.00	29.9
J-678	148: Zone-1	True	3,461.71	1,500.00	34.4
J-696	148: Zone-1	True	5,000.00	1,500.00	53.0
J-697	148: Zone-1	True	5,000.00	1,500.00	38.2
J-716	148: Zone-1	True	5,000.00	1,500.00	49.6
J-717	148: Zone-1	True	5,000.00	1,500.00	48.1
J-681	148: Zone-1	True	3,884.32	1,500.00	35.8
J-682	148: Zone-1	True	3,988.14	1,500.00	32.1
J-718	148: Zone-1	True	3,194.46	1,500.00	32.9
J-719	148: Zone-1	True	5,000.00	1,500.00	48.6
J-721	148: Zone-1	True	4,222.90	1,500.00	25.9
J-720	148: Zone-1	True	4,565.20	1,500.00	25.0
J-728	148: Zone-1	True	4,324.54	1,500.00	25.8
J-727	148: Zone-1	True	4,084.00	1,500.00	26.3
J-726	148: Zone-1	True	3,986.29	1,500.00	26.8
J-725	148: Zone-1	True	3,929.13	1,500.00	28.8
J-724	148: Zone-1	True	3,914.00	1,500.00	27.0
J-723	148: Zone-1	True	3,932.48	1,500.00	26.3
J-722	148: Zone-1	True	4,070.33	1,500.00	27.5
J-733	148: Zone-1	True	4,446.19	1,500.00	42.5
J-734	148: Zone-1	True	2,738.53	1,500.00	25.0
J-759	148: Zone-1	True	3,209.85	1,500.00	27.9
J-764	148: Zone-1	True	3,330.67	1,500.00	26.9
J-763	148: Zone-1	True	2,491.79	1,500.00	31.5
J-762	148: Zone-1	True	2,375.81	1,500.00	34.1
J-761	148: Zone-1	True	2,375.58	1,500.00	34.1
J-760	148: Zone-1	True	2,523.84	1,500.00	32.3
J-767	148: Zone-1	True	4,803.73	1,500.00	25.3
J-768	148: Zone-1	True	4,818.39	1,500.00	25.5
J-769	148: Zone-1	True	4,869.61	1,500.00	25.2
J-770	148: Zone-1	True	3,976.71	1,500.00	47.4
J-775	148: Zone-1	True	5,000.00	1,500.00	44.1
J-777	148: Zone-1	True	3,261.66	1,500.00	25.0
J-778	148: Zone-1	True	2,908.71	1,500.00	38.6

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-757	148: Zone-1	True	5,000.00	1,500.00	37.4
J-758	148: Zone-1	True	4,676.33	1,500.00	25.8
J-765	148: Zone-1	True	5,000.00	1,500.00	38.9
J-785	148: Zone-1	True	4,418.40	1,500.00	25.0
J-787	148: Zone-1	True	5,000.00	1,500.00	49.7
J-672	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-5	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-251	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-518	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-732	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-731	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-730	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-776	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-782	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-766	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-784	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-786	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-323	148: Zone-1	True	5,000.00	1,500.00	35.6
J-583	148: Zone-1	True	3,974.93	1,500.00	32.6
J-213	148: Zone-1	True	2,798.33	1,552.29	25.1
J-320	148: Zone-1	True	3,303.75	1,500.60	67.4
J-340	148: Zone-1	True	5,000.00	1,503.00	39.3
J-584	148: Zone-1	True	3,068.20	1,503.00	25.4
J-585	148: Zone-1	True	2,336.96	1,503.00	52.5
J-586	148: Zone-1	True	2,931.62	1,503.00	39.1
J-341	148: Zone-1	True	2,995.77	1,503.00	44.4
J-598	148: Zone-1	True	2,895.86	1,504.82	43.7
J-599	148: Zone-1	True	3,231.78	1,504.82	30.7
J-600	148: Zone-1	True	3,066.69	1,504.82	42.8
J-601	148: Zone-1	True	3,413.01	1,504.82	30.9
J-597	148: Zone-1	True	3,248.85	1,504.82	40.2
J-603	148: Zone-1	True	3,938.04	1,507.34	38.4
J-604	148: Zone-1	True	3,801.00	1,508.39	26.4
J-487	148: Zone-1	True	3,245.89	1,508.39	48.9
J-605	148: Zone-1	True	3,718.47	1,508.39	29.7
J-606	148: Zone-1	True	3,700.85	1,509.44	26.5
J-610	148: Zone-1	True	3,282.26	1,509.44	33.2
J-609	148: Zone-1	True	3,301.71	1,509.44	32.5
J-607	148: Zone-1	True	3,717.12	1,509.44	26.2
J-608	148: Zone-1	True	3,765.27	1,509.44	27.7
J-549	148: Zone-1	True	3,330.86	1,500.00	26.6
J-614	148: Zone-1	True	1,764.73	1,502.99	31.5
J-613	148: Zone-1	True	1,822.29	1,502.99	28.0
J-612	148: Zone-1	True	1,869.48	1,502.99	25.0
J-615	148: Zone-1	True	1,851.06	1,502.99	32.0
J-611	148: Zone-1	True	1,972.17	1,502.99	25.0
J-413	148: Zone-1	True	2,021.64	1,502.99	25.0
J-616	148: Zone-1	True	5,000.00	1,500.00	44.1
J-617	148: Zone-1	True	5,000.00	1,500.00	42.3
J-618	148: Zone-1	True	5,000.00	1,500.00	41.4
J-621	148: Zone-1	True	5,000.00	1,515.37	38.4
J-620	148: Zone-1	True	5,000.00	1,515.37	38.4
J-623	148: Zone-1	True	5,000.00	1,515.37	41.4
J-624	148: Zone-1	True	5,000.00	1,500.00	41.5
J-619	148: Zone-1	True	5,000.00	1,515.37	41.3
J-622	148: Zone-1	True	4,999.17	1,515.37	41.0
J-602	148: Zone-1	True	5,000.00	1,500.00	50.1
J-636	148: Zone-1	True	5,000.00	1,500.00	40.7
J-633	148: Zone-1	True	3,135.88	1,500.00	29.3
J-646	148: Zone-1	True	2,249.58	1,502.30	39.6
J-647	148: Zone-1	True	3,806.23	1,502.30	49.2

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-649	148: Zone-1	True	2,575.12	1,502.30	25.9
J-648	148: Zone-1	True	4,845.83	1,502.30	25.0
J-644	148: Zone-1	True	5,000.00	1,500.00	32.2
J-651	148: Zone-1	True	2,753.44	1,502.10	32.7
J-652	148: Zone-1	True	2,807.66	1,502.10	39.2
J-653	148: Zone-1	True	2,927.51	1,502.10	42.3
J-650	148: Zone-1	True	4,552.90	1,500.00	25.0
J-441	148: Zone-1	True	4,216.43	1,500.00	25.0
J-240	148: Zone-1	True	3,968.37	1,501.49	32.4
J-626	148: Zone-1	True	2,722.79	1,506.29	51.1
J-625	148: Zone-1	True	4,943.03	1,500.00	25.0
J-634	148: Zone-1	True	5,000.00	1,500.00	48.1
J-643	148: Zone-1	True	5,000.00	1,500.00	51.0
J-635	148: Zone-1	True	3,100.94	1,500.00	33.9
J-638	148: Zone-1	True	5,000.00	1,500.00	37.0
J-639	148: Zone-1	True	5,000.00	1,500.00	37.0
J-641	148: Zone-1	True	3,553.58	1,507.34	25.0
J-640	148: Zone-1	True	2,643.98	1,507.34	55.4
J-642	148: Zone-1	True	3,234.29	1,507.34	36.3
J-655	148: Zone-1	True	5,000.00	1,500.00	30.3
J-659	148: Zone-1	True	4,486.88	1,500.00	50.1
J-658	148: Zone-1	True	5,000.00	1,500.00	41.3
J-660	148: Zone-1	True	5,000.00	1,500.00	46.8
J-656	148: Zone-1	True	5,000.00	1,505.24	37.1
J-657	148: Zone-1	True	3,815.65	1,500.00	57.6
J-661	148: Zone-1	True	3,638.25	1,500.00	60.8
J-662	148: Zone-1	True	5,000.00	1,500.00	46.5
J-654	148: Zone-1	True	3,595.00	1,500.00	34.5
J-663	148: Zone-1	True	3,449.57	1,515.37	65.2
J-664	148: Zone-1	True	3,304.83	1,509.44	38.8
J-666	148: Zone-1	True	4,063.96	1,507.34	56.8
J-667	148: Zone-1	True	5,000.00	1,500.00	48.8
J-701	148: Zone-1	True	5,000.00	1,500.00	38.1
J-704	148: Zone-1	True	5,000.00	1,500.00	40.8
J-706	148: Zone-1	True	4,632.33	1,500.00	25.0
J-708	148: Zone-1	True	4,925.35	1,500.00	25.0
J-711	148: Zone-1	True	5,000.00	1,500.00	39.7
J-671	148: Zone-1	True	1,581.43	1,500.00	25.0
J-683	148: Zone-1	True	3,313.29	1,500.00	27.6
J-693	148: Zone-1	True	1,688.71	1,500.00	72.5
J-690	148: Zone-1	True	4,168.70	1,513.68	25.0
J-703	148: Zone-1	True	5,000.00	1,500.00	40.6
J-705	148: Zone-1	True	4,547.14	1,500.00	27.5
J-707	148: Zone-1	True	3,893.37	1,500.00	45.2

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-709	148: Zone-1	True	3,267.74	1,500.00	63.9
J-700	148: Zone-1	True	5,000.00	1,500.00	38.1
J-702	148: Zone-1	True	4,922.00	1,500.00	39.8
J-679	148: Zone-1	True	1,888.67	1,500.00	46.1
J-680	148: Zone-1	True	1,936.37	1,500.00	58.3
J-694	148: Zone-1	True	3,308.32	1,513.68	28.1
J-684	148: Zone-1	True	3,316.83	1,500.00	27.5
J-685	148: Zone-1	True	3,251.30	1,513.68	25.0
J-687	148: Zone-1	True	2,928.33	1,500.00	36.0
J-686	148: Zone-1	True	3,044.42	1,500.00	32.1
J-695	148: Zone-1	True	3,274.05	1,500.00	32.9
J-688	148: Zone-1	True	3,522.66	1,500.00	25.0
J-692	148: Zone-1	True	3,536.15	1,500.00	33.6
J-689	148: Zone-1	True	3,832.62	1,500.00	25.0
J-691	148: Zone-1	True	3,812.93	1,500.00	34.5
J-677	148: Zone-1	True	3,130.13	1,500.00	32.2
J-547	148: Zone-1	True	3,229.03	1,500.00	27.9
J-676	148: Zone-1	True	3,136.75	1,500.00	29.2
J-698	148: Zone-1	True	1,902.54	1,500.00	53.7
J-699	148: Zone-1	True	3,632.81	1,500.00	33.0
J-1	148: Zone-1	True	5,000.00	1,500.48	46.5
J-2	148: Zone-1	True	2,200.82	1,500.00	32.0
J-3	148: Zone-1	True	1,991.36	1,530.18	25.0
J-4	148: Zone-1	True	2,111.01	1,507.48	25.0
J-6	148: Zone-1	True	2,930.10	1,546.30	41.8
J-7	148: Zone-1	True	4,111.28	1,730.94	25.0
J-8	148: Zone-1	True	4,887.21	1,549.48	26.2
J-9	148: Zone-1	True	5,000.00	1,523.71	44.9
J-10	148: Zone-1	True	5,000.00	1,500.72	45.0
J-12	148: Zone-1	True	4,086.79	1,500.00	38.8
J-13	148: Zone-1	True	3,185.58	1,500.00	26.3
J-14	148: Zone-1	True	5,000.00	1,500.00	45.5
J-15	148: Zone-1	True	5,000.00	1,521.82	45.5
J-16	148: Zone-1	True	5,000.00	1,500.00	45.3
J-17	148: Zone-1	True	5,000.00	1,500.00	48.1
J-18	148: Zone-1	True	5,000.00	1,504.66	48.2
J-19	148: Zone-1	True	5,000.00	1,561.98	45.6
J-20	148: Zone-1	True	5,000.00	1,501.57	48.4
J-21	148: Zone-1	True	5,000.00	1,519.33	49.8
J-22	148: Zone-1	True	5,000.00	1,517.20	34.8
J-23	148: Zone-1	True	5,000.00	1,500.00	46.9
J-24	148: Zone-1	True	5,000.00	1,500.00	47.7
J-25	148: Zone-1	True	5,000.00	1,500.00	49.8
J-26	148: Zone-1	True	4,234.57	1,510.41	29.7

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-27	148: Zone-1	True	3,521.54	1,505.44	29.1
J-30	148: Zone-1	True	2,945.10	1,509.05	31.2
J-31	148: Zone-1	True	2,504.05	1,508.14	38.3
J-32	148: Zone-1	True	2,544.08	1,506.33	36.5
J-33	148: Zone-1	True	3,021.92	1,503.38	30.7
J-35	148: Zone-1	True	2,982.57	1,517.68	25.1
J-36	148: Zone-1	True	1,811.60	1,500.70	25.1
J-38	148: Zone-1	True	3,209.42	1,502.72	27.5
J-39	148: Zone-1	True	4,014.94	1,507.31	43.1
J-40	148: Zone-1	True	3,562.50	1,505.02	38.4
J-41	148: Zone-1	True	3,191.91	1,500.00	50.5
J-42	148: Zone-1	True	5,000.00	1,515.63	50.1
J-43	148: Zone-1	True	3,248.58	1,500.00	52.5
J-44	148: Zone-1	True	3,723.56	1,500.00	28.5
J-45	148: Zone-1	True	2,135.84	1,500.00	25.3
J-46	148: Zone-1	True	1,649.44	1,500.00	49.8
J-47	148: Zone-1	True	3,134.62	1,500.96	25.1
J-48	148: Zone-1	True	3,219.24	1,501.49	25.0
J-49	148: Zone-1	True	2,324.88	1,500.00	53.9
J-50	148: Zone-1	True	4,280.55	1,504.30	34.3
J-51	148: Zone-1	True	5,000.00	1,506.59	50.5
J-52	148: Zone-1	True	4,136.26	1,500.64	25.0
J-53	148: Zone-1	True	2,257.40	1,503.15	67.6
J-54	148: Zone-1	True	5,000.00	1,512.22	50.1
J-55	148: Zone-1	True	5,000.00	1,502.45	50.1
J-56	148: Zone-1	True	5,000.00	1,506.51	48.6
J-57	148: Zone-1	True	5,000.00	1,513.02	46.1
J-58	148: Zone-1	True	5,000.00	1,503.54	40.7
J-59	148: Zone-1	True	5,000.00	1,506.43	44.5
J-60	148: Zone-1	True	5,000.00	1,505.95	47.2
J-61	148: Zone-1	True	5,000.00	1,500.00	49.4
J-62	148: Zone-1	True	5,000.00	1,500.00	49.8
J-63	148: Zone-1	True	5,000.00	1,504.06	50.0
J-64	148: Zone-1	True	4,579.35	1,533.00	32.1
J-65	148: Zone-1	True	4,360.06	1,518.21	34.3
J-66	148: Zone-1	True	4,267.15	1,513.67	37.0
J-67	148: Zone-1	True	3,597.94	1,534.69	47.7
J-68	148: Zone-1	True	3,540.83	1,536.29	48.7
J-69	148: Zone-1	True	3,660.00	1,510.13	39.4
J-70	148: Zone-1	True	3,290.12	1,511.74	25.0
J-71	148: Zone-1	True	1,840.03	1,510.49	68.6
J-72	148: Zone-1	True	4,983.55	1,515.96	25.0
J-73	148: Zone-1	True	5,000.00	1,510.25	44.3
j-74	148: Zone-1	True	5,000.00	1,519.05	36.0

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-75	148: Zone-1	True	3,112.72	1,502.49	63.1
J-76	148: Zone-1	True	5,000.00	1,500.00	37.3
J-77	148: Zone-1	True	4,917.01	1,512.66	27.3
J-79	148: Zone-1	True	5,000.00	1,523.83	47.5
J-80	148: Zone-1	True	5,000.00	1,521.78	40.8
J-81	148: Zone-1	True	5,000.00	1,524.48	38.2
J-82	148: Zone-1	True	5,000.00	1,508.44	44.6
J-83	148: Zone-1	True	4,739.89	1,511.90	33.6
J-84	148: Zone-1	True	4,516.46	1,511.33	36.4
J-85	148: Zone-1	True	4,549.44	1,510.97	35.0
J-86	148: Zone-1	True	4,818.23	1,513.54	33.1
J-87	148: Zone-1	True	1,819.09	1,510.77	60.7
J-88	148: Zone-1	True	1,764.88	1,518.01	60.1
J-89	148: Zone-1	True	1,666.38	1,518.09	62.0
J-90	148: Zone-1	True	1,690.59	1,515.96	59.7
J-91	148: Zone-1	True	3,210.69	1,504.54	52.9
J-92	148: Zone-1	True	3,381.05	1,525.52	53.0
J-93	148: Zone-1	True	5,000.00	1,516.40	41.3
J-94	148: Zone-1	True	5,000.00	1,512.26	41.8
J-95	148: Zone-1	True	5,000.00	1,511.33	39.1
J-96	148: Zone-1	True	5,000.00	1,522.03	29.4
J-97	148: Zone-1	True	4,678.94	1,515.84	25.8
J-98	148: Zone-1	True	4,496.38	1,500.00	27.6
J-99	148: Zone-1	True	3,891.69	1,513.02	47.5
J-100	148: Zone-1	True	3,755.21	1,512.74	45.7
J-101	148: Zone-1	True	3,167.56	1,509.40	59.4
J-102	148: Zone-1	True	4,967.45	1,515.55	33.8
J-103	148: Zone-1	True	3,820.59	1,517.16	44.0
J-104	148: Zone-1	True	3,608.82	1,509.24	42.5
J-105	148: Zone-1	True	3,544.16	1,508.92	42.5
J-106	148: Zone-1	True	3,530.54	1,513.83	46.3
J-107	148: Zone-1	True	3,739.33	1,515.80	44.3
J-108	148: Zone-1	True	3,623.03	1,512.70	46.0
J-109	148: Zone-1	True	4,277.99	1,508.76	37.7
J-110	148: Zone-1	True	3,918.61	1,515.19	49.5
J-111	148: Zone-1	True	4,921.93	1,512.30	35.8
J-112	148: Zone-1	True	3,519.13	1,510.09	44.7
J-113	148: Zone-1	True	3,462.18	1,509.57	44.4
J-114	148: Zone-1	True	4,460.44	1,526.61	38.6
J-115	148: Zone-1	True	2,091.41	1,519.29	39.6
J-116	148: Zone-1	True	2,212.91	1,516.92	32.6
J-117	148: Zone-1	True	3,232.94	1,529.22	42.0
J-118	148: Zone-1	True	3,619.01	1,508.76	38.3
J-119	148: Zone-1	True	3,140.38	1,508.04	52.4

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-120	148: Zone-1	True	5,000.00	1,506.51	29.3
J-121	148: Zone-1	True	3,485.08	1,507.52	25.0
J-122	148: Zone-1	True	1,852.13	1,504.19	70.7
J-123	148: Zone-1	True	2,221.35	1,504.19	72.9
J-124	148: Zone-1	True	3,269.46	1,508.08	34.7
J-125	148: Zone-1	True	3,157.07	1,513.75	33.4
J-126	148: Zone-1	True	2,632.86	1,501.13	28.6
J-127	148: Zone-1	True	2,306.57	1,503.61	25.0
J-128	148: Zone-1	True	2,395.33	1,503.50	25.0
J-129	148: Zone-1	True	2,644.76	1,519.17	36.3
J-130	148: Zone-1	True	3,196.71	1,510.53	34.4
J-131	148: Zone-1	True	2,427.93	1,501.05	45.1
J-132	148: Zone-1	True	3,105.96	1,514.15	25.0
J-133	148: Zone-1	True	4,285.65	1,510.89	37.3
J-134	148: Zone-1	True	3,373.16	1,502.89	25.0
J-135	148: Zone-1	True	4,155.17	1,508.76	36.9
J-136	148: Zone-1	True	3,378.86	1,525.48	44.8
J-137	148: Zone-1	True	3,348.91	1,505.14	31.4
J-138	148: Zone-1	True	2,029.54	1,504.19	60.7
J-139	148: Zone-1	True	1,918.24	1,508.40	68.3
J-140	148: Zone-1	True	4,617.14	1,511.49	26.8
J-141	148: Zone-1	True	4,942.15	1,505.87	40.6
J-142	148: Zone-1	True	4,436.85	1,507.11	49.9
J-143	148: Zone-1	True	4,635.75	1,515.27	25.0
J-144	148: Zone-1	True	3,578.90	1,500.00	45.0
J-145	148: Zone-1	True	3,059.12	1,501.37	37.4
J-146	148: Zone-1	True	3,185.41	1,507.35	33.1
J-147	148: Zone-1	True	1,680.04	1,509.73	25.3
J-155	148: Zone-1	True	2,658.84	1,500.00	25.0
J-156	148: Zone-1	True	2,795.93	1,512.90	25.4
J-157	148: Zone-1	True	3,455.57	1,522.87	26.6
J-158	148: Zone-1	True	3,806.42	1,502.65	27.8
J-159	148: Zone-1	True	3,881.76	1,501.04	27.5
J-160	148: Zone-1	True	3,945.02	1,511.01	28.8
J-161	148: Zone-1	True	3,923.59	1,503.82	30.0
J-162	148: Zone-1	True	3,962.12	1,510.65	32.4
J-163	148: Zone-1	True	4,224.61	1,517.20	29.1
J-164	148: Zone-1	True	5,000.00	1,514.55	34.8
J-165	148: Zone-1	True	5,000.00	1,510.29	33.6
J-166	148: Zone-1	True	3,315.59	1,523.43	62.1
J-168	148: Zone-1	True	4,263.66	1,500.00	33.2
J-169	148: Zone-1	True	4,521.64	1,500.00	28.5
J-170	148: Zone-1	True	2,889.87	1,500.72	44.7
J-171	148: Zone-1	True	3,138.26	1,503.66	25.1

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-172	148: Zone-1	True	3,019.90	1,508.76	35.2
J-173	148: Zone-1	True	2,545.99	1,525.56	45.6
J-174	148: Zone-1	True	3,442.00	1,500.40	39.6
J-175	148: Zone-1	True	3,219.83	1,510.45	45.5
J-176	148: Zone-1	True	2,640.11	1,530.06	29.9
J-177	148: Zone-1	True	3,248.81	1,514.95	45.4
J-178	148: Zone-1	True	3,388.03	1,511.01	40.6
J-179	148: Zone-1	True	3,241.26	1,511.01	33.5
J-180	148: Zone-1	True	2,728.14	1,516.28	25.2
J-181	148: Zone-1	True	2,461.82	1,500.00	25.9
J-182	148: Zone-1	True	1,903.48	1,506.07	52.2
J-183	148: Zone-1	True	2,530.29	1,506.03	34.3
J-184	148: Zone-1	True	2,320.01	1,500.00	53.6
J-185	148: Zone-1	True	4,284.25	1,506.39	34.6
J-186	148: Zone-1	True	5,000.00	1,504.50	31.3
J-187	148: Zone-1	True	5,000.00	1,500.00	30.1
J-189	148: Zone-1	True	3,971.02	1,519.01	31.9
J-190	148: Zone-1	True	3,844.19	1,511.33	38.0
J-191	148: Zone-1	True	5,000.00	1,506.31	28.4
J-192	148: Zone-1	True	5,000.00	1,566.88	36.5
J-194	148: Zone-1	True	3,697.56	1,523.79	25.0
J-195	148: Zone-1	True	4,129.77	1,540.88	33.5
J-197	148: Zone-1	True	2,985.60	1,525.76	25.0
J-198	148: Zone-1	True	1,729.95	1,516.20	25.1
J-201	148: Zone-1	True	3,186.17	1,522.47	41.9
J-202	148: Zone-1	True	3,319.24	1,509.12	38.4
J-203	148: Zone-1	True	3,019.12	1,501.61	29.3
J-204	148: Zone-1	True	3,042.76	1,500.00	27.6
J-205	148: Zone-1	True	2,411.98	1,501.93	40.2
J-206	148: Zone-1	True	2,468.82	1,501.91	37.9
J-207	148: Zone-1	True	3,629.98	1,503.90	29.7
J-208	148: Zone-1	True	2,161.20	1,511.78	38.1
J-209	148: Zone-1	True	3,278.45	1,507.88	38.9
J-210	148: Zone-1	True	3,208.58	1,531.15	36.2
J-211	148: Zone-1	True	4,322.40	1,550.76	25.0
J-212	148: Zone-1	True	3,093.43	1,500.00	28.2
J-214	148: Zone-1	True	1,834.78	1,518.25	25.4
J-216	148: Zone-1	True	1,523.04	1,507.19	25.0
J-219	148: Zone-1	True	4,846.00	1,509.20	29.6
J-220	148: Zone-1	True	4,165.68	1,500.84	25.0
J-221	148: Zone-1	True	5,000.00	1,507.76	35.0
J-222	148: Zone-1	True	5,000.00	1,534.81	50.1
J-223	148: Zone-1	True	5,000.00	1,518.25	49.8
J-224	148: Zone-1	True	5,000.00	1,513.14	52.8

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-225	148: Zone-1	True	5,000.00	1,502.01	50.2
J-226	148: Zone-1	True	5,000.00	1,521.82	50.5
J-227	148: Zone-1	True	5,000.00	1,553.05	45.6
J-228	148: Zone-1	True	5,000.00	1,501.00	50.0
J-229	148: Zone-1	True	2,231.65	1,501.37	72.8
J-231	148: Zone-1	True	5,000.00	1,545.78	50.9
J-232	148: Zone-1	True	5,000.00	1,537.42	51.1
J-233	148: Zone-1	True	5,000.00	1,507.88	49.4
J-234	148: Zone-1	True	5,000.00	1,552.97	31.9
J-235	148: Zone-1	True	5,000.00	1,500.00	44.4
J-237	148: Zone-1	True	1,520.92	1,509.28	25.2
J-239	148: Zone-1	True	2,144.76	1,500.00	45.6
J-241	148: Zone-1	True	5,000.00	1,500.00	33.4
J-242	148: Zone-1	True	5,000.00	1,500.00	30.4
J-243	148: Zone-1	True	5,000.00	1,503.94	28.6
J-244	148: Zone-1	True	5,000.00	1,530.87	29.4
J-245	148: Zone-1	True	5,000.00	1,535.57	56.1
J-246	148: Zone-1	True	2,678.65	1,516.92	66.2
J-247	148: Zone-1	True	3,254.90	1,508.60	25.4
J-248	148: Zone-1	True	3,127.65	1,508.60	25.1
J-249	148: Zone-1	True	2,655.68	1,501.55	25.0
J-270	148: Zone-1	True	5,000.00	1,506.83	57.5
J-297	148: Zone-1	True	3,098.11	1,503.82	42.2
J-298	148: Zone-1	True	3,873.41	1,502.53	27.3
J-299	148: Zone-1	True	3,309.67	1,504.22	34.2
J-300	148: Zone-1	True	3,368.78	1,500.80	36.0
J-301	148: Zone-1	True	3,369.78	1,500.22	31.7
J-302	148: Zone-1	True	3,484.73	1,500.24	27.1
J-303	148: Zone-1	True	2,653.52	1,500.00	46.6
J-304	148: Zone-1	True	3,252.38	1,503.22	26.5
J-305	148: Zone-1	True	3,637.47	1,505.55	26.0
J-306	148: Zone-1	True	4,353.41	1,518.85	29.9
J-307	148: Zone-1	True	4,336.40	1,508.60	44.5
J-308	148: Zone-1	True	4,800.21	1,507.27	46.2
J-309	148: Zone-1	True	3,735.39	1,508.20	42.4
J-310	148: Zone-1	True	2,917.41	1,508.12	25.0
J-311	148: Zone-1	True	2,018.46	1,500.68	25.0
J-312	148: Zone-1	True	5,000.00	1,518.37	56.6
J-313	148: Zone-1	True	4,381.27	1,513.99	44.4
J-314	148: Zone-1	True	4,478.46	1,515.03	46.5
J-315	148: Zone-1	True	3,605.38	1,509.44	42.6
J-317	148: Zone-1	True	5,000.00	1,524.68	53.2
J-318	148: Zone-1	True	5,000.00	1,506.51	53.0
J-324	148: Zone-1	True	2,555.30	1,502.10	71.3

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-325	148: Zone-1	True	5,000.00	1,504.30	51.0
J-328	148: Zone-1	True	5,000.00	1,500.00	45.9
J-329	148: Zone-1	True	3,023.90	1,500.00	29.1
J-330	148: Zone-1	True	4,816.28	1,512.26	25.0
J-331	148: Zone-1	True	4,108.78	1,504.53	35.7
J-332	148: Zone-1	True	3,125.75	1,515.73	35.4
J-333	148: Zone-1	True	3,869.35	1,505.39	37.7
J-334	148: Zone-1	True	2,759.74	1,515.73	49.2
J-335	148: Zone-1	True	3,969.81	1,500.00	35.8
J-338	148: Zone-1	True	5,000.00	1,503.00	43.8
J-339	148: Zone-1	True	5,000.00	1,503.00	44.3
J-348	148: Zone-1	True	3,743.30	1,500.60	27.8
J-349	148: Zone-1	True	5,000.00	1,500.00	50.8
J-350	148: Zone-1	True	2,131.93	1,500.00	57.7
J-351	148: Zone-1	True	5,000.00	1,511.41	46.5
J-354	148: Zone-1	True	5,000.00	1,500.00	50.9
J-355	148: Zone-1	True	2,782.34	1,500.00	31.0
J-356	148: Zone-1	True	1,779.18	1,503.61	49.4
J-357	148: Zone-1	True	2,703.23	1,500.00	33.1
J-358	148: Zone-1	True	2,667.05	1,503.61	26.6
J-359	148: Zone-1	True	3,023.54	1,500.00	59.9
J-360	148: Zone-1	True	5,000.00	1,500.00	52.0
J-361	148: Zone-1	True	2,091.58	1,500.00	72.7
J-369	148: Zone-1	True	2,540.84	1,500.00	45.5
FH X-4	148: Zone-1	True	5,000.00	1,500.00	31.9
FH J-31	148: Zone-1	True	4,820.21	1,500.00	29.0
FH G-5	148: Zone-1	True	5,000.00	1,500.00	50.0
FH J-1	148: Zone-1	True	5,000.00	1,500.00	50.1
J-394	148: Zone-1	True	3,336.42	1,515.70	30.4
J-395	148: Zone-1	True	3,359.96	1,515.70	26.1
J-396	148: Zone-1	True	2,982.60	1,508.14	35.8
J-397	148: Zone-1	True	3,019.93	1,509.05	35.5
J-398	148: Zone-1	True	2,745.43	1,508.14	37.6
J-399	148: Zone-1	True	1,876.35	1,502.72	31.3
J-400	148: Zone-1	True	1,842.72	1,510.86	25.4
J-401	148: Zone-1	True	5,000.00	1,500.00	48.8
J-402	148: Zone-1	True	4,439.96	1,504.53	29.0
J-403	148: Zone-1	True	3,288.39	1,509.94	48.7
J-404	148: Zone-1	True	3,237.29	1,508.14	45.9
J-405	148: Zone-1	True	3,721.25	1,502.70	35.6
J-406	148: Zone-1	True	3,672.44	1,501.57	30.9
J-407	148: Zone-1	True	4,107.73	1,503.61	30.9
J-408	148: Zone-1	True	3,346.95	1,502.70	25.2
J-409	148: Zone-1	True	1,971.49	1,502.70	66.9

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-411	148: Zone-1	True	2,202.30	1,507.07	35.9
J-412	148: Zone-1	True	2,098.44	1,502.99	25.3
J-414	148: Zone-1	True	5,000.00	1,500.00	30.6
J-415	148: Zone-1	True	5,000.00	1,500.00	30.8
J-416	148: Zone-1	True	5,000.00	1,500.00	30.7
J-417	148: Zone-1	True	3,986.62	1,502.25	25.0
J-418	148: Zone-1	True	3,894.44	1,506.02	35.5
J-419	148: Zone-1	True	3,646.48	1,504.50	35.4
J-420	148: Zone-1	True	2,537.46	1,501.49	61.4
J-423	148: Zone-1	True	3,107.75	1,505.26	46.8
J-424	148: Zone-1	True	3,399.49	1,504.50	42.8
J-425	148: Zone-1	True	4,949.95	1,500.00	25.0
J-426	148: Zone-1	True	4,550.70	1,503.61	25.0
J-427	148: Zone-1	True	2,696.25	1,509.94	29.9
J-428	148: Zone-1	True	2,608.88	1,506.28	25.1
J-429	148: Zone-1	True	2,956.35	1,508.14	40.4
J-430	148: Zone-1	True	2,005.66	1,500.00	25.0
J-431	148: Zone-1	True	1,834.61	1,500.00	35.1
J-433	148: Zone-1	True	4,087.57	1,507.54	31.9
J-434	148: Zone-1	True	2,727.11	1,500.00	69.2
J-435	148: Zone-1	True	2,670.24	1,500.00	42.3
J-436	148: Zone-1	True	4,680.46	1,500.00	49.4
J-437	148: Zone-1	True	3,917.69	1,500.00	51.2
J-439	148: Zone-1	True	2,641.58	1,500.00	25.0
J-440	148: Zone-1	True	2,262.75	1,501.05	40.8
J-442	148: Zone-1	True	3,144.16	1,502.10	55.6
J-443	148: Zone-1	True	2,477.53	1,500.00	33.9
J-444	148: Zone-1	True	5,000.00	1,500.00	25.9
J-445	148: Zone-1	True	4,100.56	1,500.00	42.5
J-446	148: Zone-1	True	2,049.28	1,500.00	41.0
J-447	148: Zone-1	True	1,560.70	1,500.00	42.2
J-449	148: Zone-1	True	2,116.87	1,500.00	25.0
J-450	148: Zone-1	True	1,893.85	1,500.00	36.8
J-453	148: Zone-1	True	2,628.62	1,500.00	25.2
J-454	148: Zone-1	True	2,255.26	1,500.00	41.1
J-455	148: Zone-1	True	3,278.84	1,500.00	25.0
J-456	148: Zone-1	True	2,854.93	1,500.00	39.3
J-459	148: Zone-1	True	2,882.52	1,502.83	31.7
J-460	148: Zone-1	True	3,311.27	1,500.91	25.0
J-461	148: Zone-1	True	5,000.00	1,501.19	25.7
J-462	148: Zone-1	True	1,941.86	1,500.00	46.8
J-463	148: Zone-1	True	2,485.35	1,503.37	25.0
J-464	148: Zone-1	True	2,474.89	1,503.46	25.0
J-467	148: Zone-1	True	2,710.39	1,502.83	25.9

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-468	148: Zone-1	True	2,040.08	1,502.55	25.0
J-469	148: Zone-1	True	2,678.87	1,503.46	25.0
J-470	148: Zone-1	True	5,000.00	1,500.00	53.2
J-471	148: Zone-1	True	5,000.00	1,500.00	53.4
J-472	148: Zone-1	True	5,000.00	1,500.00	50.0
J-474	148: Zone-1	True	1,963.11	1,502.83	25.0
J-475	148: Zone-1	True	1,855.45	1,500.00	52.4
J-476	148: Zone-1	True	1,556.82	1,500.00	48.3
J-478	148: Zone-1	True	1,714.03	1,500.00	42.3
J-480	148: Zone-1	True	3,637.31	1,500.64	35.2
J-481	148: Zone-1	True	3,582.39	1,500.00	31.7
J-482	148: Zone-1	True	3,078.91	1,500.00	25.0
J-483	148: Zone-1	True	2,298.70	1,506.29	30.9
J-485	148: Zone-1	True	3,943.30	1,500.00	43.5
J-486	148: Zone-1	True	3,488.55	1,507.34	43.2
J-488	148: Zone-1	True	3,763.75	1,500.00	28.8
J-489	148: Zone-1	True	3,392.54	1,508.92	25.0
J-490	148: Zone-1	True	2,147.96	1,508.92	63.1
J-491	148: Zone-1	True	3,796.54	1,500.00	25.7
J-492	148: Zone-1	True	5,000.00	1,500.00	50.0
J-493	148: Zone-1	True	5,000.00	1,500.00	50.0
J-495	148: Zone-1	True	1,503.64	1,500.70	44.3
J-496	148: Zone-1	True	5,000.00	1,500.00	50.0
J-498	148: Zone-1	True	5,000.00	1,500.00	53.0
J-499	148: Zone-1	True	5,000.00	1,500.00	53.2
J-500	148: Zone-1	True	2,442.41	1,503.15	72.0
J-501	148: Zone-1	True	5,000.00	1,500.00	52.7
J-503	148: Zone-1	True	5,000.00	1,500.00	52.8
J-505	148: Zone-1	True	5,000.00	1,500.00	50.5
J-506	148: Zone-1	True	5,000.00	1,500.00	45.6
J-508	148: Zone-1	True	1,990.11	1,500.00	25.4
J-511	148: Zone-1	True	5,000.00	1,500.00	48.2
J-513	148: Zone-1	True	5,000.00	1,500.00	48.5
J-514	148: Zone-1	True	5,000.00	1,500.00	49.2
J-515	148: Zone-1	True	5,000.00	1,500.00	49.2
J-516	148: Zone-1	True	1,651.86	1,500.00	44.0
J-517	148: Zone-1	True	1,525.34	1,500.00	25.0
J-519	148: Zone-1	True	3,335.44	1,500.00	38.4
J-520	148: Zone-1	True	5,000.00	1,505.24	46.7
J-521	148: Zone-1	True	5,000.00	1,505.24	46.5
J-522	148: Zone-1	True	5,000.00	1,505.24	43.8
J-523	148: Zone-1	True	5,000.00	1,500.00	38.5
J-524	148: Zone-1	True	4,569.92	1,500.00	27.3
J-525	148: Zone-1	True	3,419.01	1,500.00	59.3

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-526	148: Zone-1	True	5,000.00	1,500.00	46.7
J-527	148: Zone-1	True	5,000.00	1,500.00	46.5
J-528	148: Zone-1	True	5,000.00	1,500.00	46.5
J-529	148: Zone-1	True	5,000.00	1,500.00	44.9
J-530	148: Zone-1	True	3,496.78	1,500.00	32.0
J-531	148: Zone-1	True	3,175.08	1,500.00	40.0
J-532	148: Zone-1	True	3,231.35	1,500.00	38.3
J-533	148: Zone-1	True	3,825.73	1,500.00	35.7
J-537	148: Zone-1	True	5,000.00	1,500.00	57.0
J-538	148: Zone-1	True	5,000.00	1,500.00	56.1
J-539	148: Zone-1	True	5,000.00	1,500.00	57.8
J-540	148: Zone-1	True	5,000.00	1,500.00	57.5
J-541	148: Zone-1	True	4,109.01	1,500.00	27.1
J-542	148: Zone-1	True	5,000.00	1,500.00	46.6
J-543	148: Zone-1	True	2,897.67	1,500.00	51.5
J-544	148: Zone-1	True	5,000.00	1,500.00	46.7
J-545	148: Zone-1	True	5,000.00	1,500.00	57.5
J-548	148: Zone-1	True	3,296.92	1,500.00	28.6
J-550	148: Zone-1	True	3,210.78	1,510.48	27.4
J-551	148: Zone-1	True	3,694.64	1,500.00	25.8
J-552	148: Zone-1	True	5,000.00	1,500.00	56.0
J-553	148: Zone-1	True	1,556.55	1,500.00	49.7
J-554	148: Zone-1	True	1,581.43	1,500.00	28.3
J-555	148: Zone-1	True	5,000.00	1,500.00	57.5
J-577	148: Zone-1	True	2,847.50	1,500.00	25.0
J-582	148: Zone-1	True	5,000.00	1,500.00	45.8
J-673	148: Zone-1	True	5,000.00	1,500.00	40.0
J-674	148: Zone-1	True	4,943.74	1,500.00	29.4
J-675	148: Zone-1	True	4,289.25	1,500.00	27.8
J-678	148: Zone-1	True	3,312.57	1,500.00	34.5
J-696	148: Zone-1	True	5,000.00	1,500.00	52.2
J-697	148: Zone-1	True	2,624.68	1,500.00	25.0
J-716	148: Zone-1	True	5,000.00	1,500.00	48.0
J-717	148: Zone-1	True	5,000.00	1,500.00	46.8
J-681	148: Zone-1	True	3,699.51	1,500.00	34.7
J-682	148: Zone-1	True	3,783.27	1,500.00	31.6
J-718	148: Zone-1	True	2,244.41	1,500.00	25.0
J-719	148: Zone-1	True	5,000.00	1,500.00	47.0
J-721	148: Zone-1	True	4,181.38	1,500.00	25.9
J-720	148: Zone-1	True	4,512.55	1,500.00	25.0
J-728	148: Zone-1	True	4,279.93	1,500.00	25.8
J-727	148: Zone-1	True	4,046.52	1,500.00	26.3
J-726	148: Zone-1	True	3,951.48	1,500.00	26.8
J-725	148: Zone-1	True	3,895.85	1,500.00	28.7

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-724	148: Zone-1	True	3,881.10	1,500.00	26.9
J-723	148: Zone-1	True	3,899.10	1,500.00	26.3
J-722	148: Zone-1	True	4,033.24	1,500.00	27.5
J-733	148: Zone-1	True	1,507.70	1,500.00	25.1
J-757	148: Zone-1	True	4,966.37	1,500.00	35.8
J-758	148: Zone-1	True	3,915.64	1,500.00	34.6
J-759	148: Zone-1	True	3,102.97	1,500.00	27.7
J-764	148: Zone-1	True	3,212.14	1,500.00	26.8
J-763	148: Zone-1	True	2,437.19	1,500.00	31.2
J-762	148: Zone-1	True	2,327.71	1,500.00	33.7
J-761	148: Zone-1	True	2,327.50	1,500.00	33.8
J-760	148: Zone-1	True	2,467.44	1,500.00	32.0
J-765	148: Zone-1	True	5,000.00	1,500.00	25.6
J-767	148: Zone-1	True	3,165.67	1,500.00	25.2
J-768	148: Zone-1	True	3,403.17	1,500.00	25.2
J-769	148: Zone-1	True	2,930.19	1,500.00	25.2
J-770	148: Zone-1	True	2,682.62	1,500.00	35.7
J-775	148: Zone-1	True	5,000.00	1,500.00	42.0
J-777	148: Zone-1	True	3,241.16	1,500.00	25.0
J-778	148: Zone-1	True	2,894.26	1,500.00	38.5
J-785	148: Zone-1	True	3,803.91	1,500.00	25.0
J-787	148: Zone-1	True	5,000.00	1,500.00	44.6
J-154	148: Zone-1	False	1,234.05	1,500.00	33.0
J-5	148: Zone-1	False	1,471.12	1,501.53	56.4
J-37	148: Zone-1	False	1,417.97	1,500.70	48.9
J-148	148: Zone-1	False	1,433.44	1,503.98	26.3
J-149	148: Zone-1	False	1,329.48	1,504.06	26.5
J-150	148: Zone-1	False	1,417.48	1,506.75	27.4
J-151	148: Zone-1	False	1,415.32	1,500.96	25.1
J-152	148: Zone-1	False	1,450.07	1,503.26	28.0
J-153	148: Zone-1	False	1,286.53	1,500.00	35.1
J-196	148: Zone-1	False	1,031.08	1,515.03	76.4
J-199	148: Zone-1	False	1,330.59	1,501.17	48.8
J-200	148: Zone-1	False	1,479.76	1,500.00	40.6
J-215	148: Zone-1	False	1,219.35	1,504.82	25.1
J-217	148: Zone-1	False	964.70	1,509.85	41.5
J-218	148: Zone-1	False	1,407.31	1,503.54	33.6
J-236	148: Zone-1	False	1,138.89	1,515.55	50.0
J-238	148: Zone-1	False	1,028.02	1,503.82	57.8
J-251	148: Zone-1	False	1,351.18	1,514.95	62.8
J-363	148: Zone-1	False	1,153.03	1,506.99	25.0
J-364	148: Zone-1	False	1,112.09	1,506.99	26.1
J-365	148: Zone-1	False	1,084.55	1,506.99	29.2
J-366	148: Zone-1	False	1,101.53	1,506.99	25.0

Fire Flow Node FlexTable: Fire Flow Report (ChubAug1_2013.wtg)

Current Time: 0.000 hours

Label	Zone	Satisfies Fire Flow Constraints?	Fire Flow (Available) (gpm)	Flow (Total Needed) (gpm)	Pressure (Calculated Zone Lower Limit) (psi)
J-367	148: Zone-1	False	1,033.11	1,506.99	32.0
J-451	148: Zone-1	False	1,303.58	1,500.00	75.8
J-573	148: Zone-1	False	1,092.42	1,506.99	25.0
J-574	148: Zone-1	False	1,081.08	1,506.99	25.1
J-575	148: Zone-1	False	1,029.22	1,506.99	30.3
J-576	148: Zone-1	False	1,026.23	1,506.99	31.7
J-732	148: Zone-1	False	1,483.59	1,500.00	28.3
J-731	148: Zone-1	False	1,475.84	1,500.00	28.9
J-734	148: Zone-1	False	1,122.23	1,500.00	25.0
J-672	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-518	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-730	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)
J-776	148: Zone-1	(N/A)	(N/A)	(N/A)	(N/A)

APPENDIX E FINANCIAL INFORMATION

CITY OF CHUBBUCK
RESOLUTION No. 9-2010

A RESOLUTION OF THE CITY OF CHUBBUCK, IDAHO, AMENDING THE RATES TO BE CHARGED BY THE CITY FOR WATER FURNISHED THROUGH THE MUNICIPAL WATER SYSTEM.

WHEREAS, Section 13.04.010 of the Chubbuck Municipal Code provided that the rates and fees for water furnished through the municipal water system shall be set by resolution:

NOW, THEREFORE, be it resolved by the City Council of the City of Chubbuck that effective, October 1, 2010, the monthly charges for this service shall be as follows:

WATER MONTHLY SERVICE RATES

Meter Size	Minimum Base Charge
5/8 x 3/4, 3/4, 1 inch	$ 20.22
1.5 inch	$ 65.32
2 inch	$ 103.17
3 inch	$ 218.67
4 inch	$ 360.82
6 inch	$ 732.92
8 inch	$ 1,149.97
10 inch	$ 1,758.82

Volumetric Charge: $ 1.15 per one thousand gallons metered water.

Billing Charge: $ 3.78 per bill.

CONNECTION FEES

Each Connection: $2,250 per equivalent single family dwelling as reasonably determined by the Public Works Director.

PASSED AND APPROVED BY THE MAYOR AND COUNCIL OF THE CITY OF CHUBBUCK, THIS 14th DAY of September, 2010.

Steven M. England

Steven M. England, Mayor

ATTEST:

Rich Morgan

Rich Morgan, City Clerk

J:\Water\RATES\Water resolutions\Water Resolution 9-2010.wpd

CITY OF CHUBBUCK
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2011

WATER UTILITY

		BUDGET	PERIOD ACTUAL	YTD ACTUAL	UNEXPENDED	PCNT
31-4341-110	WW SALARIES	635,372.00	502,187.33	502,187.33	133,184.67	79.0
31-4341-210	WW EMPLOYER SHARE - FICA	48,607.00	38,370.79	38,370.79	10,236.21	78.9
31-4341-220	WW EMPLOYER SHARE - RETIREMENT	69,891.00	52,092.95	52,092.95	17,798.05	74.5
31-4341-240	WW WORKMEN'S COMPENSATION	23,000.00	14,341.81	14,341.81	8,658.19	62.4
31-4341-250	WW EMPLOYEE MEDICAL INS	226,324.00	203,659.62	203,659.62	22,664.38	90.0
31-4341-310	WW OFFICE SUPPLIES & ADM	16,500.00	17,888.52	17,888.52	(1,388.52)	108.4
31-4341-320	WW SALARY - BENEFITS SURVEY	600.00	.00	.00	600.00	.0
31-4341-330	WW EMPLOYEE RECOGNITION	1,500.00	1,660.22	1,660.22	(160.22)	110.7
31-4341-340	WW OFFICE EQUIP & MAINT	6,200.00	1,726.96	1,726.96	4,473.04	27.9
31-4341-343	WW COMPUTER LAN MAINTENANCE	3,800.00	.00	.00	3,800.00	.0
31-4341-345	WW COMPUTER	20,000.00	12,555.46	12,555.46	7,444.54	62.8
31-4341-346	WW MAPPING	15,000.00	2,647.03	2,647.03	12,352.97	17.7
31-4341-370	WW TRAINING/PUBLICATIONS	10,000.00	5,906.98	5,906.98	4,093.02	59.1
31-4341-410	WW ENG/PROF SERVICES	30,000.00	19,144.24	19,144.24	10,855.76	63.8
31-4341-420	WW LEGAL	12,500.00	.00	.00	12,500.00	.0
31-4341-460	WW EQUIP & LIABILITY INS	42,500.00	57,796.52	57,796.52	(15,296.52)	136.0
31-4341-510	WW TELEPHONE	5,000.00	6,591.05	6,591.05	(1,591.05)	131.8
31-4341-520	WW ELECTRIC POWER	2,228.00	1,552.38	1,552.38	675.62	69.7
31-4341-522	WW NATURAL GAS	500.00	1,272.47	1,272.47	(772.47)	254.5
31-4341-600	WW BLDG MAINT/OPER/REPAIR	10,000.00	2,376.48	2,376.48	7,623.52	23.8
31-4341-610	WW BLDG. MAINT/OPER/REPAIR	.00	400.00	400.00	(400.00)	.0
31-4341-694	WW DEPOSIT REFUND	.00	.00	.00	.00	.0
31-4341-695	WW OVERPAYMENT CLOSEOUT	.00	.00	.00	.00	.0
31-4341-740	WW SAFETY	2,200.00	1,532.37	1,532.37	667.63	69.7
31-4341-750	WW RATES AND FEE STUDY	10,000.00	.00	.00	10,000.00	.0
31-4341-761	WW CLOTHING	1,000.00	1,336.25	1,336.25	(336.25)	133.6
31-4341-812	WW BONDS & INTEREST RET.	159,600.00	24,663.28	24,663.28	134,936.72	15.5
31-4341-815	WW WELL HEAD/SOURCE PROTECTION	4,000.00	1,428.26	1,428.26	2,571.74	35.7
31-4341-816	WW CONSUMER CONFIDENCE REPORT	2,500.00	.00	.00	2,500.00	.0
31-4341-817	WW IMPACT FEE STUDY	9,000.00	6,379.00	6,379.00	2,621.00	70.9
31-4341-820	WW DEQ FEE ASSESSMENT	15,000.00	.00	.00	15,000.00	.0
31-4341-825	WW WATER RIGHTS	80,000.00	57,834.96	57,834.96	22,165.04	72.3
31-4341-826	WW FH IRRIGATION M&O ASSESSMEN	8,500.00	8,303.72	8,303.72	196.28	97.7
31-4341-828	WW PRESSURE IRRIGATION	25,000.00	2,637.50	2,637.50	22,362.50	10.6
31-4341-830	WW BLDG REM/ADD	20,000.00	.00	.00	20,000.00	.0
31-4341-900	WW 2008 CARRY-OVER	.00	.00	.00	.00	.0
	TOTAL CLASS 1	1,516,322.00	1,046,286.15	1,046,286.15	470,035.85	69.0
	WW ELEC MOTOR M & O:					
31-4342-101	WW ELEC MOTOR M & O	12,000.00	.00	.00	12,000.00	.0
31-4342-102	WW PUMP & EQUIP M & O	5,000.00	2,367.37	2,367.37	2,632.63	47.4
31-4342-103	WW ELECTRICAL POWER	118,000.00	133,189.21	133,189.21	(15,189.21)	112.9
31-4342-104	WW SCADA M & O	30,000.00	12,636.84	12,636.84	17,363.16	42.1
31-4342-105	WW DEPR. TRANSFER	.00	.00	.00	.00	.0
31-4342-524	WW DISINFECTION EQUIPMENT	.00	.00	.00	.00	.0
31-4342-540	WW WATER CLEAN UP PROJECT	.00	.00	.00	.00	.0
31-4342-600	WW BLDG & GROUNDS M & O	2,000.00	2,552.67	2,552.67	(552.67)	127.6
31-4342-621	WW	.00	.00	.00	.00	.0
	TOTAL WW ELEC MOTOR M & O	167,000.00	150,746.09	150,746.09	16,253.91	90.3

CITY OF CHUBBUCK
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2011

WATER UTILITY

		BUDGET	PERIOD ACTUAL	YTD ACTUAL	UNEXPENDED	PCNT
	WW DISINFECTION EQUIP:					
31-4343-524	WW DISINFECTION EQUIP	1,000.00	.00	.00	1,000.00	.0
31-4343-525	WW DISINFECTION CHEMICAL	10,000.00	14,834.55	14,834.55	(4,834.55)	148.4
31-4343-526	WW TREATMENT CHEMICALS	5,000.00	3,697.55	3,697.55	1,302.45	74.0
31-4343-530	WW Q.C. SAMPLING/TESTING	7,500.00	2,071.37	2,071.37	5,428.63	27.6
	TOTAL WW DISINFECTION EQUIP	23,500.00	20,603.47	20,603.47	2,896.53	87.7
	WW TRANSMISSION/ STORAGE:					
31-4344-119	WW MAINTENANCE AND OPERATION	2,000.00	.00	.00	2,000.00	.0
31-4344-120	WW TRANS IMPROVEMENT	45,000.00	.00	.00	45,000.00	.0
31-4344-121	WW TRANS MAINT/OPER/REPAIR	20,000.00	1,583.27	1,583.27	18,416.73	7.9
31-4344-122	WW STOR MAIN/OPER/REPAIR	15,000.00	.00	.00	15,000.00	.0
31-4344-123	WW BUILDING MAINT/OPER	.00	7.90	7.90	(7.90)	.0
31-4344-125	WW DIGLINE	1,000.00	509.54	509.54	490.46	51.0
31-4344-600	WW BLDG MAINTENANCE & REPAIR	2,000.00	.00	.00	2,000.00	.0
	TOTAL WW TRANSMISSION/ STORAGE	85,000.00	2,100.71	2,100.71	82,899.29	2.5
	WW DISTR SYS IMPROVEMENTS:					
31-4345-751	WW DISTR SYS. IMPROVEMENTS	4,000.00	.00	.00	4,000.00	.0
31-4345-752	WW DISTR SYS M & O	20,000.00	12,151.14	12,151.14	7,848.86	60.8
31-4345-753	WW NEW CONNECTIONS	5,000.00	6,270.39	6,270.39	(1,270.39)	125.4
31-4345-754	WW SERVICE CONN MAINT/OPER	5,000.00	1,800.85	1,800.85	3,199.15	36.0
31-4345-755	WW FIRE HYD MAINT/OPER/REPAIR	14,000.00	710.19	710.19	13,289.81	5.1
31-4345-756	WW METERS-REPL/MAINT/OPER	15,000.00	5,440.97	5,440.97	9,559.03	36.3
31-4345-757	WW CROSS/CONNECTION CONTROL	.00	.00	.00	.00	.0
31-4345-759	WW PARK SPRINKLER REPAIR	5,500.00	.00	.00	5,500.00	.0
	TOTAL WW DISTR SYS IMPROVEMENTS	68,500.00	26,373.54	26,373.54	42,126.46	38.5
	CLASS 8:					
31-4348-350	WW FUEL & LUBRICANTS	30,000.00	15,738.86	15,738.86	14,261.14	52.5
31-4348-360	WW SMALL TOOLS/EQUIPMENT	6,000.00	3,691.99	3,691.99	2,308.01	61.5
31-4348-610	WW EQUIP, REPAIRS & MAINT	15,000.00	1,716.21	1,716.21	13,283.79	11.4
31-4348-611	WW VEHICLE M&O	15,000.00	7,357.99	7,357.99	7,642.01	49.1
31-4348-630	WW RADIO EQUIP M&O	1,000.00	.00	.00	1,000.00	.0
31-4348-750	WW CENTRAL GARAGE	48,738.00	.00	.00	48,738.00	.0
31-4348-800	WW CAPITAL PLANNING	100,000.00	.00	.00	100,000.00	.0
31-4348-801	SML TRK DEPR TRANSFER	76,950.00	.00	.00	76,950.00	.0
31-4348-802	WW LARGE TK/EQUIP	20,000.00	.00	.00	20,000.00	.0
31-4348-803	WW HEAVY EQUIP	.00	.00	.00	.00	.0
31-4348-805	WW HOUSE PAYMENT LOAN	.00	.00	.00	.00	.0
31-4348-810	WW BACKHOE/LOADER	32,633.00	2,217.63	2,217.63	30,415.37	6.8
31-4348-815	WW RADIO UPGRADE	7,000.00	.00	.00	7,000.00	.0
31-4348-817	WW PICK UP REPLACEMENT	20,000.00	4,675.75	4,675.75	15,324.25	23.4
	TOTAL CLASS 8	372,321.00	35,398.43	35,398.43	336,922.57	9.5
	TOTAL DEPARTMENT 434	2,232,643.00	1,281,508.39	1,281,508.39	951,134.61	57.4

CITY OF CHUBBUCK
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2011

WATER UTILITY

	BUDGET	PERIOD ACTUAL	YTD ACTUAL	UNEXPENDED	PCNT
TOTAL FUND EXPENDITURES	2,232,643.00	1,281,508.39	1,281,508.39	951,134.61	57.4
NET REVENUE OVER EXPENDITURES	(2,232,643.00)	(1,281,508.39)	(1,281,508.39)	(951,134.61)	(57.4)

CITY OF CHUBBUCK, IDAHO

AUDITED FINANCIAL STATEMENTS

FOR THE FISCAL YEARS ENDED SEPTEMBER 30, 2012 AND 2011

DEATON & COMPANY

Certified Public Accountants

CITY OF CHUBBUCK, IDAHO
ANNUAL FINANCIAL REPORT
SEPTEMBER 30, 2012 AND 2011

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CITY OF CHUBBUCK

Steven M. England, Mayor
P.O. Box 5604
5160 Yellowstone Avenue
Chubbuck, ID 83202-0006
(208) 237-2430
(208) 237-2409 Fax

March 30, 2013

The Honorable Mayor Steven England, Members of the City Council, and Citizens of the City of Chubbuck:

Idaho State Law requires that all general-purpose local governments with an annual budget that exceeds two hundred fifty thousand dollars submit copies of their audited financial statements to the legislative council. The statements must be presented in conformity with generally accepted accounting principles (GAAP) and audited in accordance with generally accepted auditing standards (GAAS) by a firm of licensed certified public accountants. Pursuant to those requirements, we hereby issue the comprehensive annual financial report for the City of Chubbuck for the fiscal year ended September 30, 2012.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive frame-work of internal control that is has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements.

Deaton & Company, Chartered, a firm of licensed certified public accountants has issued an unqualified opinion on the City of Chubbuck's financial statements for the year ended September 30, 2012. The independent auditor's report is located at the front of the financial section of this report.

Management's Discussion and Analysis (MD &A) immediately follows the independent auditor's report and provides a narrative introduction, overview, and analysis of the basic financial statements. MD&A complement this letter of transmittal and should be read in conjunction with it.

Profile of the City of Chubbuck

The City of Chubbuck (population 14,067) was incorporated in 1950. Chubbuck is located in the southeastern portion of the State of Idaho.

Chubbuck has a land area of 4.19 square miles and is bordered by the City of Pocatello, with its own population of 54,810. The City is located in Bannock County with a 2011 census population of 83,020. The City is empowered to levy property taxes on both real and personal property within the city limits. It also is empowered by state statue to extend its corporate limits by annexation, which it had done from time to time.

The City of Chubbuck operates under the Council-Mayor form of government. Policy-making and legislative authority are vested in a governing council (City Council) consisting of the Mayor and four other members, all elected on a non-partisan basis. The Council is responsible for passing ordinances, adopting budget, appointing committees, approval of internal control framework and hiring city management. The Mayor acts as the Chief Executive Officer and oversees the day-to-day operations of the City. The Mayor and Council members are elected at large for 4-year terms, with two of the Council members standing for election every two years.

The City of Chubbuck provides a full range of services. These services include Public Safety (police, fire, animal control, and building inspection); Environmental Health (sanitation, water, waste water treatment and storm water management); Transportation (street & highway maintenance and traffic engineering); Recreational (parks and recreation); Neighborhood Quality (engineering, planning and development, community services) and Administration (mayor/council, finance, elections, human resources, legal risk management and information technology). In addition to general government activities, the Mayor and City Council exercise, or have the ability to exercise, oversight of the Chubbuck Development Authority, a legally separate corporation. Therefore, its activities are included as a separate component unit in the reporting entity.

The annual budget serves as the foundation for the City of Chubbuck's financial planning and control. After reviewing service levels from the previous fiscal year, the Council analyzes draft budget requests during May. The Chief Financial Officer and Mayor are responsible for preparing a draft budget for the Council. The budget is prepared by fund, function and activity, and includes information on the past year, current year estimates and requested appropriation for the next fiscal year. Prior to August 1, the City's Chief Financial Officer and the Mayor submit the proposed budget to the City Council for review. The City Council holds public hearings and may add to, subtract from or change the proposed budget, but may not change the form of the budget. Prior to August 30, the budget is legally enacted through passage of the annual appropriation ordinance (not in excess of the proposed budget) by the City Council. Expenditures may not exceed budgeted appropriations at the fund level. City management can legally amend or transfer appropriations within individual funds but not between funds which requires the approval of the City Council in a budget amendment, which follows a public notice, public hearing and amended ordinances adoption process similar to the adoption of the original budget. Budgets are integrated into the accounting system to facilitate management control during the year.

The Council reviews service levels for all departments prior to entertaining budget requests for the next fiscal year. Revenue projections receive equal attention and the Council makes budget decisions

sufficient to balance the budget against projected revenues. Cash balances and budget to actual trends are monitored monthly.

The preparation of the comprehensive annual financial report was made possible by the dedicated service of the entire staff of the City and, in particular, the Clerk's Office. Each member of these departments has our sincere appreciation for the contributions made in the preparation of this project. Credit also must be given to the Mayor and the City Council for their support for maintaining high standards of professionalism in the management of the City of Chubbuck's finances.

Respectfully submitted March 30, 2013

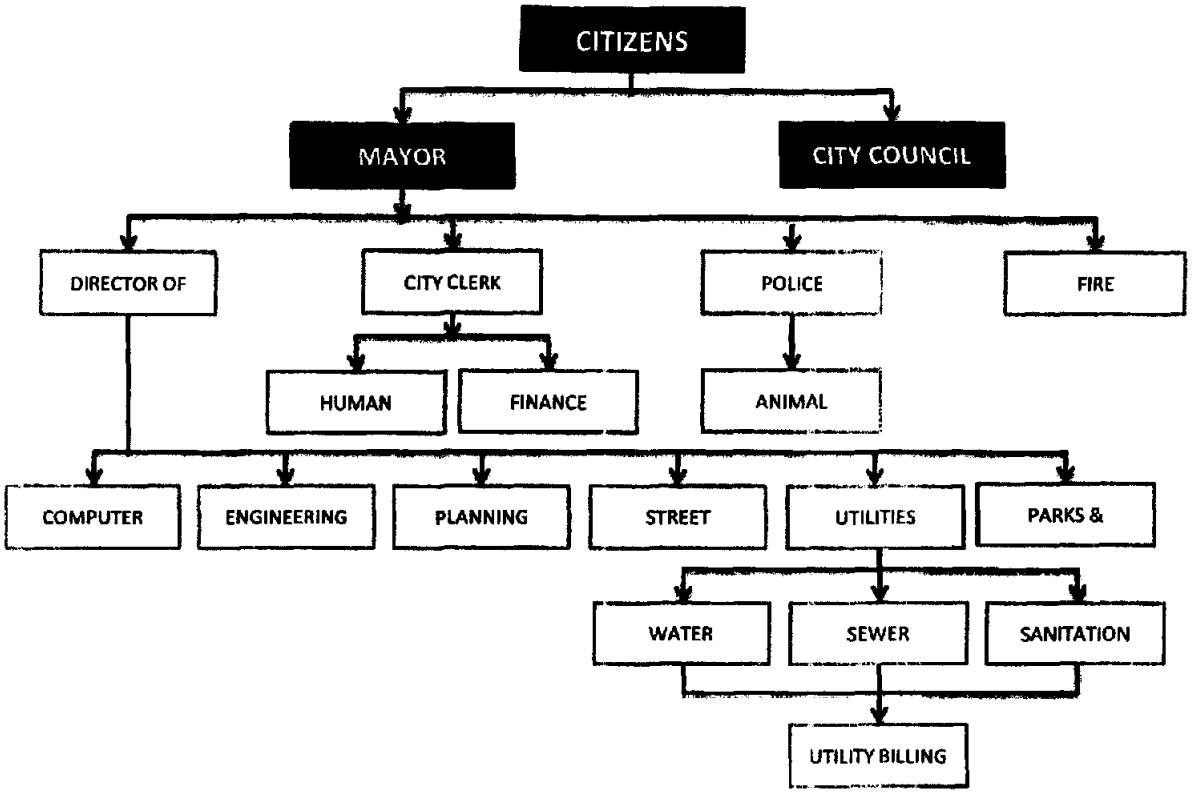
Rich Morgan
City Clerk

Marie Chappell
Finance Clerk

CITY OF CHUBBUCK, IDAHO
List of Principal Officials
SEPTEMBER 30, 2012

Title	Name
Elected Officials	
Mayor	Steven England
Council President	Kevin England
Council Member	Kermit Morrison
Council Member	Josh Ellis
Council Member	Brent Marshall
City Officials	
City Attorney	Tom Holmes
Public Works Director	Steven Smart
Public Works Superintendent	Bryan Hall
City Clerk/Treasurer	Rich Morgan
Human Resource Officer	Eric Jablonski
Financial Officer	Marie Chappell
City Planner	Paul Andrus
Police Chief	Randy Severe
Computer Information Systems	Andy Despain
Parks & Recreation	Bill Guinn
Fire Chief	Eric King

CITY OF CHUBBUCK
ORGANIZATION CHART



Deaton & Company, Chartered
Certified Public Accountants
215 North 9th, Suite A
Pocatello, Idaho 83201-5278
(208) 232-5825
Members of Idaho Society of Certified Public Accountants
Members of American Institute of Certified Public Accountants

INDEPENDENT AUDITOR'S REPORT

To the City Council
City of Chubbuck

We have audited the accompanying financial statements of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of City of Chubbuck as of and for the years ended September 30, 2012 and 2011, which collectively comprise the City's basic financial statements as listed in the table of contents. These financial statements are the responsibility of the City of Chubbuck's management. Our responsibility is to express opinions on these financial statements based on our audit. The prior year summarized comparative information has been derived from he City's 2011 financial statements and, in our report dated May 11, 2012, we expressed unqualified opinions on the respective financial statements of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and the significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinions.

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of the City of Chubbuck as of September 30, 2012 and 2011, and the respective changes in financial position and cash flows, where applicable, thereof for the years then ended in conformity with accounting principles generally accepted in the United States of America.

In accordance with Government Auditing Standards, we have also issued our report dated March 29, 2013, on our consideration of the City of Chubbuck's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards and important for assessing the results of our audit.

Accounting principles generally accepted in the United States of America require that the Management's discussion and analysis and budgetary comparison information on pages 9 through 17 and 45 through 46 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion provide any assurance.

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City of Chubbuck's financial statements as a whole. The combining and individual nonmajor fund financial statements are presented for purposes of additional analysis and are not a required part of the financial statements. The accompanying schedule of expenditures of federal awards is presented for purposes of additional analysis as required by U.S. Office of Management and Budget Circular A-133, Audits of States, Local Governments, and Non-Profit Organizations, and is also not a required part of the financial statements. The combining and individual nonmajor fund financial statements and the schedule of expenditures of federal awards are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

Deaton & Company

Pocatello, Idaho
March 29, 2013

City of Chubbuck
Management's Discussion and Analysis
For the Year Ended September 30, 2012

As management of the City of Chubbuck, we offer readers of the City of Chubbuck's financial statements this narrative overview and analysis of the financial activities for the fiscal year ended September 30, 2012. We encourage readers to consider the information presented here in conjunction with additional information that we have furnished in our letter of transmittal.

Financial Highlights

- The assets of the City of Chubbuck exceed its liabilities at the close of the most recent fiscal year by $27,160,040 (net assets).
- At the end of the current fiscal year, unassigned fund balances for the general fund was $2,348,830 or 40 percent of total general fund expenditures.
- The governments net assets increased by $6,988,059. Approximately half of this increase, $3,804,688, is attributed to capital contributions from the Chubbuck Development Authority.
- In the City's business-type activities, operating revenues increased by $516,367. And operating expenses increased by $419,964. These increases are due to a combination of increases in operating costs and a small increase in the customer rates.
- During the current fiscal year, City of Chubbuck's debt had an increase of $429,044. (Including compensated absences). This was primarily due to an increase in sewer department long-term notes payable.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the City of Chubbuck's basic financial statements. The City's basic financial statements are comprised of three components: 1) governmental-wide financial statements, 2) fund financial statements and 3) notes to the financial statements. This report also contains other supplementary information in addition to the basic financial-statements themselves.

Government-wide financial statements. The government-wide financial statements are designed to provide readers with a broad overview of the City's finances, in a manner similar to a private-sector business.

The Statement of Net Assets presents information on all of the City's assets and liabilities, with the difference between the two reported as net assets. Over time, increases or decreases in net assets may serve as a useful indicator of whether the financial position of the City's is improving or deteriorating.

The Statement of Activities presents information showing how the City's net assets changed during the fiscal year. All changes in the assets are reported when the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in the future fiscal periods (e.g. uncollected taxes and earned but unused compensated absences).

Both of the government-wide financial statements distinguish function of the City of Chubbuck that are principally supported by taxes and intergovernmental revenues (governmental activities) from functions that are intended to recover all or a significant portion of their costs through user fees and charges (business-type activities). The governmental activities of the City of Chubbuck include general government and administration, public safety, parks, and highway streets and roads. The business-type activities of the City include water and sewer, and sanitation operations.

Fund Financial Statements. A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated from specific activities or objectives. The City, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All of the funds of the City of Chubbuck can be divided into three categories: governmental funds, proprietary funds, and fiduciary funds.

Governmental Funds. Governmental funds are used to account for essentially the same functions reported as governmental activities in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on current sources and uses of spendable resources, as well as on balances of spendable resources available at the end of the fiscal year. Such information may be useful in evaluation a government's near-term financing equipments.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for governmental funds with similar information presented for governmental activities in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. Both the governmental funds balance sheet and the governmental fund statements of revenues, expenditures, and changes in fund balances provide a reconciliation to facilitate this comparison between governmental funds and governmental activities.

The City of Chubbuck maintains seven individual governmental funds. Information's is presented separately in the governmental fund balance sheet and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the General Fund, which is the City's only major governmental fund. Data from the other six funds are combined into a single, aggregated presentation. Individual fund date for each of these non-major governmental funds is provided in the form of combining statements elsewhere in this report.

The City of Chubbuck adopts an annual appropriated budget of its general fund, major funds, and its nonmajor funds. Budgetary comparison schedules have been provided for these funds to demonstrate compliance with these budgets.

The basic governmental fund financial statements may be found on pages 20-22 of this report.

Proprietary Funds. The City of Chubbuck maintains two different types of proprietary funds. Enterprise funds are used to report the same functions presented as business-type activities in the government-wide financial statements. The City of Chubbuck uses enterprise funds to account for its Water department, Sewer department, and Sanitation department. Internal service funds are an accounting device used to accumulate and allocate costs internally among the City of Chubbuck's various functions. The City of Chubbuck uses an internal service fund to accounts for its central garage operations. Because this service predominantly benefits governmental rather than the business-type

functions, it has been included within governmental type activities in the government-wide financial statements.

Proprietary funds provide the same type of information as the government-wide financial statements, only in more detail. The proprietary fund financial statements include the operational and financial date from both the types of funds. The Water, Sewer, and Sanitation funds are major funds and their information is shown in separate columns. The internal service fund and the non-major enterprise funds are combined into a single, aggregated presentation in the proprietary funds financial statements. Individual fund data for the non-major enterprise fund is provided in the form of coming in statements elsewhere in this report.

The City of Chubbuck adopts an annual appropriated budget for its proprietary funds. Budgetary comparison schedules have been provided for these funds to demonstrate compliance with these budgets.

The basic proprietary fund financial statements may be found on pages 23-26 of this report.

Fiduciary Funds. Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are not reflected in the government-wide financial statements because the resources of those funds are not available to support the City of Chubbuck's own programs. The accounting used for fiduciary funds is similar to proprietary funds.

The City of Chubbuck adopts an annual appropriated budget for its fiduciary fund. Budgetary comparison schedules are provided for this fund to demonstrate compliance with this budget.

The fiduciary fund financial statements can be found on pages 27-28 of this report.

Notes to the Financial Statements. The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements may be found on pages 29-42 of this report.

Other Information. In addition to the basic financial statements and accompanying notes, this report also presents certain required supplementary information concerning the City's budgeted expense and revenues versus actual expenses and revenues.

The combining statement referred to earlier in connection with non-major governmental funds is presented following the required supplementary information on budget comparison.

Government-wide Financial Analysis

As noted earlier, net assets may serve over time as useful indicator of government's financial position. In the case of the City of Chubbuck, assets exceeded liabilities by $27,160,040 as of September 30, 2012.

The largest portion of the City of Chubbuck's net assets (45%) reflects its investments in capital assets (e.g., land, building, equipment, improvements, contraction in progress and infrastructure), less any debt used to acquire those assets that is still outstanding. The City uses these capital assets to provide service to citizens; consequently these assets are not available for future spending. Although the City's investment in capital assets is reported net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be used to liquidate these liabilities.

Below is a summary of the City of Chubbuck's Net Asset statement.

City of Chubbuck's Net Assets

	Governmental Activities		Business Activities		Total	
	2012	2011	2012	2011	2012	2011
ASSETS						
Current and other assets	$ 3,373,702	$ 2,836,140	$ 30,269,197	$ 27,561,493	$ 33,642,899	$ 30,397,633
Capital assets	7,706,251	5,082,171	8,246,663	6,602,931	15,952,914	11,685,102
Total assets	11,079,953	7,918,311	38,515,860	34,164,424	49,595,813	42,082,735
LIABILITIES						
Long-term liabilites outstanding	261,740	172,451	21,055,376	1,573,844	21,317,116	1,746,295
Other liabilites	215,256	212,509	903,401	20,047,925	1,118,657	20,260,434
Total liabilites	476,996	384,960	21,958,777	21,621,769	22,435,773	22,006,729
NET ASSETS						
Invested in captial assets, net of related debt	7,706,251	5,082,171	4,402,647	2,260,822	12,108,898	7,342,993
Restricted			169,081	237,981	169,081	237,981
Unrestricted	2,896,706	2,451,180	11,985,355	10,043,852	14,882,061	12,495,032
Total net assets	$ 10,601,957	$ 7,533,351	$ 16,557,083	$ 12,542,655	$ 27,160,040	$ 20,076,006

An additional portion of the City of Chubbuck's net assets $169,081 represent resources that are subject to external restriction on how they may be used. The remaining balance of unrestricted net assets ($14,882,062) may be used to meet the governments' on going obligation to citizens and creditors.

As of September 30, 2012, the City is able to report positive balances in all three categories of net assets, both for the government as a whole, as well as for its separate governmental and business-tye activities.

At the end of the current fiscal year, 95 percent of the liabilities are made up of noncurrent liabilities. This primarily represents notes payable and bonds discussed in note 9 pages 38-41 of the notes to financials.

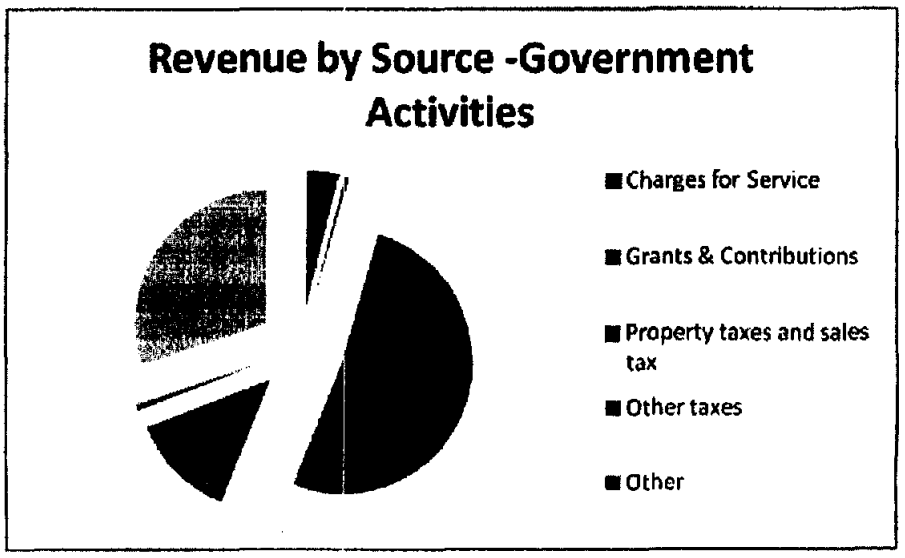
Governmental activities. Governmental activities' key elements are broken down in the following charts. Government activities increased net assets by $2,958,020 and business-type activates increased net assets by $4,030,039.

The City of Chubbuck's direct charges to users of governmental series made up $ 350,992. These charges are for park rentals, building permits and other fees related to public safety and administration. Public safety, the largest portion in fiscal year 2012, includes the fire department and police department and accounts for $3,884,651 in expenditures. The second largest portion of expenditures is the street department which accounts for $1,087,455. General government accounts for $235,127 in expenditures.

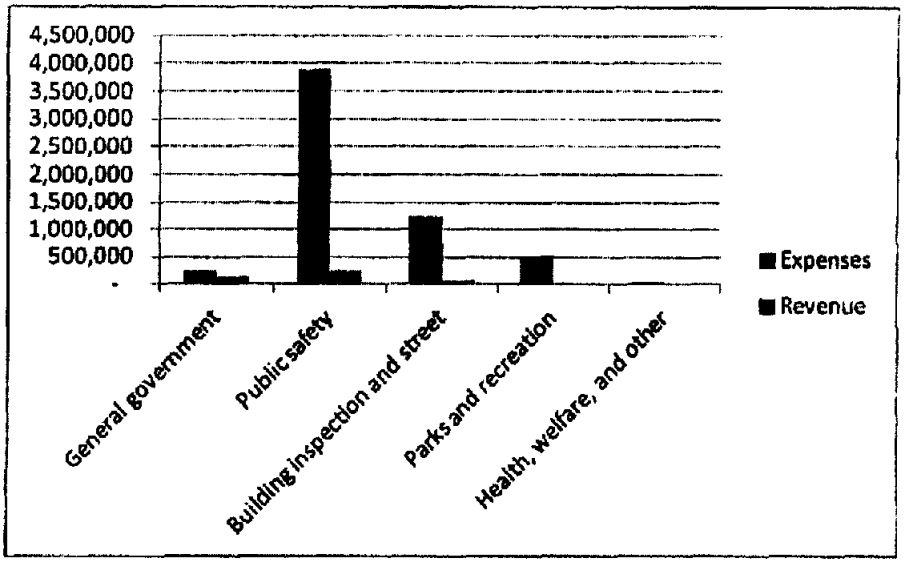
Below is summary of the City of Chubbuck's Changes in Net Assets.

City of Chubbuck's Changes in Net Assets

	Governmental Activities		Business Activities		Total	
	2012	2011	2012	2011	2012	2011
REVENUES						
Program revenues:						
Charges for services	$ 350,992	$ 488,169	$ 7,240,119	$ 6,712,923	$ 7,591,111	$ 7,201,092
Operating grants and contributions	43,612	64,685			43,612	64,685
General revenue:					-	-
Property taxes and sales tax	4,594,553	4,441,858			4,594,553	4,441,858
Other taxes	1,161,901	977,193			1,161,901	977,193
Other	72,506	133,118	42,921	22,849	115,427	155,967
Capital Contributions	2,683,248	217,034	1,125,220		3,808,468	217,034
Total Revenues	8,906,812	6,322,057	8,408,260	6,735,772	17,315,072	13,057,829
EXPENSES						
General government	235,127	229,616			235,127	229,616
Public safety	3,884,648	3,885,128			3,884,648	3,885,128
Building inspection and street	1,245,864	996,396			1,245,864	996,396
Parks and recreation	534,574	544,793			534,574	544,793
Health, welfare, and other	48,579	45,344			48,579	45,344
Water			1,398,887	1,355,305	1,398,887	1,355,305
Sewer			1,847,034	1,669,178	1,847,034	1,669,178
Sanitation			1,132,300	1,174,725	1,132,300	1,174,725
Total expenses	5,948,792	5,701,277	4,378,221	4,199,208	10,327,013	9,900,485
INCREASE IN NET ASSETS	2,958,020	620,780	4,030,039	2,536,564	6,988,059	3,157,344
NET ASSETS beginning	7,533,351	6,895,033	12,542,655	10,006,091	20,076,006	16,901,124
Prior Period Adjustment	111,586	17,541	(15,611)		95,975	17,541
NET ASSETS ending	$ 10,602,957	$ 7,533,354	$ 16,557,083	$ 12,542,655	$ 27,160,040	$ 20,076,009



Expenses and Program Revenues – Governmental Activities

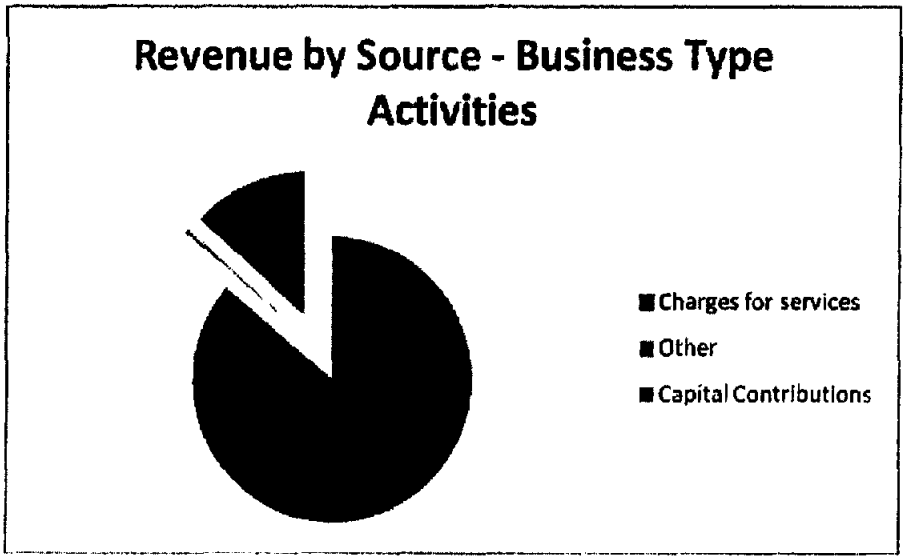


- The majority of the City of Chubbuck's governmental activities' revenue is received from property and sales tax (52 percent). This amount would be 74 percent of the revenue received without this fiscal year's capital contributions from Chubbuck Development Authority.
- When all taxes are added together, they make up 64 percent of the budget or 92 percent without the current fiscal years' capital contributions from Chubbuck Development Authority.
- When revenues are compared to expenses, it shows that none of the City of Chubbuck's programs are self supporting. They all require tax support to continue at their current level of service.

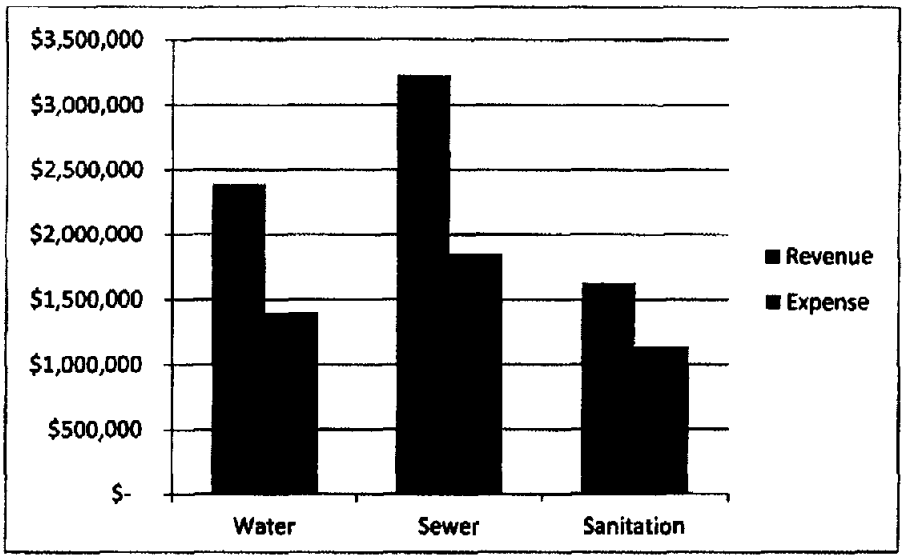
For the most part, increases in expenses closely paralleled inflation and growth in the demand for services. No significant transaction occurred outside of the Major funds for fiscal year 2012. No significant losses or revenues were received during the year.

The major fund in the City is the general fund. Significant transactions within the general fund this year mainly consisted of payments of personnel, law enforcement expenses, fire department expenses, and street maintenance.

Business-type activities. Businesses-type activities' key elements are broken down in the following charts.



Expenses and Program Revenues – Business Type Activities



- One of the major sources of the City of Chubbuck's business-type activities' revenue is received from charges for services (86 percent). Currently, the City of Chubbuck's business type activities do not use property taxes for any type of funding.
- The second major source is capital construction (13 percent). These contributions were received by water only.
- When revenues are compared to expenses, it shows that all of the City of Chubbuck's programs are self-supporting.

Financial Analysis of the Government's Funds

As noted earlier, the City of Chubbuck uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements.

Governmental funds. The focus of the City of Chubbuck's governmental funds is to provide information on near-term inflows, outflows, and balances of spendable resources. Such information is useful in assessing the City of Chubbuck's financing requirements. In particular, unreserved fund balance may serve as a useful measure of the government's net recourses available for spending at the end of the fiscal year.

At the end of the current fiscal year the City of Chubbuck's governmental funds reported combined ending fund balances of $2,981,667. Of which $2,248,830 of this total is unassigned fund balance (79 percent).

The general fund is the chief operating fund of the City of Chubbuck. In the general fund, the City budgeted for a decrease in the fund balance of $2,905. Due to actual revenues being more than budgeted and actual expenses being less than budgeted, the actual fund balance increase for fiscal year 2012 was $335,957. As a measure of liquidity, it may be useful to compare both unassigned fund balance and to total fund expenditures. Unassigned fund balance represents 40 percent of total general fund expenditures.

Proprietary funds. The City of Chubbuck's proprietary fund statements provide the same type of information found in the government-wide financial statements, but in more detail.

Unrestricted net assets of the respective proprietary fund are Water - $4,799,969, Sewer - $5,592,789, and Sanitation - $1,593,083. The water funds had an increase in net assets of $2,148,987; the sewer fund had an increase in net assets of $1,385,736; and the sanitation fund and an increase in net assets of $1,090,557.

General Fund Budgetary Highlights

The City made no revisions to the original appropriations approved by the City Council. As stated earlier revenue was higher than budgeted and expenses were less. This accounts for a $335,957 in the general fund balance. The variance in expenditures was due to a combination of numerous small savings in the general government area. During this fiscal year the City used a very conservative approach to operating expenses due to the current economy.

Capital Asset and Debt Administration

Capital assets. The City of Chubbuck's investment in capital assets for its governmental and business-type activities as of September 30, 2012 amounts to $15,952,915 (net of accumulated depreciation). This investment in capital assets includes land, buildings, machinery, equipment, other improvements, and infrastructure. The total increase in the City of Chubbuck's investment in capital assets for the fiscal year was $4,267,813. The increase in assets includes contributions from the Chubbuck Development Authority of $3,308,468.

City of Chubbuck's Capital Assets

(net of accumulated depreciation)

	Governmental Activities		Business Activities		Total	
	2012	2011	2012	2011	2012	2011
Land	$ 90,866	$ 90,866	$ 709,854	$ 709,854	$ 800,720	$ 800,720
Building & Imp.	2,854,621	2,868,733	9,055,315	7,949,755	11,909,936	10,818,488
Machinery & Equip.	3,751,745	3,576,270	3,034,760	2,875,129	6,786,505	6,451,399
Infrastructure	3,075,550	568,875			3,075,550	568,875
Work in Progress	2,321,235	2,130,547	19,661		2,340,896	2,130,547
Water Rights			1,192,392	417,850	1,192,392	417,850
Bond Fees			18,013	19,300	18,013	19,300
Total	$ 12,094,017	$ 9,235,291	$ 14,029,995	$ 11,971,888	$ 26,124,012	$ 21,207,179

Additional information on the City of Chubbuck's capital assets can be found in note 8 on page 38 of this report.

Long-term debt. At the end of the current fiscal year, the City of Chubbuck had total debt outstanding of $21,317,116. Of this amount, $17,534,634 is comprised of notes to the Department of Environmental Quality for sewer infrastructure. Long-term debt also includes bonds with a remaining balance of $1,824,814 used for purchasing water shares.

City of Chubbuck Long Term Debt

Debt Type	2012 Balance	2011 Balance
Water Revenue Bonds	$ 1,830,000	$ 1,930,000
Sewer Revenue Bonds	-	65,000
Water - DEQ Loan	267,790	283,370
Sewer - DEQ Loans	17,671,318	16,952,087
Notes Payable Sanitation	1,641,413	1,953,409
Compensated Absences	410,865	366,283
	$ 21,821,386	$ 21,550,149

The State of Idaho mandates a general obligation debt limit of 2% of the assessed market value of taxable property within the City boundaries. The City of Chubbuck currently does not have general obligation debt. The limit totaled $8,676,553 on September 30, 2012. The City of Chubbuck's general obligation bond above is subject to this limit. Therefore $8,676,553 is available for future general obligation indebtedness. Additional information on the City of Chubbuck's long-term debt can be found in note 9 on pages 38-41 of this report.

Request for information

The financial report is designed to provide our patrons of the City of Chubbuck and creditors with a general overview of the City's finances and to show the City's accountability for the money it receives. If you have question about this report or need any additional financial information, contact the Mayor and City Council at 5602 Yellowstone Ave, Chubbuck, ID 83202, telephone (208)237-2400.

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF NET ASSETS
SEPTEMBER 30, 2012

	Governmental Activities	Business-type Activities	Total	Development Authority	CIAWWC Authority
ASSETS					
Current assets					
Cash and cash equivalent	$ 2,808,335	$ 10,879,107	$ 13,687,442	$ 2,188,384	$ -
Property taxes receivable	325,267	-	325,267	123,401	-
Intergovernmental receivables	239,536	-	239,536	-	-
Internal balances	-	-	-	-	-
Other accounts receivable	564	756,616	757,180	25,000	-
	3,373,702	11,635,723	15,009,425	2,336,785	-
Noncurrent assets					
Restricted assets					
Bond reserves	-	169,081	169,081	-	-
Utility deposits	-	182,324	182,324	-	-
Advance to joint venture	-	18,282,069	18,282,069	-	-
Capital assets	12,094,017	14,029,650	26,123,667	-	18,299,134
Accumulated depreciation	(4,387,766)	(5,782,986)	(10,170,752)	-	-
	7,706,251	26,880,138	34,586,389	-	18,299,134
	11,079,953	38,515,861	49,595,814	2,336,785	18,299,134
LIABILITIES					
Current liabilities					
Accounts payable	79,683	94,876	174,559	20,122	11,580
Accrued payroll	70,138	22,083	92,221	-	-
Accrued bond interest	-	65,968	65,968	-	-
Current portion compensated absences	65,435	16,737	82,172	-	-
Current portion of bonds payable	-	110,000	110,000	-	-
Current portion of long-term debt	-	411,413	411,413	-	-
Payable from restricted assets -					-
Water deposits	-	182,324	182,324	-	-
	215,256	903,401	1,118,657	20,122	11,580
Noncurrent liabilities					
Bonds payable	-	1,824,814	1,824,814	-	-
Note payable	-	19,163,609	19,163,609	-	-
Accrued compensated absences	261,740	66,953	328,693	-	-
Advance payable	-	-	-		18,282,069
	261,740	21,055,376	21,317,116	-	18,282,069
	476,996	21,958,777	22,435,773	20,122	18,293,649
NET ASSETS					
Invested in capital assets, net of related debt	7,706,251	4,402,647	12,108,898	-	-
Restricted for bond service	-	169,081	169,081	-	-
Unrestricted	2,896,706	11,985,356	14,882,062	2,316,663	5,485
	$10,602,957	$ 16,557,083	$ 27,160,040	$ 2,316,663	$ 5,485

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF ACTIVITIES
FOR THE YEAR ENDED SEPTEMBER 30, 2012

	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Total Net (Expense) Revenue	Development Authority	CIAWWC Authority
Functions/Programs						
Primary Government:						
Governmental activities:						
General government	$ 235,127	$ 133,808	$ -	$ (101,319)	$ -	$ -
Law enforcement	2,576,916	-	27,892	(2,549,024)	-	-
Fire control	1,307,735	210,650	-	(1,097,085)	-	-
Building inspection	158,409	-	-	(158,409)	-	-
Street	1,087,455	-	-	(1,087,455)	-	-
Parks and recreation	534,574	6,534	-	(528,040)	-	-
Health and welfare	31,462	-	-	(31,462)	-	-
Other special revenue funds	17,113	-	15,720	(1,393)	-	-
	5,948,791	350,992	43,612	(5,554,187)	-	-
Business-type activities						
Water	1,398,887	2,386,464	-	987,577	-	-
Sewer	1,847,034	3,228,353	-	1,381,319	-	-
Sanitation	1,132,300	1,625,302	-	493,002	-	-
	4,378,221	7,240,119	-	2,861,898	-	-
Total primary government	$ 10,327,012	$ 7,591,111	$ 43,612	$ (2,692,289)	$ -	$ -
Component Unit:						
Chubbuck Development Authority	$ 3,236,093				$ (3,236,093)	$ -
CIAWWC Authority	2,750				-	(2,750)
	$ 3,238,843				$ (3,236,093)	$ (2,750)

	General Activities	Business-type Activities	Total	Development Authority	CIAWWC Authority
Net (expense)/revenue	$ (5,554,187)	$ 2,861,898	$ (2,692,289)	$ (3,236,093)	$ (2,750)
General revenues					
General property taxes and sales tax	4,594,553	-	4,594,553	1,828,285	-
Franchise fees	201,128	-	201,128	-	-
Intergovernmental	908,227	-	908,227	-	5,490
Leases and rents	52,546	-	52,546	-	-
Interest income	36,797	32,121	68,918	27,671	-
Gain on sale of assets	17,223	10,800	28,023	-	-
Capital contributions	2,683,248	1,125,220	3,808,468	-	-
Other revenue	18,486	-	18,486	-	-
	8,512,208	1,168,141	9,680,349	1,855,956	5,490
NET CHANGE IN NET ASSETS	2,958,021	4,030,039	6,988,060	(1,380,137)	2,740
BEGINNING NET ASSETS	7,533,351	12,542,655	20,076,006	3,696,800	2,745
PRIOR PERIOD ADJUSTMENT	111,585	(15,611)	95,974	-	-
ENDING NET ASSETS	$ 10,602,957	$ 16,557,083	$ 27,160,040	$ 2,316,663	$ 5,485

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
BALANCE SHEETS
GOVERNMENTAL FUNDS
SEPTEMBER 30, 2012
WITH COMPARATIVE TOTALS AS OF SEPTEMBER 30, 2011

	General Fund	Other Governmental Funds	Total	2011
ASSETS				
Cash	$ 2,175,498	$ 632,837	$ 2,808,335	$ 3,282,793
Accounts receivable	564	-	564	-
Property and sales taxes receivable	325,267	-	325,267	276,604
Intergovernmental receivables	239,536	-	239,536	213,679
	$ 2,740,865	$ 632,837	$ 3,373,702	$ 3,773,076
LIABILITIES				
Accounts payable	$ 79,883	$ -	$ 79,883	$ 88,192
Accrued payroll	70,138	-	70,138	60,298
Interfund payable	-	-	-	796,185
Accrued compensated absences	65,435	-	65,435	53,126
Deferred revenue	176,779	-	176,779	150,185
	392,035	-	392,035	1,147,986
FUND BALANCES				
Unreserved, reported in:				
Committed	-	632,837	632,837	629,440
Unassigned	2,348,830	-	2,348,830	1,995,650
	2,348,830	632,837	2,981,667	2,625,090
	$ 2,740,865	$ 632,837		$ 3,773,076

Amounts reported for governmental activities in the Statement of Net Assets are different because:

Capital assets used in governmental activities are not financial resources and therefore are not reported in the funds, net of accumulated depreciation of $4,387,766.	7,706,251
Deferred tax revenue represents amounts that were not available to fund current expenditures and therefore are not reported in the funds	176,779
Long-term liabilities are not due and payable in the current period and therefore are not reported in the funds:	
Accrued compensated absences	(261,740)
Net assets of governmental funds	$10,602,957

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES
GOVERNMENTAL FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012
WITH COMPARATIVE TOTALS FOR THE YEAR ENDED SEPTEMBER 30, 2011

	General Fund	Other Governmental Funds	Total	2011
REVENUES				
General property taxes and sales tax	$ 4,567,959	$ -	$ 4,567,959	$ 4,435,834
Franchise fees	201,128	-	201,128	179,839
Intergovernmental	908,227	-	908,227	797,354
Parks revenue	2,399	-	2,399	1,977
Licenses, permits and fines	133,808	-	133,808	237,249
Grants	27,892	-	27,892	58,465
Fire protection and prevention	210,650	-	210,650	180,020
Leases and rents	52,546	-	52,546	50,644
Interest income	34,264	2,533	36,797	30,738
Donations	-	15,720	15,720	6,220
Charges for services	4,135	-	4,135	68,923
Other revenues	16,228	2,258	18,486	35,491
	6,159,236	20,511	6,179,747	6,082,754
EXPENDITURES				
General government	214,382	-	214,382	186,863
Law enforcement	2,494,222	-	2,494,222	2,616,515
Fire control	1,174,659	-	1,174,659	1,127,747
Building inspection	158,409	-	158,409	165,214
Street	1,035,804	-	1,035,804	788,356
Parks and recreation	488,874	-	488,874	498,355
Health and welfare	31,462	-	31,462	44,487
Court fund	-	2,780	2,780	857
Parks Fund	-	14,333	14,333	-
Capital outlays	225,467	-	225,467	58,690
	5,823,279	17,113	5,840,392	5,487,084
EXCESS OF REVENUES OVER (UNDER) EXPENDITURES	335,957	3,398	339,355	595,670
OTHER FINANCING SOURCES				
Proceeds from capital lease	-	-	-	-
Principal payments on leases	-	-	-	(43,139)
Interest expense	-	-	-	(3,064)
Proceeds from sale of assets	17,223	-	17,223	16,242
	17,223	-	17,223	(29,961)
NET CHANGE IN FUND BALANCES	353,180	3,398	356,578	565,709
BEGINNING FUND BALANCE	1,995,650	629,440	2,625,090	1,947,795
PRIOR PERIOD ADJUSTMENT	-		-	111,586
ENDING FUND BALANCE	$ 2,348,830	$ 632,838	$ 2,981,668	$ 2,625,090

(Continued)

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES
GOVERNMENTAL FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012

	2012 Total
Reconciliation of the change in fund balances - total governmental funds to the change in net assets of governmental activities:	
Net change in fund balances - total governmental funds	$ 356,578
Amounts reported for governmental activities in the Statement of Activities are different because:	
Governmental funds report capital outlays as expenditures while governmental activities report depreciation expense to allocate those expenditures over the life of the assets. Capital asset contributions from other entities are not recognized as a revenue for governmental purposes, but are required to be recognized on the Statement of Activities:	
Contributed capital assets	2,683,575
Capital asset purchases capitalized	225,467
Depreciation expense	(284,962)
Deferred revenues are not recorded as current period receipts	26,594
Some expenses reported in the Statement of Activities do not require the use of current financial resources and therefore are not reported as expenditures in governmental fund:	
Accrued compensated absences	(49,231)
Change in net assets	$ 2,958,021

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF NET ASSETS
PROPRIETARY FUNDS
SEPTEMBER 30, 2012
WITH COMPARATIVE TOTALS AS OF SEPTEMBER 30, 2011

ASSETS	Water	Sewer	Sanitation	Total	2011	Internal Service Funds 2012	Internal Service Funds 2011
Current assets							
Cash and cash equivalents	$ 4,566,154	$ 4,847,380	$ 1,465,573	$ 10,879,107	$ 8,023,419	$ -	$ -
Accounts receivable	307,701	290,486	158,429	756,616	706,043		
	4,873,855	5,137,866	1,624,002	11,635,723	8,729,462	-	-
Noncurrent assets							
Restricted assets							
Bond reserves	169,081	-	-	169,081	237,981	-	-
Utility deposits	180,564	1,760	-	182,324	154,930	-	-
Interfund receivable	-	-	-	-	796,185	-	-
Advance to joint venture	-	18,282,069	-	18,282,069	17,642,935	-	-
Capital assets	7,181,828	4,133,072	2,455,107	13,770,007	11,712,245	259,643	259,643
Accumulated depreciation	(1,850,994)	(2,910,869)	(814,740)	(5,576,603)	(5,171,225)	(206,383)	(197,732)
	5,680,479	19,506,032	1,640,367	26,826,878	25,373,051	53,260	61,911
	10,554,334	24,643,898	3,264,369	38,462,601	34,102,513	53,260	61,911
LIABILITIES							
Current Liabilities							
Accounts payable	26,083	58,153	9,109	93,345	39,515	1,531	2,973
Payroll payable	9,676	7,425	4,982	22,083	21,161	-	-
Accrued compensated absences	7,625	7,625	1,487	16,737	20,130	-	-
Current portion of bonds payable	110,000	-	-	110,000	165,000	-	-
Accrued interest	-	57,622	8,346	65,968	23,957	-	-
Current portion of long-term debt	16,090	136,684	258,639	411,413	1,161,789	-	-
Payable from restricted assets - Water/ Sewer deposits	180,564	1,760	-	182,324	154,930	-	-
	350,038	269,269	282,563	901,870	1,586,482	1,531	2,973
Noncurrent Liabilities							
Revenue bonds payable, net unamortized premium	1,824,614	-	-	1,824,614	1,940,330	-	-
Note payable	251,700	17,529,135	1,382,774	19,163,609	18,027,077	-	-
Compensated absences	30,502	30,502	5,949	66,953	80,518	-	-
	2,107,016	17,559,637	1,388,723	21,055,376	20,047,925	-	-
	2,457,054	17,828,906	1,671,286	21,957,246	21,634,407	1,531	2,973
NET ASSETS							
Invested in capital assets, net of related debt	3,128,230	1,222,203	1,640,367	5,990,800	4,152,320	53,260	61,911
Restricted for bond service	169,081	-	-	169,081	237,981	-	-
Unrestricted	4,799,969	5,592,789	(47,284)	10,345,474	8,093,416	(1,531)	(2,973)
	$ 8,097,280	$ 6,814,992	$ 1,593,083	16,505,355	$ 12,483,717	$ 51,728	$ 58,938
Adjustment to reflect the consolidation of internal service fund activities related to enterprise activities.				51,728			
				$ 16,557,083			

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET ASSETS
PROPRIETARY FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012
WITH COMPARATIVE TOTALS FOR THE YEAR ENDED SEPTEMBER 30, 2011

	Water	Sewer	Sanitation	Total	2011	Internal Service Funds 2012	Internal Service Funds 2011
OPERATING REVENUES							
Service revenue	$ 451,650	$3,228,353	$1,557,747	$5,237,750	$4,550,867	$ 67,555	$ 56,726
Revenue used as security for revenue bond:							
Charges for services	1,934,814	-	-	1,934,814	2,105,330	-	-
	2,386,464	3,228,353	1,557,747	7,172,564	6,656,197	67,555	56,726
OPERATING EXPENSES							
Salaries and wages	514,285	388,882	219,155	1,122,322	1,189,982	-	-
Personnel benefits	193,806	141,980	81,185	416,771	587,500	13,815	-
Repairs and maintenance	224,204	164,739	324,153	713,096	499,089	11,767	8,386
Supplies and tools	44,259	31,833	35,098	111,190	72,017	3,567	9,874
Garbage containers	-	-	-	-	30,722	-	-
Travel, meetings, and training	7,713	-	2,243	9,956	6,529	-	2,094
Fuels and lubricants	18,826	9,477	79,699	108,002	97,421	24,755	22,552
Telephone and communications	4,831	3,968	3,967	12,766	19,409	-	72
Utilities	119,543	26,350	3,110	149,103	155,927	12,209	12,077
Treatment - Pocatello	-	867,688	-	867,688	808,433	-	-
Insurance	19,266	13,101	14,642	47,009	63,962	-	-
Other purchased services	6,510	-	838	7,348	2,023	-	-
Professional services	61,560	18,576	9,768	89,904	43,121	-	-
Facilities plan	3,396	-	-	3,396	2,646	-	-
Bad debt	4,370	4,075	8,166	16,611	37,942	-	-
Depreciation	116,350	130,454	177,147	423,951	385,987	8,652	11,065
	1,338,819	1,801,123	959,171	4,099,113	4,002,710	74,765	66,120
OPERATING INCOME	1,047,645	1,427,230	598,576	3,073,451	2,653,487	(7,210)	(9,394)
NONOPERATING REVENUE (EXPENSE)							
Interest income	25,390	4,417	2,314	32,121	22,849	-	-
Interest expense	(60,068)	(45,911)	(98,364)	(204,343)	(130,378)	-	-
Capital contributions	1,125,220	-	-	1,125,220	-	-	-
Gain (Loss) from asset disposal	10,800	-	-	10,800	-	-	-
Transfers in (out)	-	-	-	-	-	-	-
	1,101,342	(41,494)	(96,050)	963,798	(107,529)	-	-
NET INCOME (LOSS)	2,148,987	1,385,736	502,526	4,037,249	2,545,958	(7,210)	(9,394)
BEGINNING NET ASSETS	5,948,293	5,429,256	1,090,557		-	58,939	68,332
PRIOR PERIOD ADJUSTMENT	-	-	-		(15,611)	-	-
ENDING NET ASSETS	$8,097,280	$6,814,992	$1,593,083		$2,530,347	$ 51,729	$ 58,938

Adjustment to reflect the consolidation of internal service fund activities related to enterprise funds	(7,210)
Change in net assets of business-type activities	$4,030,039

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF CASH FLOWS - PROPRIETARY FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012
WITH COMPARATIVE TOTALS FOR THE YEAR ENDED SEPTEMBER 30, 2011

	Water	Sewer	Sanitation	Total	2011	Internal Service Funds 2012	Internal Service Funds 2011
CASH FLOWS FROM OPERATING ACTIVITIES							
Cash received from revenues	$2,352,286	$3,223,071	$1,530,023	$ 7,105,380	$ 6,534,684	$ 67,555	$ 56,726
Cash paid to suppliers	(509,412)	(1,083,774)	(472,442)	(2,065,628)	(1,968,326)	(67,555)	(56,726)
Cash paid to employees	(716,184)	(539,202)	(299,743)	(1,555,129)	(1,810,436)	-	-
Net cash provided by operating activities	1,126,690	1,600,095	757,838	3,484,623	2,755,920	-	-
CASH FLOW FROM NONCAPITAL FINANCING ACTIVITIES							
Transfer from (to) other funds	313,461	364,900	-	678,361	(134,409)	-	-
Internal loan from (to) other funds	-	-	117,824	117,824	-	-	-
Advance to joint venture	-	(639,134)	-	(639,134)	(7,383,420)	-	-
Change in restricted cash	-	68,900	-	68,900	(105,331)	-	-
Net cash (used) in noncapital financing activities	313,461	(205,334)	117,824	225,951	(7,623,160)	-	-
CASH FLOW FROM CAPITAL AND RELATED FINANCING ACTIVITIES							
Proceeds from debt	-	713,732	-	713,732	10,091,264	-	-
Principal paid on capital debt	(121,096)	(65,000)	(311,996)	(498,092)	(379,863)	-	-
Interest paid on capital debt	(60,068)	(3,900)	(98,364)	(162,332)	(185,068)	-	-
Purchase of capital assets	(782,566)	(6,848)	(150,901)	(940,315)	(451,178)	-	-
Net cash provided (used) in capital and related financing activities	(963,730)	637,984	(561,261)	(887,007)	9,075,155	-	-
CASH FLOW FROM INVESTING ACTIVITIES							
Interest and dividend received	25,390	4,417	2,314	32,121	22,849	-	-
Net cash provided by financing activities	25,390	4,417	2,314	32,121	22,849	-	-
NET INCREASE IN CASH AND CASH EQUIVALENTS	501,811	2,037,162	316,715	2,855,688	4,230,764	-	-
BEGINNING CASH AND CASH EQUIVALENTS	4,064,343	2,810,218	1,148,858	8,023,419	3,792,655	-	-
ENDING CASH AND CASH EQUIVALENTS	$4,566,154	$4,847,380	$1,465,573	$10,879,107	$ 8,023,419	$ -	$ -

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENTS OF CASH FLOWS - PROPRIETARY FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012
WITH COMPARATIVE TOTALS FOR THE YEAR ENDED SEPTEMBER 30, 2011
RECONCILIATIONS OF NET INCOME TO NET CASH
PROVIDED BY OPERATING ACTIVITIES

	Water	Sewer	Sanitation	Total	2011	Internal Service Funds 2012	Internal Service Funds 2011
OPERATING INCOME	$ 1,047,645	$ 1,427,230	$ 598,576	$ 3,073,451	$ 2,653,487	$ (7,210)	$ (9,394)
RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES							
Depreciation	116,350	130,454	177,147	423,951	385,987	8,652	11,065
(Increase) decrease in assets							
Accounts receivable	(29,808)	(1,207)	(19,558)	(50,573)	(93,296)	-	-
Increase (decrease) in liabilities							
Accounts payable	856	51,971	1,925	54,752	(198,128)	(1,442)	(1,671)
Accrued compensated absences	(8,353)	(8,353)	(252)	(16,958)	7,870	-	-
Total adjustments	79,045	172,865	159,262	411,172	102,433	7,210	9,394
NET CASH PROVIDED BY OPERATING ACTIVITIES	$ 1,126,690	$ 1,600,095	$ 757,838	$ 3,484,623	$ 2,755,920	-	$ -

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO

STATEMENT OF FIDUCIARY NET ASSETS

RECREATIONAL PROGRAMS FUND

FOR THE YEAR ENDED SEPTEMBER 30, 2012
WITH COMPARTIVE TOTALS FOR THE YEAR ENDED SEPTEMBER 30, 2011

	Recreation Programs Trust Fund 2012	2011
Assets		
Cash	$ 20,797	$ 9,745
	20,797	9,745
Liabilities		
Accounts payable	-	-
Net Assets		
Held in trust for recreation programs	$ 20,797	$ 9,745

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO

STATEMENT OF CHANGES IN FIDUCIARY NET ASSETS

RECREATIONAL PROGRAMS FUND

FOR THE YEAR ENDED SEPTEMBER 30, 2012
WITH COMPARTIVE TOTALS FOR THE YEAR ENDED SEPTEMBER 30, 2011

	Recreation Programs Trust Fund 2012	2011
Additions		
Contributions:		
Registration Fees	$ 48,325	$ 48,105
Sponsorships	16,441	15,863
Total additions	64,766	63,968
Deductions		
Director's compensation	4,500	4,500
Boy's baseball	25,644	25,865
Girl's softball	16,961	18,095
Tee/tiger ball	6,609	5,763
Total deductions	53,714	54,223
Change in net assets	11,052	9,745
Net assets - beginning of the year	-	-
Prior period adjustment	9,745	(9,745)
Net assets - end of the year	$ 20,797	$ -

See accompanying notes to financial statements

NOTE 1 - Summary of Significant Accounting Policies

The City's financial statements comply with generally accepted accounting principles (GAAP). GAAP includes all relevant Governmental Accounting Standards Board (GASB) pronouncements within the codification. The government-wide financial statements, including the enterprise funds and the fund financial statements for the proprietary funds, are also under GASB codification. The accounting and reporting framework and the more significant accounting policies are discussed in subsequent subsections of this note. Applicable GASB statements have been implemented through GASB 54.

A. Reporting Entity

The City's financial reporting entity comprises the following:

Primary Government

In determining the financial reporting entity, the City complies with the provisions of GASB Statement No. 14, "The Financial Reporting Entity". Currently, the City reports two component unit; the Chubbuck Development Authority and the Chubbuck Impact Area Waste Water Authority.

Discretely Presented Component Units

Chubbuck Development Authority (CDA)

One component unit reported in the combined financial statements represents the financial balances and transactions of the Chubbuck Development Authority (CDA). CDA is a legally separate entity incorporated under the State of Idaho's urban renewal laws. CDA works with the City to develop blighted areas within the City using tax increment financing to fund projects. These projects could include providing infrastructures, purchasing land and demolishing blighted structures or rehabilitating structures to provide for low income housing, among others.

The Board of Commissioners of the Authority consists of 7-9 members, which are appointed by the Mayor.

Complete financial statements of the Authority can be obtained from the Treasury, City of Chubbuck, 5160 Yellowstone Ave, Chubbuck, Idaho 83202.

Chubbuck Impact Area Waste Water Collection Authority (CIAWWCA)

Effective September 1, 2007, Bannock County, Idaho, City of Pocatello, Idaho and the City of Chubbuck, Idaho entered into a Joint Powers Agreement creating the Chubbuck Impact Area Wastewater Collection Authority for the purpose of financing, designing, acquiring, constructing, managing, and operating a sewage collection facility along with transmission mains and lift stations to serve those who own and operate a collection system under Idaho Law for the residents of the City of Chubbuck, Idaho. The Authority is a public entity of the State of Idaho, therefore, the Authority's income is exempt form Federal and Idaho income taxes. A six-member board governs the Chubbuck Impact Area Wastewater Collection Authority with two members representing Bannock County, two members representing the City of Pocatello and two members representing the City of Chubbuck. The City of Chubbuck provides loans to the Authority with no interest or maturity date. Outstanding balance of loans to the authority at year-end totaled $18,282,069.

NOTE 1 - Summary of Significant Accounting Policies (Continued)

A. Reporting Entity (Continued)

Upon termination of this Agreement, title to all buildings, improvements, facilities, equipment and personal property held by the Authority shall vest in the City of Chubbuck.

Complete financial statements of the Authority can be obtained from the Treasury, City of Chubbuck, 5160 Yellowstone Ave, Chubbuck, Idaho 83202.

B. Basis of Presentation

Government-wide Statements

The Statement of Net Assets and Statement of Activities display information about the reporting government as a whole. They include all funds of the reporting entity except for fiduciary funds. The statements distinguish between governmental and business-type activities. Governmental activities generally are financed through taxes, intergovernmental revenues, and other non-exchange revenues. Business-type activities are financed in whole or in part by fees charged to external parties for goods or services.

Fund Financial Statements

Fund financial statements of the reporting entity are organized into funds, each of which is considered to be separate accounting entities. Each fund is accounted for by providing a separate set of self-balancing accounts that constitute its assets, liabilities, fund equity, revenues, and expenditure/expenses. Funds are organized into three major categories: Governmental, proprietary, and fiduciary. An emphasis is placed on major funds within the governmental and proprietary categories. A fund is considered major if it is the primary operating fund of the City or meets the following criteria:

a. Total assets, liabilities, revenues or expenditures/expenses of that individual governmental or enterprise fund are at least 10 percent of the corresponding total for all funds of that category or type.

b. Total assets, liabilities, revenues, or expenditures/expenses of the individual governmental fund or enterprise fund are at least 5 percent of the corresponding total for all governmental and enterprise funds combined.

Governmental Funds

General Fund

The General Fund is the general operating fund of the City and is always classified as a major fund. All financial resources, except those required to be accounted for in another fund, are accounted for in the General Fund.

Special Revenue Funds

Special Revenue Funds are used to account for the proceeds of specific revenue sources that are legally restricted to expenditures for specific purposes.

NOTE 1 - Summary of Significant Accounting Policies (Continued)

B. Basis of Presentation (Continued)

Proprietary Funds

Enterprise Funds

Enterprise funds are used to account for business-like activities provided to the general public. These activities are financed primarily by user charges and the measurement of financial activity focuses on net income measurement similar to the private sector. The reporting entity includes the water, sewer and sanitation funds.

Internal Service Funds

Internal service funds account for repairs and maintenance service for vehicles and equipment provided to other departments or agencies of the City on a cost reimbursement basis.

C. Measurement Focus and Basis of Accounting

Measurement focus is a term used to describe "which" transactions are recorded within the various financial statements. Basis of accounting refers to "when" transactions are recorded regardless of the measurement focus applied.

Measurement Focus

On the government-wide Statement of Net Assets and the Statement of Activities, both governmental and business-like activities are presented using the economic resources measurement focus as defined in item b. below.

In the fund financial statements, the "current financial resources" measurement focus or the "economic resources" measurement focus is used as appropriate:

a. All governmental funds utilize a "current financial resources" measurement focus. Only current financial assets and liabilities are generally included on their balance sheets. Their operating statements present sources and uses of available spendable financial resources during a given period. These funds use fund balance as their measure of available spendable financial resources at the end of the period.

b. The proprietary fund utilizes an "economic resources" measurement focus. The accounting objectives of this measurement focus are the determination of operating income, changes in net assets (or cost recovery), financial position, and cash flows. All assets and liabilities (whether current or noncurrent) associated with their activities are reported. Proprietary fund equity is classified as net assets.

Basis of Accounting

In the government-wide Statement of Net Assets and Statement of Activities, both governmental and business-like activities are presented using the accrual basis of accounting. Under the accrual basis of accounting, revenues are recognized when earned and expenses are recorded when the liability is incurred or economic asset used. Revenues, expenses, gains, losses, assets, and liabilities resulting from exchange and exchange-like transactions are recognized when the exchange takes place.

NOTE 1 - Summary of Significant Accounting Policies (Continued)

C. Measurement Focus and Basis of Accounting (Continued)

In the fund financial statements, governmental funds are presented on the modified accrual basis of accounting. Under this modified accrual basis of accounting, revenues are recognized when "measurable and available." Measurable means knowing or being able to reasonably estimate the amount. Available means collectible within the current period or within sixty days after year end. Expenditures (including capital outlay) are recorded when the related fund liability is incurred, except for general obligation bond principal and interest which are reported when due.

All proprietary funds utilize the accrual basis of accounting. Under the accrual basis of accounting, revenues are recognized when earned and expenses are recorded when the liability is incurred or economic asset used.

The effect of interfund activity has been eliminated from the government-wide financial statements.

D. Budgets and Encumbrances

Budgets are adopted on a basis consistent with generally accepted accounting principles. Annual appropriated budgets are adopted for the general and special revenue funds. All annual appropriations lapse at fiscal year end.

Each month the City prepares a financial report that reflects the actual and budgeted financial data. A strict purchase order system is used in controlling and maintaining expenditures within budget categories. This data is reviewed by the City Council. The City does not use the encumbrance method of accounting.

The excess expenditures were funded by donated capital outlays, decreased expenditures in other functional expenditures, and proceeds in excess of the amount budgeted.

E. Cash and Cash Equivalents

For the purpose of the Statement of Net Assets, "cash and cash equivalents" includes all demand, savings accounts, certificates of deposits, and state investing pools of the City. For the purpose of the proprietary fund Statement of Cash Flows, "cash and cash equivalents" include all demand and savings accounts, and certificates of deposit or short-term investments with an original maturity of three months or less.

F. Property, Plant, and Equipment

The accounting treatment for property, plant and equipment depends on whether the assets are used in governmental fund operations or proprietary fund operations and whether they are reported in the government-wide or fund financial statements.

Government-wide Statements

In the government-wide financial statements, fixed assets are accounted for as capital assets. All fixed assets are valued at historical cost, or estimated historical cost if actual is unavailable, except for donated fixed assets which are recorded at their estimated fair value at the date of donation. Estimated historical cost was used to value the majority of the assets acquired prior to September 30, 2003.

NOTE 1 - Summary of Significant Accounting Policies (Continued)

F. Property, Plant, and Equipment (Continued)

Governmental fund infrastructure assets were not capitalized prior to October 1, 2003.

Depreciation of all exhaustible fixed assets is recorded as an allocated expense in the Statement of Activities, with accumulated depreciation reflected in the Statement of Net Assets. Depreciation is provided over the assets' estimated useful lives using the straight-line method of depreciation. The range of estimated useful lives by type of asset is as follows:

Buildings	20-50 years
Other structures	5-40 years
Vehicles	5-30 years
Equipment	2-40 years

Fund Financial Statements

In the fund financial statements, fixed assets used in governmental fund operations are accounted for as capital outlay expenditures of the governmental fund upon acquisition. Fixed assets used in proprietary fund operations are accounted for the same as in the government-wide statements.

G. Restricted Assets

Restricted assets include cash and investments of the general fund that are legally restricted as to their use. The primary restricted assets are related to employee benefits.

Restricted assets include cash and investments of the proprietary fund that are legally restricted as to their use. The primary restricted assets are related to utility deposits and bond reserve requirements.

When both restricted and unrestricted resources are available for use, it is the City's policy to use restricted resources first, then unrestricted resources as they are needed.

H. Long-term Debt

The accounting treatment of long-term debt depends on whether the assets are used in governmental fund operations or proprietary fund operations and whether they are reported in the government-wide or fund financial statements.

All long-term debt to be repaid from governmental and business-type resources are reported as liabilities in the government-wide statements. The long-term debt consists primarily of notes payable, capital leases, and accrued compensated absences.

Long-term debt for governmental funds is not reported as liabilities in the fund financial statements. Debt proceeds are reported as other financing sources. Payment of principal and interest are reported as expenditures. The accounting for proprietary funds is the same in the fund statements as it is in the government-wide statements.

NOTE 1 - Summary of Significant Accounting Policies (Continued)

I. Comparative data/reclassifications

Comparative total data for the prior year has been presented in the fund financial statements in order to provide an understanding of the changes in assets and operations of these funds. Also, certain amounts presented in the prior year data have been reclassified in order to be consistent with the current year's presentation.

J. Compensated Absences

The City's policies regarding vacation time permit employees to accumulate earned but unused vacation leave. The liability for these unpaid compensated absences is recorded as long-term debt in the government-wide statements. The current portion of this debt is estimated based on historical trends. In the fund financial statements, governmental funds report only the compensated absence liability payable from expendable available financial resources, while the proprietary funds report the liability as it is incurred.

K. Equity Classifications

Government-wide Statements

Equity is classified as net assets and displayed in three components:

a. Invested in capital assets, net of related debt - Consists of capital assets including restricted capital assets, net of accumulated depreciation and reduced by the outstanding balances of any bonds, mortgages notes, or other borrowings that are attributable to the acquisition, construction, or improvement of these assets.

b. Restricted net assets - Consists of net assets with constraints placed on the use either by (1) external groups such as creditors, grantors, contributors, or laws or regulations of other governments; or (2) law through constitutional provisions or enabling legislation.

c. Unrestricted net assets - All other net assets that do not meet the definition of "restricted" or "invested in capital assets, net of related debt."

Fund Statements

In the fund financial statements, governmental funds report the following classifications of fund balance:

Nonspendable items- This category includes a portion of net resources that cannot be spent because of their form or because they must be maintained intact. This includes inventories and prepaid items.

Restricted items- This category includes resources where limitations are imposed by external entities, such as grantors and creditors, or to comply with laws and regulations of governments.

Committed items- This category includes amounts that can only be used for the specific purposes determined by a formal action of the City's highest level of decision-making authority for the City. Commitments may be changed or lifted only by the Council taking the same formal action that imposed the constraint originally.

Assigned items- Assigned items represent the City's intent to use certain resources for specific purposes. The City Council may establish the intended use of these funds for a designated purpose.

Unassigned items- Represents the remainder of the City's equity in governmental fund-type balances in excess of the aforementioned classifications.

NOTE 1 - Summary of Significant Accounting Policies (Continued)

L. Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires the City to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

NOTE 2 - Legal Compliance - Budgets

Approximately six to seven months before the start of a new fiscal year, the City's financial officer submits to the City Council a proposed operating budget for the fiscal year commencing the following October 1. The budget is prepared by fund, function and activity, and includes information on the past year, current year estimates and requested appropriations for the next fiscal year.

The City Council holds public hearings and may add to, subtract from or change appropriations, but may not change the form of the budget. Any changes in the budget must be within the revenues and reserves estimated as available to the City or the revenue estimates must be changed by an affirmative vote of a majority of the City Council. After public hearings and before the end of the fiscal year, the City Council formally adopts the budget.

Expenditures may not legally exceed budgeted appropriations at the activity level. During the year, several supplementary appropriations may be necessary.

NOTE 3 - Restricted Assets and Payable from Restricted Assets

Assets have been set aside for special items and are restricted for that purpose. Restricted resources are used only after the unrestricted resources are depleted. To date cash has been restricted for the following items:

Proprietary	
Bond reserves	$ 169,081
Utility deposits	182,324
Total	$ 351,405

Bond reserves are amounts the City is legally required to reserve for the repayment of outstanding bonds.

Water deposits are collected from individuals who receive utility services from the City. Money on deposit may be used to pay past due balances or is returned when the payer stops utility service. Restricted utility deposits totaled $182,324 at year-end.

NOTE 4 - Property Tax

Bannock County has the responsibility of assessing and collecting all property taxes. Taxes levied for the year are payable in two installments due December 20th of the current year and June 20th of the following year. The County remits property taxes collected to the City monthly.

Property taxes are recognized as revenue when received for monthly reporting purposes. At year end, an accrual is made to recognize property taxes receivable at year end. At year end, $325,267 in outstanding property taxes were expected to be collected and remitted by the County.

NOTE 5 - Cash and Cash Equivalents and Investments

Primary Government:

Deposits at year end consist of the following:

Deposits	
Cash in bank - carrying amount	
Restricted	$ 351,405
Unrestricted	13,687,442
	$ 14,038,847

Bank Deposits - Custodial Credit Risk for deposits is the risk that, in the event of bank failure, the government's deposits may not be returned to it. At year-end, the carrying amount of the City's deposits (cash and certificates of deposit) was $14,038,847 and the bank balance was $11,056,280. The deposits were covered by collateralized accounts or federal depository insurance of $250,000 per bank. Non-interest bearing account were insured up to 100%. The City uses various commercial banks to limit their exposure to custodial credit risk, however, some of the City's deposits including the State of Idaho, Local Government Investment Pool (LGIP) at year-end were not insured nor collateralized in the amount of $3,310,219.

The State Treasurer's Investment Pools (LGIP) operates in accordance with appropriate state laws and regulations. The reported value of the pools is the same as the fair value of the pool shares.

Investments - The City has no investments

Component Unit - Chubbuck Development Authority (CDA):

Deposits at year end consist of the following:

Deposits	
Cash in bank - carrying amount	
Unrestricted	$ 2,188,384

Bank Deposits - Custodial Credit Risk for deposits is the risk that, in the event of bank failure, the government's deposits may not be returned to it. At year-end the carrying amount and bank balance of CDA's deposits (cash and certificates of deposit) was $2,188,384. At year-end, all the Authority's deposits were held in the LGIP. Deposits in the LGIP are not insured or guaranteed by the Federal Deposit Insurance Corporation, the State of Idaho or any other government agency. CDA's deposits in the bank at year-end were subject to custodial credit risk.

The State Treasurer's Investment Pools (LGIP) operates in accordance with appropriate state laws and regulations. The reported value of the pools is the same as the fair value of the pool shares.

Investments - The CDA has no investments

NOTE 5 - Cash and Cash Equivalents and Investments (Continued)

Component Unit - Chubbuck Impact Area Waste Water Collection Authority (CIAWWCA):

Deposits and Investments - The CIAWWCA has no deposits or investments.

Deposits at year end consist of the following:

Deposits	
Cash in bank - carrying amount	
Unrestricted	$ -

Bank Deposits - Custodial Credit Risk for deposits is the risk that, in the event of bank failure, the government's deposits may not be returned to it. At year-end the carrying amount and bank balance of CIAWWCA's deposits (cash and certificates of deposit) was $0. At year-end, all the Authority's deposits were held in a financial institution. All deposits were guaranteed by the Federal Deposit Insurance Corporation and were not subject to custodial credit risk.

NOTE 6 - Receivables

All trade receivables are shown net of allowance for doubtful accounts. Doubtful accounts are based on an aging delinquent balance report. Historically 100% of property taxes have been collected, therefore, there is no allowance for uncollectible property tax receivables.

Receivables as of year-end for the City's business-type funds are as follows:

	Water	Sewer	Sanitation	Total
Accounts Receivables	$ 358,260	$ 336,196	$ 190,291	$ 884,747
Allowance for Doubtful Accounts	(50,559)	(45,710)	(31,862)	(128,131)
	$ 307,701	$ 290,486	$ 158,429	$ 756,616

NOTE 7 - Concentration of Credit Risk

Interest Rate Risk is the risk that changes in interest rates will adversely affect the value of a deposit. The City manages its exposure to declines in fair value by limiting the average maturity of its deposits to one year or less, or redeemable on demand with no penalty.

Credit Risk is the risk that an issuer or a counterparty to a deposit will not fulfill its obligations. The City seeks to minimize credit risk through diversification of deposits within the choices allowed under state statutes.

Concentration of Credit Risk is the risk of loss attributed to the magnitude of an investment in a single issuer. Exclusive of the State of Idaho LGIP, the City's deposits in any one issuer does not represent a concentration of total credit risk. The funds in the State of Idaho LGIP are in a variety of investments which are required to have an A quality credit rating or better.

The City is subject to credit risk on deposits in banks that exceed the FDIC maximum insured balance amount.

Additionally, the City grants credit to customers in the City for utility service. This extension of credit potentially subjects the City to credit risk.

NOTE 8 - Changes in Fixed Assets

A summary of general fixed assets at year end is as follows:

	Beginning Balance	Additions	Deletions	Ending Balance
Nondepreciable assets				
Land	$ 90,866	$ 190,688	$ -	$ 281,554
Infrastructures	582,988	2,492,562	-	3,075,550
Work in process	2,130,547	-	-	2,130,547
Buildings and Improvements	2,854,621	-	-	2,854,621
Vehicles and Equipment	3,576,270	225,791	50,316	3,751,745
	9,235,292	2,909,041	50,316	12,094,017
Accumulated Depreciation	4,153,120	284,962	50,316	4,387,766
	$ 5,082,172	$ 2,624,079	$ -	7,706,251

A summary of proprietary type fixed assets at year end is as follows:

	Beginning Balance	Additions	Deletions	Ending Balance
Nondepreciable assets				
Land	$ 709,854	$ -	$ -	$ 709,854
Water Rights	417,850	774,542	-	1,192,392
Work in process	-	19,661		19,661
Office Equipment	196,905		-	196,905
Buildings and Improvements	7,949,755	1,105,215	-	9,054,970
Vehicles and Equipment	2,678,224	178,204	18,573	2,837,855
Bond Fees	19,300	-	1,287	18,013
	11,971,888	2,077,622	19,860	14,029,650
Accumulated Depreciation	5,368,957	433,889	19,860	5,782,986
	$ 6,602,931	$ 1,643,733	$ -	$ 8,246,664

NOTE 9 - Long-term Debt and Accrued Compensation

Accrued Compensated Absences:

	Governmental	Business-type
Current portion	$ 65,435	$ 16,737
Noncurrent portion	261,740	66,953
	$ 327,175	$ 83,690

NOTE 9 - Long-term Debt and Accrued Compensation (Continued)

Long-term Debt:

Business-type activities:

In 2006, the City refinanced a construction line of credit for a note payable with the Department of Environmental Quality (DEQ) with an interest rate of 3.25% and semi-annual payments of $12,332 for 20 years.

Current portion	$ 16,090
Noncurrent portion	251,700
	$ 267,790

At year-end the City was authorized, on a line-of-credit, to borrowed $19,841,414 from the Department of Environmental Quality (DEQ) under five (5) separate loans. One loan of $1,400,000 requires the principal and 3% interest to be paid in biannual installments over 20 years. The other four (4) loans have zero percent interest rate and are required to be paid in biannual installments over 20 years at the close of the loan. At year-end two of the five loans were closed. The notes are used to finance the designing and constructing of the Chubbuck Northwest Sewer Interceptor. It may also be used to finance services to provide environmental field studies, public involvement, and agency permit applications. If funds allow, it may include the purchase of needed right-of-way for construction of the sewer system. At year-end the balance available to the City was $1,130,736.

	Total Award	Available	Outstanding
DEQ line of credit at 3%, with biannual payment of $47,504 for 20 years, and a maturity date of November 1, 2030. Loan closed April 29, 2010. Principal payments of $3,431 were made as of September 30, 2012.	$ 1,400,000	$ -	$ 1,396,569
DEQ line of credit at zero percent interest, with biannual payment of $5,499 for 20 years, and a maturity date of November 1, 2030. Loan closed April 22, 2010.	219,976	-	203,478
DEQ line of credit at zero percent interest, with biannual payment of $217,532 for 20 years, and a maturity date of fiscal year 2033. Loan set to close fiscal year 2013.	8,701,260	1,130,736	7,570,524
DEQ line of credit at zero percent interest, with biannual payment of $234,739 for 20 years, and a maturity date of fiscal year 2033. Loan set to close fiscal year 2013.	9,389,548	-	8,364,618
DEQ line of credit at zero percent interest, with biannual payment of $2,281 for 20 years, and a maturity date of February 16, 2030. Loan closed January 31, 2011.	130,630	-	130,630
	$ 19,841,414	$ 1,130,736	$ 17,665,819
Less current portion			136,684
Noncurrent portion			$ 17,529,135

NOTE 9 - Long-term Debt and Accrued Compensation (Continued)

Long-term Debt Continued:

Business-type Activities Continued:

The City issued two utility bonds. On October 1, 1972, the City issued its Sewer Revenue Bonds, at 5.425% and mature on October 1, 2013. These bonds were paid in full on September 10, 2012. The Water Revenue Bonds, Series 2011 was issued September 28, 2011, for 15 years in the amount of $1,930,000 at a premium of $110,330. The bond carries interest rates between 2 and 4.75% and a maturity date of September 1, 2026.

Bonds Payable:	Net Premium	Principal
Water Revenue Bond	$ 104,814	$ 1,830,000
	104,814	1,830,000
Less current portion		110,000
Noncurrent portion		$ 1,720,000

Bond premiums, net amortization totaled $110,330. Bond expenses, net amortization totaled $19,300. The bond premium and expenses are amortized over fifteen (15) years, the life of the bond. Bond premium amortization of $5,516 and expense of $1,287 was recognized at year-end.

Notes Payable

On June 4, 2008, the City issued three notes to purchase assets needed in order to collect sanitation for the City. Notes one and two were issued at 5.50% and the third note at 5.25%. The third note was refinanced in 2009. The notes were issued for $936,576, $541,537 and $1,375,000 with monthly payments of $17,890, $6,985, and $9,321, respectively until the maturity date of May 5, 2013, 2016 and 2029, respectively.

Notes Payable:	Balance
Note 1	$ 137,024
Note 2	276,283
Note 3	1,228,106
	1,641,413
Less current portion	258,639
Noncurrent portion	$ 1,382,774

Annual Debt Service Requirements for leases, bonds and notes payable

Year Ending	Governmental Activities		Business-type Activities	
September 30	Principal	Interest	Principal	Interest
2013	$ -	$ -	$ 1,350,120	$ 230,610
2014	-	-	1,133,125	231,684
2015	-	-	1,143,201	233,326
2016	-	-	1,098,322	185,388
2017	-	-	1,075,803	149,557
2018-2022	-	-	5,522,912	709,441
2023-2027	-	-	5,615,403	635,326
2028-2032	-	-	4,471,635	99,032
	$ -	$ -	$ 21,410,521	$ 2,474,364

NOTE 9 - Long-term Debt and Accrued Compensation (Continued)

Changes in long-term liabilities

Long-term liability activity for the year was as follows:

	Beginning Balance	Additions	Reductions	Ending Balance	Due within one year
Governmental activities					
Compensated absences	$ 265,635	$ 371,569	$ 310,029	$ 327,175	$ 65,435
	$ 265,635	$ 371,569	$ 310,029	$ 327,175	$ 65,435
				Long-term portion	$ 261,740

	Beginning Balance	Additions	Reductions	Ending Balance	Due within one year
Business-type activities					
Bonds payable	$ 1,995,000	$ -	$ 165,000	$ 1,830,000	$ 110,000
Notes payable	19,188,866	745,456	353,801	19,580,521	411,413
Compensated absences	100,648	101,518	118,476	83,690	16,737
	$21,284,514	$ 846,974	$ 637,277	$ 21,494,211	$ 538,150
				Long-term portion	$ 20,956,061

NOTE 10 - Pension Disclosures

The Public Employee Retirement System of Idaho (PERSI), a cost sharing multi-employer public retirement system, was created by the Idaho State Legislature. It is a defined benefit plan requiring that both the member and the employer to contribute. The plan provides benefits based on members' years of service, age, and compensation. In addition, benefits are provided for disability, death, and survivors of eligible members or beneficiaries. The authority to establish and amend benefit provisions is established in Idaho Code. Designed as a mandatory system for eligible state and school district employees, the legislation provided for other political subdivisions to participate by contractual agreement with PERSI. Financial reports for the plan are available from PERSI upon request.

After 5 years of credited service, members become fully vested in retirement benefits earned to date. Members are eligible for retirement benefits upon attainment of the ages specified for their employment classification. For each month of credited service, the annual service retirement allowance is 2.0% (2.3% police/firefighter) of the average monthly salary for the highest consecutive 42 months.

The contribution requirements of the City of Chubbuck and its employees are established and may be amended by the PERSI Board of Trustees. At year-end the required contribution rate as a percentage of covered payroll for members was 6.23% for general members and 7.65% for police/firefighters. The employer rate as a percentage of covered payroll was 10.39% for general members and 10.73% for police/firefighter members. The City of Chubbuck contributions required and paid were $398,799, $402,921, and $336,8275, for the three years ended September 30, 2012, 2011, and 2010, respectively.

NOTE 11 - Risk Management

The City is exposed to various risks of loss. The City has obtained commercial insurance to reduce the risk of substantial losses.

NOTE 12 - Subsequent Events

Subsequent events were evaluated up to May 11, 2012, the date the financial statements were available to be issued. A long-term note in the sewer fund with a balance of $1,396,567 was paid on January 7, 2013 along with accured interest of $69,331.

NOTE 13 - Other Postemployment Benefits

The City complies with Idaho's requirements under the Consolidated Omnibus Budget Reconcillation Act (COBRA). The liability under state requirements related to other post-employment benefits for the medical insurance COBRA program is not required to be reported. The City does not participate in any other post-employment benefit (OPEB).

NOTE 14 - Correction of an Error and Prior Period Adjustments

Adjustments Governmental activities:
During the year checks that should have been voided in prior years was discovered and the amounts were added to available cash in the amount of $150,496.

An account that should have been recorded has a payable was recorded as revenue for $29,165, consequently accounts payable were increased by $29, 165.

The recreational program fund was changed from being a governmental fund to a fiduciary fund. This fund balance was removed from the governmental fund for the amount of $9,745 and added to the fund balance of the newly created recreational programs fiduciary fund.

Adjustments Business-type activities:

In 2011 interest was not accrued in the amount of $15,610. This adjustment increased the prior years interest payable by $15,610.

REQUIRED SUPPLEMENTARY INFORMATION

CITY OF CHUBBUCK, IDAHO
BUDGETARY COMPARISON SCHEDULE

GENERAL FUND
YEAR ENDED SEPTEMBER 30, 2012

	Budgeted Amounts			Variance
	Original	Final	Actual Amounts	Positive (Negative)
Resources				
General property taxes and sales tax	$ 4,517,559	$ 4,517,559	$ 4,567,959	$ 50,400
Franchise fees	222,000	222,000	201,128	(20,872)
Intergovernmental	785,000	785,000	908,227	123,227
Parks revenue	3,600	3,600	2,399	(1,201)
Licenses, permits and fines	139,500	139,500	133,808	(5,692)
Grants	-	-	27,892	27,892
Fire protection and prevention	-	-	210,650	210,650
Leases and rents	-	-	52,546	52,546
Interest income	10,000	10,000	34,264	24,264
Donations	-	-	-	-
Charges for services	189,740	189,740	4,135	(185,605)
Other resources	279,053	279,053	16,228	(262,825)
Amounts available for appropriations	6,146,452	6,146,452	6,159,236	12,784
Charges to appropriations				
General government	377,518	377,518	214,382	163,136
Law enforcement	2,755,119	2,755,119	2,494,222	260,897
Fire control	1,113,106	1,113,106	1,174,659	(61,553)
Building inspection	165,268	165,268	158,409	6,859
Street	937,422	937,422	1,035,804	(98,382)
Parks and recreation	637,349	637,349	488,874	148,475
Health and welfare	33,275	33,275	31,462	1,813
Capital Outlays	130,300	130,300	225,467	(95,167)
Total charges to appropriations	6,149,357	6,149,357	5,823,279	326,078
EXCESS OF REVENUES OVER (UNDER) EXPENDITURES	(2,905)	(2,905)	335,957	338,862
Other Financing Sources				
Principal payments on leases	-	-	-	-
Interest expense	-	-	-	-
Proceeds from sale of assets	-	-	17,223	17,223
	-	-	17,223	17,223
NET CHANGE IN FUND BALANCE	(2,905)	(2,905)	353,180	356,085
BEGINNING FUND BALANCE	10,000	10,000	1,995,650	1,985,650
ENDING FUND BALANCE	$ 7,095	$ 7,095	$ 2,348,830	$ 2,341,735

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
SEPTEMBER 30, 2011

NOTE 1 - EXPENDITURES IN EXCESS OF BUDGET

GENERAL FUND

Fire Control

The City had expenditures in excess of budget of $61,553 due to an increase in fire control expenditures. Increased maintenance, fuel, and equipment expenditures were not accounted for in the budget. These expenditures were paid using excess revenues over budget.

Street

The City had expenditures in excess of budget of $98,382 due to an increase in highway, streets and roads expenditures. Increased highway and street maintenance, repairs and maintenance, and personnel expenditures were not accounted for in the budget. These expenditures were paid using excess revenues over budget.

Capital Outlays

The City had expenditures in excess of budget of $95,167 due to the purchase of additional assets not accounted for in the budget. Theses assets included equipment and vehicles that were not accounted for in the budget. These expenditures were paid using excess revenues over budget.

OTHER SUPPLEMENTARY INFORMATION

CITY OF CHUBBUCK, IDAHO
COMBINING BALANCE SHEET
NONMAJOR GOVERNMENTAL FUNDS
SEPTEMBER 30, 2012

	Special Revenue						
	Street Guarantee Fund	General LID Fund	Juvenile Referral Fund	Court Fund	Road Projects Fund	Parks Fund	Total Nonmajor Funds
ASSETS							
Cash	$ 15,514	$ 198,724	$ 5,059	$ 57,781	$ 164,622	$ 191,138	$ 632,838
FUND BALANCES							
Committed, reported in:							
Special revenue fund	$ 15,514	$ 198,724	$ 5,059	$ 57,781	$ 164,622	$ 191,138	$ 632,838

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES
NONMAJOR GOVERNMENTAL FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012

	Special Revenue						
	Street Guarantee Fund	General LID Fund	Juvenile Referral Fund	Court Fund	Road Projects Fund	Parks Fund	Total Nonmajor Funds
REVENUES							
Interest income	$ 23	$ 1,388	$ 12	$ 197	$ 421	$ 492	$ 2,533
Donations	-	-	-	-	-	15,720	15,720
Other revenues	-	-	-	2,258	-	-	2,258
	23	1,388	12	2,455	421	16,212	20,511
EXPENDITURES							
Other purchased services	-	-	-	2,780	-	14,333	17,113
	-	-	-	2,780	-	14,333	17,113
NET CHANGE IN FUND BALANCES	23	1,388	12	(325)	421	1,879	3,398
BEGINNING FUND BALANCE	15,491	197,336	5,047	58,106	164,201	189,259	629,440
ENDING FUND BALANCE	$ 15,514	$ 198,724	$ 5,059	$ 57,781	$ 164,622	$ 191,138	$ 632,838

See accompanying notes to financial statements

CITY OF CHUBBUCK, IDAHO
BUDGETARY COMPARISON SCHEDULE

NONMAJOR GOVERNMENTAL FUNDS
FOR THE YEAR ENDED SEPTEMBER 30, 2012

	Budgeted Amounts			
	Original	Final	Actual Amounts	Variance Positive (Negative)
Resources				
General property taxes and sales tax	$ 15,000	$ 15,000	$ -	$ (15,000)
Interest income	11,900	11,900	2,533	(9,367)
Donations	80,000	80,000	15,720	(64,280)
Other resources	40,000	40,000	2,258	(37,742)
Amounts available for appropriations	146,900	146,900	20,511	(126,389)
Charges to appropriations				
Street guarantee fund	15,500	15,500	-	15,500
General LID fund	3,600	3,600	-	3,600
Juvenile referral fund	500	500	-	500
Court fund	42,100	42,100	2,780	39,320
Road projects fund	1,200	1,200	-	1,200
Parks fund	84,000	84,000	14,333	69,667
Total charges to appropriations	146,900	146,900	17,113	129,787
NET CHANGE IN FUND BALANCE	-	-	3,398	3,398
BEGINNING FUND BALANCE	-	-	629,440	629,440
ENDING FUND BALANCE	$ -	$ -	$ 632,838	$ 632,838

See accompanying notes to financial statements

COMPLIANCE AND SINGLE AUDIT SECTION

Deaton & Company, Chartered
Certified Public Accountants
215 North 9th, Suite A
Pocatello, Idaho 83201-5278
(208) 232-5825
Members of Idaho Society of Certified Public Accountants
Members of American Institute of Certified Public Accountants

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

To the City Council
City of Chubbuck

We have audited the financial statements of the governmental activities, the business-type activities, the aggregate discretely presented componenet units, each major fund, and the aggregate remaining fund information of City of Chubbuck as of and for the years ended September 30, 2012 and 2011, which collectively comprise the City of Chubbuck's basic financial statements and have issued our report thereon dated March 29, 2013. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States.

Internal Control Over Financial Reporting

In planning and performing our audit, we considered the City of Chubbuck's internal control over financial reporting as a basis for designing our auditing procedures for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the City of Chubbuck's internal control over financial reporting. Accordingly, we do not express an opinion on the effectiveness of the City of Chubbuck's internal control over financial reporting.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be deficiencies, significant deficiencies, or material weaknesses. We did not identify any deficiencies in internal control over financial reporting that we consider to be material weaknesses, as defined above.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether City of Chubbuck's financial statements are free of material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under Government Auditing Standards.

This report is intended for the information and use of management, City Council, and federal awarding agencies. However, this report is a matter of public record and its distribution is not limited.

Deaton & Company

Pocatello, Idaho
March 29, 2013

Deaton & Company, Chartered
Certified Public Accountants
215 North 9th, Suite A
Pocatello, Idaho 83201-5278
(208) 232-5825
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INDEPENDENT AUDITOR'S REPORT ON COMPLIANCE WITH REQUIREMENTS THAT COULD HAVE A DIRECT AND MATERIAL EFFECT ON EACH MAJOR PROGRAM AND ON INTERNAL CONTROL OVER COMPLIANCE IN ACCORDANCE WITH OMB CIRCULAR A-133

To the City Council
City of Chubbuck

Compliance

We have audited City of Chubbuck's compliance with the types of compliance requirements described in the OMB Circular A-133 Compliance Supplement that could have a direct and material effect on each of City of Chubbuck's major federal programs for the years ended September 30, 2012 and 2011. City of Chubbuck's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs. Compliance with the requirements of laws, regulations, contracts, and grants applicable to each of its major federal programs is the responsibility of City of Chubbuck's management. Our responsibility is to express an opinion on City of Chubbuck's compliance based on our audit.

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and OMB Circular A-133, *Audits of States, Local Governments, and Non-Profit Organizations*. Those standards and OMB Circular A-133 require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about City of Chubbuck's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion. Our audit does not provide a legal determination of City of Chubbuck's compliance with those requirements.

In our opinion, City of Chubbuck, complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the years ended September 30, 2012 and 2011.

Internal Control over Compliance

Management of City of Chubbuck, is responsible for establishing and maintaining effective internal control over compliance with the requirements of laws, regulations, contracts, and grants applicable to federal programs. In planning and performing our audit, we considered City of Chubbuck's internal control over compliance with the requirements that could have a direct and material effect on a major federal program to determine the auditing procedures for the purpose of expressing our opinion on compliance and to test and report on internal control over compliance in accordance with OMB Circular A-133, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of City of Chubbuck's internal control over compliance.

A *deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be deficiencies, significant deficiencies, or material weaknesses. We did not identify any deficiencies in internal control over financial reporting that we consider to be material weaknesses, as defined above.

City of Chubbuck's responses to the findings identified in our audit are described in the accompanying schedule of findings and questioned costs. We did not audit City of Chubbuck's responses and, accordingly, we express no opinion on the responses.

This report is intended solely for the information and use of management, City Council, others within the entity, federal awarding agencies, and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties.

Deaton & Company

Pocatello, Idaho
March 29, 2013

CITY OF CHUBBUCK, IDAHO

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS

FOR THE YEAR ENDED SEPTEMBER 30, 2012

FEDERAL GRANTOR/PASS – THROUGH GRANTOR	Federal CFDA Number	Grant No.	Amount Awarded	Expenditures this Period	Total Expenditures
Grant Awards					
ENVIRONMENTAL PROTECTION AGENCEY/BUREAU OF LAND MANAGEMENT	15-242	L08AC14105-0004	$ 6,000	$ 6,000	$ 6,000
			$ 6,000	$ 6,000	$ 6,000
Loan Awards					
DEPARTMENT OF ENVIRONMENTAL QUALITY	66-458	* DW-9926	$ 279,589	$ -	$ 279,589
	66-458	WW0803	156,389	-	156,389
	66-458	WW1009	** 5,610,197	519,668	5,062,602
	66-458	WW1014	7,171,899	80,109	7,171,899
			13,218,074	599,776	12,670,479
TOTAL EXPENDITURES OF FEDERAL AWARDS			$ 13,224,074	$ 605,776	$ 12,676,479

* These awards were through the American Recovery and Reinvestment Act.

** These awards were considered major federal awards.

CITY OF CHUBBUCK, IDAHO

SCHEDULE OF FINDINGS AND QUESTIONED COSTS

FOR THE YEAR ENDED SEPTEMBER 30, 2012

SUMMARY OF AUDIT RESULTS

1. The auditor's report expresses an unqualified opinion on the financial statements of City of Chubbuck.

2. No reportable conditions disclosed during the audit of the financial statements are reported in the Independent Auditor's Report.

3. No instances of noncompliance material to the financial statements of City of Chubbuck were disclosed during the audit.

4. Reportable conditions relating to the audit of major federal award programs included significant deficiencies due to a lack of controls over asset additions and deletions reporting and the lack of controls over notes and lease liability reporting. These significant deficiencies are reported in the Report on Compliance with Requirements Applicable to Each Major Program and on Internal Control Over Compliance in accordance with OMB Circular A-133.

5. The Auditor's report on compliance for the major federal award programs for City of Chubbuck expresses an unqualified opinion on all major federal programs.

6. Audit findings relative to major federal programs for City of Chubbuck are reported in this Schedule.

7. The programs tested as major programs included Department of Environmental Quality, CFDA #66-458

8. The threshold for distinguishing Types A and B programs was $300,000.

9. City of Chubbuck was considered a high-risk audited.

FINDINGS – FINANCIAL STATEMENT AUDIT

None

FINDINGS AND QUESTIONED COSTS – MAJOR FEDERAL AWARD PROGRAM AUDIT

None

CITY OF CHUBBUCK, IDAHO

SUMMARY SCHEDULE OF PRIOR AUDIT FINDINGS (PAGE 1 OF 2)

FOR THE YEAR ENDED SEPTEMBER 30, 2011

FINDINGS – FINANCIAL STATEMENT AUDIT

2011-1 *Criteria* - Accounting policies require all cash accounts be recorded on the City's general ledger. The City also has an unwritten expectation to complete cash reconciliations prior to receiving the next month's bank statements.

Condition - A new bank account that was opened and funded was not included in the general ledger. Also the expectation of cash reconciliations was not met. The cash reconciliations were delinquent at

Effect - The City's general ledger did not accurately reflect the cash balance at yearend.

Response - Management believes the above significant deficiency is a weakness in internal controls and has agreed to review their policy to insure the recording and reporting of all cash accounts are complete and reconciled within a timely manner.

Recommendation - We recommend the City review its policies and procedures to insure all bank accounts are recorded on the City's general ledger and that cash reconciliations are performed within a timely manner.

2011-2 *Criteria* - Accounting policies require all payables incurred during the period, for proprietary funds, be recorded on the City's general ledger and that payments for these liabilities show as a decrease in liabilities.

Condition - The City had entered into a bond agreement for the purchase of water rights, however, neither the assets nor liabilities were recorded on the City's general ledger. We also found that the City expensed payments on notes payable that were recorded in proprietary funds.

Effect - The City's general ledger did not accurately reflect the bond payable and assets and liabilities were understated at yearend.

Response - Management believes the above significant deficiency is a weakness in internal controls and has agreed to review its policies and procedures to insure all payables are recorded on the City's general ledger and that payments to liabilities decrease the liabilities and are not reported as an expense.

Recommendation - We recommend the City review its policies and procedures to insure all payables are recorded on the City's general ledger and that payments to liabilities decrease the liabilities and are not reported as an expense.

CITY OF CHUBBUCK, IDAHO

SUMMARY SCHEDULE OF PRIOR AUDIT FINDINGS (PAGE 2 OF 2)

FOR THE YEAR ENDED SEPTEMBER 30, 2011

FINDINGS AND QUESTIONED COSTS - MAJOR AWARD PROGRAM AUDIT

Department of Environmental Quality

2011-2 *Criteria* - Accounting policies require all payables incurred during the period, for proprietary funds, be recorded on the City's general ledger and that payments for these liabilities show as a decrease in liabilities.

Condition - The City had entered into a bond agreement for the purchase of water rights, however, neither the assets nor liabilities were recorded on the City's general ledger. We also found that the City expensed payments on notes payable that were recorded in proprietary funds.

Effect - The City's general ledger did not accurately reflect the bond payable and assets and liabilities were understated at yearend.

Response - Management believes the above significant deficiency is a weakness in internal controls and has agreed to review its policies and procedures to insure all payables are recorded on the City's general ledger and that payments to liabilities decrease the liabilities and are not reported as an expense.

Recommendation - We recommend the City review its policies and procedures to insure all payables are recorded on the City's general ledger and that payments to liabilities decrease the liabilities and are not reported as an expense.

APPENDIX F SANITARY SURVEYS

16 April 2013

Attention: Skyler

Here is some of the information that you have requested. I still need to send the monthly reports for the wells. kurt

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way #300 • Pocatello, Idaho • 83201

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

Certified Mail #7007 1490 0002 2307 7597
Return Receipt Requested

September 10, 2009

Steve Smart
Works Director
City of Chubbuck
P.O. Box 5604
Chubbuck, ID 83202

RE: City of Chubbuck Water System Enhanced Sanitary Survey: PWS # ID6030008

Dear Mr. Smart:

On August 11, 2009 the Idaho Department of Environmental Quality (DEQ) conducted a sanitary survey of the City of Chubbuck water system. We appreciate your cooperation and support in having Doyle King and Kurt Eldredge accompany us during the survey. The purpose of the survey was to identify any areas where the system does not meet the requirements of IDAPA 58.01.08 Idaho Rules for Public Drinking Water Systems and identify potential sources of contamination. The following paragraphs describe the physical features of the system, offer recommendations, and list deficiencies noted during the survey that must be corrected.

General Description

The community water system for the City of Chubbuck serves roughly 12,000 residents through approximately 3,700 metered connections. The system is located in Chubbuck, Idaho in north Bannock County. The water system consists of three active well sources, three storage reservoirs, one booster pump station, one air stripper treatment facility, three chlorine injection systems, and associated distribution piping. Finished water flows from three storage reservoirs with a combined storage capacity of 1,725,000 gallons. There are disinfection systems at wells #3, #4, and #5 and a treatment system for the removal of perchlorate at well #4. Well #1 has been off line since January of 2003 and was disconnected in February of 2008. Well #2 is also disconnected from the distribution system due to perchlorate contamination. A source water assessment report was completed for the system in November 2000.

Sources

Wells

Well # 3 (Tag # E0007396) is located on Lariat Street and ~~Joliet~~ Sorrell Streets in the northern portion of Chubbuck. The well is housed in a 30 ft x 15-ft concrete block building. The lot does not provide 50 foot of separation to the nearest property line. The city should consider securing the full 50 foot separation around the well house so it is not developed in a manner that could cause well contamination. This well was drilled in December 1962. Based on well log information, the well is 250 feet deep and has a 13 inch casing that extends through a 16 inch tall pedestal. The casing is screened from 215 ft. to 250 ft. Static water level is 75 feet below ground surface. The discharge line has an air release/vacuum relief valve, check valve, isolation valve, flow meter, pump control valve, pressure gauge, and a smooth nosed sample tap. Well #3 has no back-up power.

– we have

– It is being installed this year. (month)

Well #4 (Tag #E0007397) is located at West Chubbuck Road and Independence Street. The well was constructed in 1984, and is housed in a 15-ft x 35-ft brick building. Based on well log information, the well casing is 400 feet deep, but the surface seal depth is unknown. A 24-inch casing extends through a 20-inch concrete pedestal and is perforated from 210 ft. to 260 ft. The static water level in the well is 72 feet below ground surface. Well #4 does not pump directly to distribution, but to the top of the air stripping tower. As water flows down through the packed tower media, clean air is drawn up through the filter media from the bottom of the tower. Volatile compounds become entrained in the air stream as the water flows down through the filter media and into the clear well. A 350-hp turbine motor pumps water from the clear well into the distribution system. The discharge line from the distribution pump has an isolation valve, pressure gauge, sample tap, and a pump-to-waste line extending outside the building.

– not any more

It now has a V12 Detroit motor for back up generator

Well # 5 (Tag #E0007398) is located along Hawthorne Road. The well was originally located inside a 12 ft x 20-ft brick building, but the building has since been extended to house a sand filter and additional piping. Well #5 was constructed in April 1996. Based on well log information, the well depth is 460 feet. The casing size is 28 inches and is 323 feet deep, it is screened and perforated from 45ft. to 145ft. Static water level in the well is 64 feet below ground surface. The 14 inch discharge line has an air release/vacuum relief valve, check valve, flow meter, pressure gauge, sample tap and pump control valve. The well can be pumped-to-waste through a fire hydrant located just outside the building. Well #5 has a separate, attached room housing a CAT diesel auxiliary power generator.

Storage

The water system has three above-ground storage reservoirs. Tank #1 and tank #2 are steel reservoirs constructed in the early 1960's. Tank #3 is a concrete reservoir constructed in 1977. The storage reservoirs are fenced and can be isolated from the rest of the system. The largest reservoir, which is the concrete reservoir #3, has an overflow that extends out into the adjacent pasture. All of the reservoirs have a single access hatch

and adequate overflow piping. There is no splash plate under the overflow discharge pipes for reservoirs #1 and #2. An inspection and cleaning of all three tanks was completed on August 20, 2002. The roof on tank #3 has been repaired and sealed since the last inspection.

Treatment

Wellhouses #3 and #5 each have a PPG Chlorinator Accutab system. The disinfection systems operate when the well pumps are in operation. Water is run through the chlorine contact chamber to create a calcium hypochlorite solution that is injected back into the discharge line of each well. NSF approved chlorine tablets are slowly dissolved and mixed with water from the well whenever the well pump comes on. Wellhouse #4 uses a model T Floc 2906 for disinfection in the same manner. An air stripping tower is also used at wellhouse #4 for removal of perchlorate. Wellhouses #3 and #5 use frost-free hydrants to test for chlorine residuals. Free chlorine residual is measured five days a week on all of the active wells. Chlorine residual logs are kept in the wellhouses.

Distribution System

The distribution piping ranges from 4 inches to 24 inches in diameter and is constructed of ductile iron pipe (DIP), high-density polyethylene (HDPE), poly-vinyl-chloride (PVC) and one section includes approximately one-quarter mile of asbestos-cement pipe. System pressure ranged between 82 and 97 psi. Approximately one mile of main line that provides fire flow to a portion of the city is 4 inch diameter pipe, which is less than the 6 inch minimum needed for fire flow. This pipe should be replaced with the correct size when maintenance is done on that section. The system has 465 fire hydrants that are exercised and flushed annually. The city's operating plan includes a cross-connection control ordinance, adopted in 1980.

Monitoring/Reporting/Data Verification

Currently, the City of Chubbuck's water system is in compliance with all chemical and bacteriological monitoring and reporting requirements.

Pumps/Pumping Facilities and Controls

Well #3 has a 200-hp turbine pump capable of producing 1,500 gpm. Well # 4 has a 125-hp turbine pump capable of pumping 2,000 gpm to the stripping tower. A 350-hp booster pump in wellhouse #4 delivers water from the clear well to distribution. Well #5 has a 500-hp turbine motor capable of pumping 4,000 gpm of water to distribution. Well #5 has a diesel auxiliary generator. The booster station at Chubbuck Road and Interstate 15 has three booster pumps, one is 25-hp and the other two are 75-hp. There is a diesel emergency backup generator at the booster station.

Management / Operator Compliance with State Regulations

The City of Chubbuck is under the direction of the Mayor, a City Council, and a Public Works Director. Doyle King and Kurt Eldredge serve as the as the certified drinking water operators for the City of Chubbuck. Doyle is the responsible in charge operator and has Class III Distribution certification, Kurt is the back-up operator and has Class II certification. They collect and monitor routine bacteria and chemical samples, they investigate customer complaints or concerns, and they make system repairs. A monthly fee of $22.04 + $1.10 per 1000 gallons is charged to each connection. Unlike systems that charge a base fee for a certain minimum gallon usage, the charge per 1000 gallon starts from the first gallon, not after some preset minimum. This fee supports facility operations and maintenance.

Ground Water under the Direct Influence of Surface Water (GWUDI)

Based on DEQ's letter dated March 15, 1995 all water sources within the water system are determined to be groundwater that is not under the direct influence of surface water.

No Significant Deficiencies were noted in the survey

Deficiencies:

The following improvements must be made to comply with DEQ regulations (IDAPA 58.01.08):

Groundwater Source:

Well #3 – E0007396

1. Well #3 does not meet all of the minimum setback requirements (in all directions) pursuant to IDAPA 58.01.08.900.01. The setback requirements from the well will be reevaluated every time an ESS is conducted. **(No action required at this time)**

Storage: Tank #1 and #2, volume 50,000 gal. and 75,000 gal.

1. For storage structures #1 and #2, one or more of the overflows and/or drains do not discharge over a drainage inlet structure or a splash plate, as required by IDAPA 58.01.08.544.06.

Distribution:

1. There are fire hydrants provided that are connected to water mains smaller than six (6) inches in diameter, which is not in accordance with IDAPA 58.01.08.542.06.

Recommendations:

1. DEQ recommends that a leak detection program be put in place and utilized.

2. DEQ recommends the PWS set up a water conservation program.

3. DEQ recommends the water system operator obtain training in cross connection control.

4. DEQ recommends that all storage tanks be cleaned every five (5) years. The cleaning of any storage tank should be coordinated with the DEQ regional office. Be advised that AWWA standards do not allow a tank to be cleaned while in service unless a Boil Water Advisory is administered.

5. DEQ administrative rules require that all confined space entry requirements be considered, in accordance with IDAPA 58.01.08.501.14. DEQ does not, however, specifically enforce Occupational Safety & Health Administration (OSHA) regulations and therefore you should refer to the OSHA web site at www.osha.gov/SLTC/confinedspaces/index.html or their Boise, Idaho Office in order to develop and implement a comprehensive confined space entry program in order to protect personnel from dangerous conditions.

   OSHA - Boise Area Office
   1150 North Curtis Road, Suite 201
   Boise, Idaho 83706
   (208) 321-2960
   (208) 321-2966 Fax

For all modifications to existing water systems, an engineering report shall be submitted to the Department of Environmental Quality's (DEQ) review and approval prior to or concurrent with the submittal of plans and specifications as required in Subsection 504.03, pursuant to IDAPA 58.01.08.503.

Prior to modifications of existing public water supply systems, plans and specifications must be submitted to the DEQ for review, and approved, pursuant to IDAPA 58.01.08.504.03. Please contact this office at 236-6160 prior to making any system modifications.

DEQ recommends the significant deficiencies be addressed as soon as possible, however, 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.

SECTION II Water Level Information (Optional data if available) well 3

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 77.3 ft. Date 5-29-12
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Data Industrial Model No. 900 Serial No. 020809

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 1000

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 10

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	**Totalizer Reading**	**Flow Rate** (circle: cfs or gpm)	**Discharge Pressure**
January (3)	5834648	1200	99
February (2)	5842296	1040	99
March (1)	5847929	0	86
April (2)	5848379	0	87
May (1)	5850588	0	87
June (1)	5850729	0	94
July (2)	5851668	0	82
August (3)	5865679	1330	98
September (4)	5871554	0	90
October (2)	5880591	1690	92
November (9)	5892505	1660	94
December (31)	5898952	0	90

Do totalizer and flow readings above include meter multipliers? ____ Yes X No

Total Acre-feet _____ **OR Total Gallons** 64,304,000
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

SECTION II Water Level Information (Optional data if available) Well 4

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 70.8 ft. Date 5-29-12
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Data Industrial Model No. 2100 Serial No. 2100-001355

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 1000

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 0

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	Totalizer Reading	Flow Rate (circle: cfs or gpm)	Discharge Pressure
* January (1)	3081912	0	0
* February ( )	—	—	—
* March ( )	—	—	—
April (3)	3095465	2493	114
May (2)	3121900	2530	113
June (5)	3157225	1902	113
July (2)	3201077	1782	113
August (1)	3255130	2410	110
September (5)	3334386	2342	114
October (3)	3377880	2586	113
November (6)	3407141	2642	114
December (31)	3441165	2125	114

Do totalizer and flow readings above include meter multipliers? ____Yes____No (NO / Yes)

Total Acre-feet _____ **OR Total Gallons** 359,253,000
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

* out of service Oct 2011 To Mar 7, 2012

Well 5

SECTION II Water Level Information (Optional data if available)

Depth to water. Record the date, if the pump was on or off, or if other nearby pumps were on.
Static Water Level (pump off, water level stable): 68.2 ft. Date 5-29-12
Dynamic Water Level (pump on): _____ ft Date _____

Section III Rate of flow and volume diverted (REQUIRED DATA)

Meter information:
Make Badger Model No. 200B Serial No. 220BR005-1211

Does the meter totalizer measure in acre-feet or gallons? **(circle one)** What is the multiplier? 100

Does the meter rate of flow indicator show gpm or cfs? **(circle one)** What is the multiplier? 0

For meters without rate of flow indicators, check here □ and see page 4 for meter information and rate measurement methods.

Reading of the meter totalizer, flow rate and discharge pressure should be taken and recorded once each month on or near the same date. Please provide the actual totalizer reading and not the total volume since last reading.

Date (date of reading)	**Totalizer Reading**	**Flow Rate** (circle: cfs or gpm)	**Discharge Pressure**
January (1)	3124932	0	91
February (2)	3473725	2751	105
March (1)	3781979	3586	104
April (2)	4029854	3514	105
May (3)	4365987	3647	104
June (4)	5413600	3677	105
July (2)	6373405	3580	104
August (2)	7491431	3614	99
September (4)	8458740	3633	101
October (1)	9055353	3143	105
November (1)	9283454	3462	105
December (31)	9497469	0	90

Do totalizer and flow readings above include meter multipliers? ____ Yes X No

Total Acre-feet _____ **OR Total Gallons** 637,253,700
(there are 325,850 gallons per acre-foot)

Calculations or Comments (If flow meter was installed, calibrated, or replaced during **this reporting year,** Please note the date.)

CITY OF CHUBBUCK
WELL WATER PUMPED

Year	Well 1 gallons	Well 2 gallons	Well 3 gallons	Well 4 gallons	Well 5 gallons	Total Pumped gallons	Total acre-feet
1990	64,772,600	271,354,000	147,364,000	66,146,700	0	549,637,300	1687
1991	0	243,570,000	247,583,000	46,474,200	0	537,627,200	1650
1992	312,630	288,672,000	229,962,000	74,801,500	0	593,748,130	1822
1993	0	147,345,000	353,936,000	36,120,600	0	537,401,600	1649
1994	12,363,700	87,824,000	470,852,000	33,364,800	0	604,404,500	1855
1995	12,818,100	62,631,000	405,146,000	19,165,000	0	499,760,100	1534
1996	15,519,400	59,363,000	350,000,000	116,955,700	0	541,838,100	1663
1997	15,643,800	27,227,000	332,185,000	0	78,450,000	453,505,800	1392
1998	16,040,700	0	171,133,000	346,812,156	160,407,000	694,392,850	2131
1999	16,588,300	0	332,260,000	65,036,825	96,201,430	510,086,550	1566
2000	14,621,400	0	277,083,000	125,862,000	200,066,418	617,632,820	1896
2001	15,116,700	0	267,618,000	158,119,440	150,582,700	591,436,840	1815
2002	11,927,900	0	252,023,000	206,846,000	184,007,300	654,804,200	2010
2003	234,600	0	273,657,000	290,452,000	208,208,000	772,551,600	2371
2004	3,000	0	282,831,000	242,660,000	220,712,100	746,206,100	2290
2005	5,700	0	246,300,000	292,665,000	233,405,982	772,376,680	2370
2006	12,000	0	311,580,000	216,429,000	344,686,551	872,707,551	2678
2007	0	0	280,136,000	240,259,000	395,632,190	916,027,190	2811
2008	0	0	293,160,000	344,641,000	287,198,400	924,999,400	2839
2009	0	0	211,229,000	241,791,000	400,079,200	853,099,200	2618

2010	**0**	**0**	**190,579,000**	**350,381,000**	**397,733,400**	**939,693.400**	**2884**
2011	**0**	**0**	**187,679,000**	**472,174,200**	**262,398,000**	**922,251,200**	**2830**
2012	**0**	**0**	**64,304,000**	**359253000**	**637,253,700**	**1,060,810,700**	
2013							

compiled by Doyle King 5-8-06

APPENDIX G CAPITAL IMPROVEMENTS

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT: Alternative Totals		PROJECT NO.:	210078	DATE:		
LOCATION: Chubbuck, Idaho		ESTIMATED BY:	SDA	8/18/2015		
OWNER: City of Chubbuck		CHECKED BY:	JPM			
			Sheet	1 of 1		
Water Right Inflation	7.5%					
Construction Inflation	6%	Interest	3%			
Improvement Item		**Year**		**Est. Cost**	**FV Cost**	**PV Cost**
Priority 1 - Immediate		2016-2017				
Rehab Well #2		2016		$324,000	$343,000	$333,000
Well #6		2017		$1,117,000	$1,255,000	$1,183,000
Booster Station (~4,000 gpm)		2017		$1,215,000	$1,365,000	$1,287,000
1.5 MG Storage Tank		2017		$2,506,000	$2,816,000	$2,654,000
Transmission Trunk Line (2,500 ft of 16-inch)		2017		$347,500	$390,000	$368,000
Rehab Well #1 or Upsize Bench BPS		2017		$270,000	$303,000	$286,000
Water Conservation Plan		2016		$30,000	$32,000	$31,000
Priority 1 - Immediate Total				**$5,809,500**	**$6,504,000**	**$6,142,000**
Priority 1 - Intermediate		2020-2025				
New Bench Booster Station		2022		$600,000	$902,000	$733,000
Well #7		2023		$793,000	$1,264,000	$998,000
Booster Station (4,000 gpm)		2023		$1,215,000	$1,937,000	$1,529,000
1 MG Storage Tank		2023		$1,990,000	$3,172,000	$2,504,000
Transmission Trunk Line (1,500 ft of 16-in)		2023		$208,500	$332,000	$262,000
Priority 1 - Intermediate Total				**$4,806,500**	**$7,607,000**	**$6,026,000**
Priority 2 Improvements						
Fire Flow Improvements		2020		$665,000	$890,000	$768,000
Distribution Network Improvements		2020		$1,053,000	$1,409,000	$1,215,000
Priority 2 - Total				**$1,718,000**	**$2,299,000**	**$1,983,000**
Priority 3 Improvements						
Distribution System Expansion - Tyhee		2025		$2,714,000	$4,860,000	$3,616,000
Distribution System Expansion - Philbin		2025		$3,188,000	$5,709,000	$4,248,000
Distribution System Expansion - Rio Vista		2025		$4,023,000	$7,205,000	$5,361,000
Priority 3 - Total				**$9,925,000**	**$17,774,000**	**$13,225,000**
Total Present Value Cost of All Recommended Improvements						**$27,376,000**

PROJECT COSTS SUMMARY

PROJECT:	2,200 gpm Well	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	JPM	12/12/2014
OWNER:	City of Chubbuck	CHECKED BY:	SDA	2/16/2015
			Sheet	1 of 24

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	New 2200 gpm Well	LS	1	$250,000	$250,000
	Pump, motor & column	LS	1	$90,000	$90,000
	Building	SF	1,000	$110	$110,000
	Chlorine feed	EA	1	$15,000	$15,000
	Power generator	EA	1	$75,000	$75,000
	Site Piping	LS	1	$25,000	$25,000
	Site Preparation/restoration	LS	1	$50,000	$50,000
	Property	acre	1	$50,000	$50,000
	Electrical	LS	1	$40,000	$40,000
				Construction Subtotal	**$ 705,000**
Contractor Overhead & Profit			**10%**		**$ 71,000**
				Construction Total	**$ 776,000**
Contingency			**20%**		**$ 155,000**
				Construction Total	**$ 931,000**
Engineering			**10%**		**$ 93,000**
Final Design and Specifications			**3%**		**$ 28,000**
Services During Construction			**3%**		**$ 28,000**
Permitting and Mitigation			**1.0%**		**$ 9,000**
Legal			**2.0%**		**$ 19,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 9,000**
Project Cost Total					**$ 1,117,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$1,151,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$1,186,000**
Years	**3**	**Rate**	**3%**	**2018 Cost**	**$1,222,000**
Years	**4**	**Rate**	**3%**	**2019 Cost**	**$1,259,000**
Years	**5**	**Rate**	**3%**	**2020 Cost**	**$1,298,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

PROJECT COSTS SUMMARY

PROJECT:	2,200 gpm Well	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	JPM	12/12/2014
OWNER:	City of Chubbuck	CHECKED BY:	SDA	2/16/2015
			Sheet	2 of 24

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	New 2200 gpm Well	LS	1	$250,000	$250,000
	Pump, motor & column	LS	1	$90,000	$90,000
	Building	SF	500	$110	$55,000
	Chlorine feed	EA	1	$15,000	$15,000
	Generator (size increase)	EA	1	$25,000	$25,000
	Site Piping	LS	1	$25,000	$25,000
	Site Preparation/restoration	LS	1	$15,000	$15,000
	Property	acre	0	$50,000	$0
	Electrical (additional)	LS	1	$25,000	$25,000
				Construction Subtotal	**$ 500,000**
Contractor Overhead & Profit			**10%**		**$ 50,000**
				Construction Total	**$ 550,000**
Contingency			**20%**		**$ 110,000**
				Construction Total	**$ 660,000**
Engineering			**10%**		**$ 66,000**
Final Design and Specifications			**3%**		**$ 20,000**
Services During Construction			**3%**		**$ 20,000**
Permitting and Mitigation			**1.0%**		**$ 7,000**
Legal			**2.0%**		**$ 13,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 7,000**
Project Cost Total					**$ 793,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$817,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$842,000**
Years	**3**	**Rate**	**3%**	**2018 Cost**	**$868,000**
Years	**4**	**Rate**	**3%**	**2019 Cost**	**$894,000**
Years	**5**	**Rate**	**3%**	**2020 Cost**	**$921,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT:	3.0 MG Tank	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	JPM	12/12/2015
OWNER:	City of Chubbuck	CHECKED BY:	SDA	2/16/2015
			Sheet	3 of 24

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Tank	LS	1	$2,400,000	$2,400,000
	Mixing System, tank controls, misc.	EA	1	$50,000	$50,000
	Tank Piping	LF	600	$125	$75,000
	Site excavation, grading and preparation	EA	1	$150,000	$150,000
	Land	acre	2.0	$50,000	$100,000
				Construction Subtotal	**$ 2,775,000**
	Contractor Overhead & Profit		**10%**		**$ 278,000**
				Construction Total	**$ 3,053,000**
	Contingency		**20%**		**$ 611,000**
				Construction Total	**$ 3,664,000**
	Engineering		**10%**		**$ 366,000**
	Final Design and Specifications		**3%**		**$ 110,000**
	Services Durign Construction		**3%**		**$ 110,000**
	Permitting and Mitigation		**1.0%**		**$ 37,000**
	Legal		**2.0%**		**$ 73,000**
	Acquisistion of Access/Rights of Way		**1.0%**		**$ 37,000**
Project Cost Total					**$ 4,397,000**
Years	**1**	**Rate**	**3%**	**2017 Cost**	**$4,531,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT:	1.5 MG Tank	PROJECT NO.:	210078	DATE:
LOCATION	Chubbuck, Idaho	ESTIMATED BY:	JPM	12/12/2015
OWNER:	City of Chubbuck	CHECKED BY:	SDA	2/16/2015
			Sheet	4 of 24

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Tank	LS	1	$1,300,000	$1,300,000
	Mixing System	EA	1	$35,000	$35,000
	Tank Piping	LF	600	$110	$66,000
	Level Controls	LS	1	$10,000	$10,000
	Site excavation, grading and preparation	EA	1	$120,000	$120,000
	Land	acre	1.0	$50,000	$50,000
				Construction Subtotal	**$ 1,581,000**
Contractor Overhead & Profit			**10%**		**$ 158,000**
				Construction Total	**$ 1,739,000**
Contingency			**20%**		**$ 348,000**
				Construction Total	**$ 2,087,000**
Engineering			**10%**		**$ 209,000**
Final Design and Specifications			**3%**		**$ 63,000**
Services Durign Construction			**3%**		**$ 63,000**
Permitting and Mitigation			**1.0%**		**$ 21,000**
Legal			**2.0%**		**$ 42,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 21,000**
Project Cost Total					**$ 2,506,000**
Years	**1**	**Rate**	**3%**	**2016 cost**	**$2,582,000**
Years	**2**	**Rate**	**3%**	**2017 cost**	**$2,661,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT:	1.0 MG Tank	PROJECT NO.:	210078	DATE:
LOCATION	Chubbuck, Idaho	ESTIMATED BY:	SDA	3/5/2015
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
			Sheet	5 of 24

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Tank	LS	1	$1,000,000	$1,000,000
	Mixing System	EA	1	$35,000	$35,000
	Tank Piping	LF	600	$100	$60,000
	Level Controls	LS	1	$10,000	$10,000
	Site excavation, grading and preparation	EA	1	$100,000	$100,000
	Land	acre	1.0	$50,000	$50,000
				Construction Subtotal	**$ 1,255,000**
Contractor Overhead & Profit			**10%**		**$ 126,000**
				Construction Total	**$ 1,381,000**
Contingency			**20%**		**$ 276,000**
				Construction Total	**$ 1,657,000**
Engineering			**10%**		**$ 166,000**
Final Design and Specifications			**3%**		**$ 50,000**
Services Durign Construction			**3%**		**$ 50,000**
Permitting and Mitigation			**1.0%**		**$ 17,000**
Legal			**2.0%**		**$ 33,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 17,000**
Project Cost Total					**$ 1,990,000**
Years	**1**	**Rate**	**3%**	**2016 cost**	**$2,051,000**
Years	**2**	**Rate**	**3%**	**2017 cost**	**$2,113,000**

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ENGINEER'S PRELIMINARY OPINION OF PROBABLE

PROJECT COSTS SUMMARY

PROJECT:	~6 to 8,000 gpm Booster Pump Station	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	CLH/JPM	12/12/2014
OWNER:	City of Chubbuck	CHECKED BY:	SDA	2/16/2015
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	CMU Building	SF	2,000	$108	$216,000
	CMU Generator Area/Pad	SF	300	$80	$24,000
	Electrical & Generator	LS	1	$165,000	$165,000
	HVAC	LS	1	$65,000	$65,000
	Electrical	LS	1	$85,000	$85,000
	Mechanical	LS	1	$150,000	$150,000
	Pumps	EA	4	$50,000	$200,000
	SCADA system	LS	1	$50,000	$50,000
	Site piping	LF	400	$90	$36,000
	Excavation/grading/surface restoration	SF	5,000	$10	$50,000
				Construction Subtotal	**$ 1,041,000**
Contractor Overhead & Profit			**10%**		**$ 104,000**
				Construction Total	**$ 1,145,000**
Contingency			**20%**		**$ 208,000**
				Construction Total	**$ 1,353,000**
Engineering			**10%**		**$ 135,000**
Final Design and Specifications			**3%**		**$ 41,000**
Services Durign Construction			**3%**		**$ 41,000**
Permitting and Mitigation			**1.0%**		**$ 14,000**
Legal			**2.0%**		**$ 27,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 14,000**
Project Cost Total					**$ 1,625,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$1,674,000**

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ENGINEER'S PRELIMINARY OPINION OF PROBABLE

PROJECT COSTS SUMMARY

PROJECT:	~3 to 4,000 gpm Booster Pump Station	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	CLH/JPM	12/12/2014
OWNER:	City of Chubbuck	CHECKED BY:	SDA	2/16/2015
			Sheet	7 of 24

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	CMU Building	SF	1,200	$108	$129,600
	CMU Generator Area/Pad	SF	220	$80	$17,600
	Generator	LS	1	$135,000	$135,000
	Electrical	LS	1	$65,000	$65,000
	HVAC	LS	1	$50,000	$50,000
	Mechanical	LS	1	$135,000	$135,000
	Pumps	EA	3	$40,000	$120,000
	Pump Control & SCADA system	LS	1	$40,000	$40,000
	Site piping	LF	400	$90	$36,000
	Excavation/grading/surface restoration	SF	5,000	$10	$50,000
				Construction Subtotal	**$ 778,000**
Contractor Overhead & Profit			**10%**		**$ 78,000**
				Construction Total	**$ 856,000**
Contingency			**20%**		**$ 156,000**
				Construction Total	**$ 1,012,000**
Engineering			**10%**		**$ 101,000**
Final Design and Specifications			**3%**		**$ 30,000**
Services Durign Construction			**3%**		**$ 30,000**
Permitting and Mitigation			**1.0%**		**$ 10,000**
Legal			**2.0%**		**$ 20,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 10,000**
Project Cost Total					**$ 1,213,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$1,250,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$1,288,000**

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PROJECT COSTS SUMMARY

PROJECT:	24-inch Tank Farm Transmission Line	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	24-inch PVC Waterline	LF	2,100	$90	$189,000
	Valves	EA	6	$4,000	$24,000
	I-15 crossing - bores	LF	500	$600	$300,000
	Other roadway crossings	LF	100	$250	$25,000
	Traffic control	LF	2,100	$4	$8,400
	Surface restoration - asphalt roadway	LF	100	$40	$4,000
	Surface restoration - gravel shoulder	LF	1,000	$18	$18,000
	Surface restoration - natural ground	LF	1,000	$10	$10,000
	Right of way acquisition	LS	1	$50,000.00	$50,000
				Construction Subtotal	**$ 628,000**
Contractor Overhead & Profit			**10%**		**$ 63,000**
				Construction Total	**$ 691,000**
Contingency			**20%**		**$ 138,000**
				Construction Total	**$ 829,000**
Engineering			**10%**		**$ 83,000**
Final Design and Specifications			**3%**		**$ 25,000**
Services During Construction			**3%**		**$ 25,000**
Permitting and Mitigation			**1.0%**		**$ 8,000**
Legal			**2.0%**		**$ 17,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 8,000**
Project Cost Total					**$ 995,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$1,056,000**

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PROJECT COSTS SUMMARY

PROJECT:	12-inch Tank Farm Transmission Line	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	12-inch PVC Waterline	LF	2,100	$55	$115,500
	Valves	EA	6	$2,000	$12,000
	I-15 crossing - bores	LF	500	$400	$200,000
	Other roadway crossings	LF	100	$200	$20,000
	Traffic control	LF	2,100	$4	$8,400
	Surface restoration - asphalt roadway	LF	100	$40	$4,000
	Surface restoration - gravel shoulder	LF	1,000	$18	$18,000
	Surface restoration - natural ground	LF	1,000	$10	$10,000
	Right of way acquisition	LS	1	$50,000.00	$50,000
				Construction Subtotal	**$ 438,000**
Contractor Overhead & Profit			**10%**		**$ 44,000**
				Construction Total	**$ 482,000**
Contingency			**20%**		**$ 96,000**
				Construction Total	**$ 578,000**
Engineering			**10%**		**$ 58,000**
Final Design and Specifications			**3%**		**$ 17,000**
Services During Construction			**3%**		**$ 17,000**
Permitting and Mitigation			**1.0%**		**$ 6,000**
Legal			**2.0%**		**$ 12,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 6,000**
Project Cost Total					**$ 694,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$737,000**

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PROJECT COSTS SUMMARY

PROJECT:	North Tank Transmission Line	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	3/5/2015
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	24-inch PVC Waterline	LF	6,650	$90	$598,500
	Valves	EA	15	$4,000	$60,000
	I-15 crossing - bores	LF	500	$600	$300,000
	Canal crossing	LF	100	$250	$25,000
	Traffic control	LF	1,500	$4	$6,000
	Surface restoration - asphalt roadway	LF	750	$40	$30,000
	Surface restoration - gravel shoulder	LF	1,000	$18	$18,000
	Surface restoration - natural ground	LF	5,000	$10	$50,000
	Right of way acquisition	LS	1	$80,000.00	$80,000
				Construction Subtotal	**$ 1,168,000**
Contractor Overhead & Profit			**10%**		**$ 117,000**
				Construction Total	**$ 1,285,000**
Contingency			**20%**		**$ 257,000**
				Construction Total	**$ 1,542,000**
Engineering			**10%**		**$ 154,000**
Final Design and Specifications			**3%**		**$ 46,000**
Services During Construction			**3%**		**$ 46,000**
Permitting and Mitigation			**1.0%**		**$ 15,000**
Legal			**2.0%**		**$ 31,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 15,000**
Project Cost Total					**$ 1,849,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$1,963,000**

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ENGINEER'S PRELIMINARY OPINION OF PROBABLE

PROJECT COSTS SUMMARY

PROJECT:	BPS Expansion of ~2,500 gpm	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	3/6/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	New Pump	LS	1	$50,000	$50,000
	Electrical	EA	1	$30,000	$30,000
	Mechanical	LS	1	$25,000	$25,000
	Pump Installation	LS	1	$15,000	$15,000
	SCADA modifications	LS	1	$5,000	$5,000
					$0
					$0
					$0
					$0
				Construction Subtotal	**$ 125,000**
Contractor Overhead & Profit			**10%**		**$ 13,000**
				Construction Total	**$ 138,000**
Contingency			**20%**		**$ 25,000**
				Construction Total	**$ 163,000**
Engineering			**10%**		**$ 16,000**
Final Design and Specifications			**3%**		**$ 5,000**
Services Durign Construction			**3%**		**$ 5,000**
Permitting and Mitigation			**1.0%**		**$ 2,000**
Legal			**2.0%**		**$ 3,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 2,000**
Project Cost Total					**$ 196,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$202,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$208,000**

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PROJECT COSTS SUMMARY

PROJECT:	PSV at Bench Booster Station	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	16" ClaVal PSV valve	EA	1	$30,000	$30,000
	12" bypass piping	LS	1	$8,000	$8,000
	Valve vault	LS	1	$12,000	$12,000
	site prep, excavation	LS	1	$20,000	$20,000
	Piping & fittings	LS	1	$7,500	$7,500
	Valves	EA	4	$2,500	$10,000
	surface restoration	LS	1	$10,000	$10,000
		LS			
				Construction Subtotal	**$ 98,000**
Contractor Overhead & Profit			**10%**		**$ 10,000**
				Construction Total	**$ 108,000**
Contingency			**20%**		**$ 22,000**
				Construction Total	**$ 130,000**
Engineering			**10%**		**$ 13,000**
Final Design and Specifications			**3%**		**$ 4,000**
Services During Construction			**3%**		**$ 4,000**
Permitting and Mitigation			**1.0%**		**$ 1,000**
Legal			**2.0%**		**$ 3,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 1,000**
Project Cost Total					**$ 156,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$161,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$166,000**

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PROJECT COSTS SUMMARY

PROJECT:	Bench Booster Station Capacity Upgrades	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Upsize pumps	EA	2	$45,000	$90,000
	Pump controls	EA	2	$12,000	$24,000
	Pipe/valve modifications	LS	1	$25,000	$25,000
	Electrical	LS	1	$25,000	$25,000
	SCADA modifications	LS	1	$5,000	$5,000
				Construction Subtotal	**$ 169,000**
Contractor Overhead & Profit			**10%**		**$ 17,000**
				Construction Total	**$ 186,000**
Contingency			**25%**		**$ 47,000**
				Construction Total	**$ 233,000**
Engineering			**10%**		**$ 23,000**
Final Design and Specifications			**3%**		**$ 7,000**
Services During Construction			**3%**		**$ 7,000**
Permitting and Mitigation			**1.0%**		**$ 2,000**
Legal			**2.0%**		**$ 5,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 2,000**
Project Cost Total					**$ 279,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$287,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$296,000**

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PROJECT COSTS SUMMARY

PROJECT:	Bench Booster Station #2	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Building	SF	800	$108	$86,400
	Large pumps	EA	1	$42,000	$42,000
	Jockey pump	EA	1	$31,000	$31,000
	Piping	LS	1	$30,000	$30,000
	Meters/controls	LS	1	$25,000	$25,000
	Standby Power Generator & Electrical	EA	1	$80,000	$80,000
	Site prep	LS	1	$45,000	$45,000
	Land	acre	1	$50,000	$25,000
				Construction Subtotal	**$ 364,000**
	Contractor Overhead & Profit		**10%**		**$ 36,000**
				Construction Total	**$ 400,000**
	Contingency		**25%**		**$ 100,000**
				Construction Total	**$ 500,000**
	Engineering		**10%**		**$ 50,000**
	Final Design and Specifications		**3%**		**$ 15,000**
	Services During Construction		**3%**		**$ 15,000**
	Permitting and Mitigation		**1.0%**		**$ 5,000**
	Legal		**2.0%**		**$ 10,000**
	Acquisistion of Access/Rights of Way		**1.0%**		**$ 5,000**
Project Cost Total					**$ 600,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$618,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$637,000**
Years	**3**	**Rate**	**3%**	**2018 Cost**	**$656,000**
Years	**4**	**Rate**	**3%**	**2019 Cost**	**$676,000**
Years	**5**	**Rate**	**3%**	**2020 Cost**	**$697,000**

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PROJECT COSTS SUMMARY

PROJECT:	Well #1 Rehabilitation	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	12/18/2018
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Building Rehab	SF	200	$25	$5,000
	Chlorine feed	EA	1	$10,000	$10,000
	Power generator	EA	1	$50,000	$50,000
	Site Piping	LS	1	$20,000	$20,000
	Site Preparation	LS	1	$5,000	$5,000
	Electrical	LS	1	$15,000	$15,000
	Pump & Motor Refurb	LS	1	$15,000	$15,000
				Construction Subtotal	**$ 120,000**
Contractor Overhead & Profit			**10%**		**$ 12,000**
				Construction Total	**$ 132,000**
Contingency			**20%**		**$ 26,000**
				Construction Total	**$ 158,000**
Engineering			**10%**		**$ 16,000**
Final Design and Specifications			**3%**		**$ 5,000**
Services During Construction			**3%**		**$ 5,000**
Permitting and Mitigation			**1.0%**		**$ 2,000**
Legal			**2.0%**		**$ 3,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 2,000**
Project Cost Total					**$ 191,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$197,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$203,000**
Years	**3**	**Rate**	**3%**	**2018 Cost**	**$209,000**
Years	**4**	**Rate**	**3%**	**2019 Cost**	**$215,000**
Years	**5**	**Rate**	**3%**	**2020 Cost**	**$222,000**

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PROJECT COSTS SUMMARY

PROJECT:	Rehab & Upsize Well #1	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	12/18/2018
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Building Rehab	SF	200	$25	$5,000
	Chlorine feed	EA	1	$10,000	$10,000
	Power generator	EA	1	$65,000	$65,000
	Site Piping	LS	1	$20,000	$20,000
	Site Preparation	LS	1	$5,000	$5,000
	Electrical	LS	1	$20,000	$20,000
	Pump & Motor Replacement	LS	1	$45,000	$45,000
				Construction Subtotal	**$ 170,000**
Contractor Overhead & Profit			**10%**		**$ 17,000**
				Construction Total	**$ 187,000**
Contingency			**20%**		**$ 37,000**
				Construction Total	**$ 224,000**
Engineering			**10%**		**$ 22,000**
Final Design and Specifications			**3%**		**$ 7,000**
Services During Construction			**3%**		**$ 7,000**
Permitting and Mitigation			**1.0%**		**$ 2,000**
Legal			**2.0%**		**$ 4,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 2,000**
Project Cost Total					**$ 268,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$276,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$285,000**
Years	**3**	**Rate**	**3%**	**2018 Cost**	**$293,000**
Years	**4**	**Rate**	**3%**	**2019 Cost**	**$302,000**
Years	**5**	**Rate**	**3%**	**2020 Cost**	**$311,000**

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PROJECT COSTS SUMMARY

PROJECT:	Well #2 Rehabilitation	PROJECT NO.:	210078	DATE:
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	12/18/2018
OWNER:	City of Chubbuck	CHECKED BY:	JPM	
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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	Demolition	LS	1	$15,000	$15,000
	Building	SF	400	$110	$44,000
	Chlorine feed	EA	1	$15,000	$15,000
	Power generator	EA	1	$60,000	$60,000
	Site Piping	LS	1	$15,000	$15,000
	Site Preparation/restoration	LS	1	$10,000	$10,000
	Electrical	LS	1	$30,000	$30,000
	Pump/Motor refurbish	LS	1	$25,000	$25,000
				Construction Subtotal	**$ 214,000**
Contractor Overhead & Profit			**10%**		**$ 21,000**
				Construction Total	**$ 235,000**
Contingency			**15%**		**$ 35,000**
				Construction Total	**$ 270,000**
Engineering			**10%**		**$ 27,000**
Final Design and Specifications			**3%**		**$ 8,000**
Services During Construction			**3%**		**$ 8,000**
Permitting and Mitigation			**1.0%**		**$ 3,000**
Legal			**2.0%**		**$ 5,000**
Acquisistion of Access/Rights of Way			**1.0%**		**$ 3,000**
Project Cost Total					**$ 324,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$334,000**
Years	**2**	**Rate**	**3%**	**2017 Cost**	**$344,000**
Years	**3**	**Rate**	**3%**	**2018 Cost**	**$354,000**
Years	**4**	**Rate**	**3%**	**2019 Cost**	**$365,000**
Years	**5**	**Rate**	**3%**	**2020 Cost**	**$376,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

ENGINEER'S PRELIMINARY OPINION OF PROBABLE PROJECT COSTS SUMMARY

PROJECT: Fire Flow Improvements
LOCATION: Chubbuck, Idaho
OWNER: City of Chubbuck

PROJECT NO.: 210078
ESTIMATED BY: SDA
CHECKED BY: JPM

DATE: 2/16/2015

Item	Unit	Unit Price	Estimated Quantity	Cost (Rounded)
Fire Flow Improvements				
8" line to replace existing 4" on Sorrel Street	LF	$116	1,000	$116,000
8" line on Teton Street	LF	$116	1,300	$151,000
8" line on Rose Street	LF	$116	600	$70,000
12" line from Yellowstone to Pine Ridge Mall Loop	LF	$132	600	$79,000
8" line on Burley Dr. to Laurel Ln.	LF	$116	900	$104,000
12" line on Yellowstone N. of Siphon to Southside	LF	$132	1,100	$145,000
Total Fire Flow Improvements Cost				**$665,000**

*Unit Prices in this table include construction cost, contingency, engineering, legal, and funding

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ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT: Annual Replacement Priorities	PROJECT NO.:	210078	DATE:
LOCATION: Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015
OWNER: City of Chubbuck	CHECKED BY:	JPM	
		Sheet	19 of 24

Item	Unit	Unit Price*	Estimated Quantity	Cost (Rounded)
12" line on Hawthorne	LF	$132	4,000	$528,000
16" line on Siphon Rd.	LF	$143	3,180	$455,000
Siphon Rd. RR crossing to 16 inch	LS		20	$70,000
Total Annual Replacement Cost				**$1,053,000**

*Unit Prices in this table include construction cost, contingency, engineering, legal, and funding

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ENGINEER'S PRELIMINARY OPINION OF PROBABLE PROJECT COSTS SUMMARY

PROJECT: Distribution System Expansion
LOCATION: Chubbuck, Idaho
OWNER: City of Chubbuck

PROJECT NO.: 210078
ESTIMATED BY: SDA
CHECKED BY: JPM
DATE: 2/16/2015
Sheet 20 of 24

Item	Unit	Unit Price*	Estimated Quantity	Cost (Rounded)
Tyhee				
Hiline (16" from Siphon to Tyhee)	LF	$143	5,280	$755,000
Tyhee (24" from Hiline to Hawthorne)	LF	$190	6,336	$1,204,000
Hawthorne (16" from Siphon to Tyhee)	LF	$143	5,280	$755,000
Tyhee Section Total			16,896	**2,714,000**
Philbin				
Siphon (16" from Hawthorne to Philbin)	LF	$143	5,280	$755,000
Tyhee (24" from Hawthorne to Philbin)	LF	$190	5,280	$1,003,000
Philbin (16" from W. Chubbuck to Tyhee	LF	$143	10,000	$1,430,000
			20,560	**3,188,000**
Rio Vista				
Tyhee (24" from Philbin to Rio Vista)	LF	$190	5,280	$1,003,000
Siphon (16" from Philbin to Rio Vista)	LF	$143	5,280	$755,000
W. Chubbuck (16" from Philbin to Rio Vista)	LF	$143	5,280	$755,000
N. Rio Vista (16" W. Chubbuck to Rio Vista)	LF	$143	10,560	$1,510,000
			26,400	**4,023,000**
Total Distribution Expansion Cost				**$9,925,000**

*Unit Prices in this table include construction cost, contingency, engineering, legal, and funding

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PROJECT COSTS SUMMARY

PROJECT:	24-inch Waterline - 1,000 ft.	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
			Sheet	21 of 24	

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Well & Transmission Line					
	24-inch PVC Waterline	LF	1,000	$90	$90,000
	Valves	EA	2	$4,000	$8,000
	Fire Hydrant Assembly	EA	2	$4,500	$9,000
	Traffic control	LF	1,000	$4	$4,000
	Surface restoration - asphalt roadway	LF	200	$40	$8,000
	Surface restoration - gravel shoulder	LF	600	$18	$10,800
	Surface restoration - natural ground	LF	200	$5	$1,000
				Construction Subtotal	**$ 131,000**
Contingency			**15%**		**$ 20,000**
				Construction Total	**$ 151,000**
Engineering			**10%**		**$ 15,000**
Final Design and Specifications			**3%**		**$ 5,000**
Services During Construction			**3%**		**$ 5,000**
Permitting and Mitigation			**1.0%**		**$ 2,000**
Legal			**2.0%**		**$ 3,000**
Acquisistion of Access/Rights of Way			**2.0%**		**$ 3,000**
Project Cost Total					**$ 184,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$190,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

PROJECT COSTS SUMMARY

PROJECT:	16-inch Waterline - 1,000 ft.	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
			Sheet	22 of 24	

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Well & Transmission Line					
	16-inch PVC Waterline	LF	1,000	$60	$60,000
	Valves	EA	2	$4,000	$8,000
	Fire Hydrant Assembly	EA	2	$4,500	$9,000
	Traffic control	LF	1,000	$4	$4,000
	Surface restoration - asphalt roadway	LF	200	$40	$8,000
	Surface restoration - gravel shoulder	LF	600	$18	$10,800
	Surface restoration - natural ground	LF	200	$5	$1,000
				Construction Subtotal	**$ 101,000**
	Contingency		**15%**		**$ 15,000**
				Construction Total	**$ 116,000**
	Engineering		**10%**		**$ 12,000**
	Final Design and Specifications		**3%**		**$ 3,000**
	Services During Construction		**3%**		**$ 3,000**
	Permitting and Mitigation		**1.0%**		**$ 1,000**
	Legal		**2.0%**		**$ 2,000**
	Acquisistion of Access/Rights of Way		**2.0%**		**$ 2,000**
Project Cost Total					**$ 139,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$143,000**

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PROJECT COSTS SUMMARY

PROJECT:	12-inch Waterline - 1,000 ft.	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
			Sheet	23 of 24	

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Well & Transmission Line					
	12-inch PVC Waterline	LF	1,000	$55	$55,000
	Valves	EA	2	$2,000	$4,000
	Fire Hydrant Assembly	EA	2	$4,500	$9,000
	Traffic control	LF	1,000	$4	$4,000
	Surface restoration - asphalt roadway	LF	200	$40	$8,000
	Surface restoration - gravel shoulder	LF	600	$18	$10,800
	Surface restoration - natural ground	LF	200	$5	$1,000
				Construction Subtotal	**$ 92,000**
	Contingency		**15%**		**$ 14,000**
				Construction Total	**$ 106,000**
	Engineering		**10%**		**$ 11,000**
	Final Design and Specifications		**3%**		**$ 3,000**
	Services During Construction		**3%**		**$ 3,000**
	Permitting and Mitigation		**1.0%**		**$ 1,000**
	Legal		**2.0%**		**$ 2,000**
	Acquisistion of Access/Rights of Way		**2.0%**		**$ 2,000**
Project Cost Total					**$ 128,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$132,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

PROJECT COSTS SUMMARY

PROJECT:	8-inch Waterline - 1,000 ft	PROJECT NO.:	210078	DATE:	
LOCATION:	Chubbuck, Idaho	ESTIMATED BY:	SDA	2/16/2015	
OWNER:	City of Chubbuck	CHECKED BY:	JPM		
			Sheet	24 of 24	

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Well & Transmission Line					
	8-inch PVC Waterline	LF	1,000	$45	$45,000
	Valves	EA	2	$1,500	$3,000
	Fire Hydrant Assembly	EA	2	$4,500	$9,000
	Traffic control	LF	1,000	$4	$4,000
	Surface restoration - asphalt roadway	LF	200	$40	$8,000
	Surface restoration - gravel shoulder	LF	600	$18	$10,800
	Surface restoration - natural ground	LF	200	$5	$1,000
				Construction Subtotal	**$ 81,000**
	Contingency		**15%**		**$ 12,000**
				Construction Total	**$ 93,000**
	Engineering		**10%**		**$ 9,000**
	Final Design and Specifications		**3%**		**$ 3,000**
	Services During Construction		**3%**		**$ 3,000**
	Permitting and Mitigation		**1.0%**		**$ 1,000**
	Legal		**2.0%**		**$ 2,000**
	Acquisistion of Access/Rights of Way		**2.0%**		**$ 2,000**
Project Cost Total					**$ 113,000**
Years	**1**	**Rate**	**3%**	**2016 Cost**	**$116,000**

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates can not and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented herein.

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT: Alternative Totals		PROJECT NO.:	210078	DATE:
LOCATION: Chubbuck, Idaho		ESTIMATED BY:	SDA	8/18/2015
OWNER: City of Chubbuck		CHECKED BY:	JPM	
			Sheet	1 of 5
Water Right Inflation	7.5%			
Construction Inflation	6%	Interest	3%	
Improvement Item		**Year**		**Est. Cost**
Priority 1 - Immediate				
Rehab Well #2		2016		$324,000
Well #6		2017		$1,117,000
Booster Station (~4,000 gpm)		2017		$1,215,000
1.5 MG Storage Tank		2017		$2,506,000
Rehab Well #1 or Upsize Bench BPS		2017		$270,000
Water Conservation Plan		2016		$30,000
Priority 1 - Immediate Total				**$5,462,000**
Alternative 2 - 40 yr. Equalization				
Rehab Well #2		2016		$324,000
Well #6 @ BPS		2017		$793,000
Booster Station (6,000 gpm)		2017		$1,625,000
3 MG Storage Tank		2017		$4,400,000
Well #7		2023		$1,117,000
Well #8		2039		$1,117,000
BPS Expansion (2,000 gpm)		2048		$190,000
Transmission Trunk Line (12,000 ft of 24-in)		2017		$2,280,000
Major Dist. Line (8,000 ft of 16-in)		2020		$1,150,000
Alternative 2 Total				**$12,996,000**
Alternative 3 - Well/Tank/BPS Packages				
Rehab Well #2		2016		$324,000
Well #6 @ BPS		2017		$793,000
Booster Station (~4,000 gpm)		2017		$1,215,000
1 MG Storage Tank		2017		$1,990,000
Well #7 @ BPS		2023		$793,000
Booster Station (~4,000 gpm)		2023		$1,215,000
1 MG Storage Tank		2023		$1,990,000
Well #8 @ BPS		2039		$793,000
Booster Station (~4,000 gpm)		2039		$1,215,000
1 MG Storage Tank		2039		$1,990,000
				$12,318,000

PROJECT COSTS SUMMARY

PROJECT: Alternative Totals		PROJECT NO.:	210078	DATE:		
LOCATION: Chubbuck, Idaho		ESTIMATED BY:	SDA	3/7/2015		
OWNER: City of Chubbuck		CHECKED BY:	JPM			
			Sheet	2 of 5		
Water Right Inflation	7.5%					
Construction Inflation	6%	Interest	3%			
Item		**Year**		**Current Cost Est.**	**Projected Cost**	**PV Cost**
Alternative 4 - Wells Only						
Rehab Well #2		2016		$324,000	$343,000	$333,000
Well #6		2017		$1,117,000	$1,255,000	$1,183,000
Well #7		2017		$1,117,000	$1,255,000	$1,183,000
Well #8		2022		$1,117,000	$1,680,000	$1,366,000
Well #9		2034		$1,117,000	$3,380,000	$1,928,000
Well #10		2046		$1,117,000	$6,800,000	$2,720,000
Additional Water Rights		2046		$1,330,000	$12,517,000	$5,007,000
Alternative 1 Total				**$7,239,000**	**$27,230,000**	**$13,720,000**
Alternative 5 - 40 yr. Equalization						
Rehab Well #2		2016		$324,000	$343,000	$333,000
Well #6 @ BPS		2017		$793,000	$891,000	$840,000
Booster Station (6,000 gpm)		2017		$1,625,000	$1,826,000	$1,721,000
3 MG Storage Tank		2017		$4,397,000	$4,940,000	$4,656,000
Well #7		2024		$1,117,000	$1,887,000	$1,446,000
Transmission Trunk Line (12,000 ft of 24-in)		2017		$2,280,000	$2,562,000	$2,415,000
Major Dist. Line (8,000 ft of 16-in)		2020		$1,150,000	$1,539,000	$1,328,000
Alternative 2 Total				**$11,686,000**	**$13,988,000**	**$12,739,000**
Alternative 6 - Well/Tank/BPS Packages						
Rehab Well #2		2016		$324,000	$343,000	$333,000
Well #6 @ BPS		2017		$793,000	$891,000	$840,000
Booster Station (~4,000 gpm)		2017		$1,215,000	$1,365,000	$1,287,000
1.5 MG Storage Tank		2017		$2,506,000	$2,816,000	$2,654,000
Well #7 @ BPS		2023		$793,000	$1,264,000	$998,000
Booster Station (~4,000 gpm)		2023		$1,215,000	$1,937,000	$1,529,000
1 MG Storage Tank		2023		$1,990,000	$3,172,000	$2,504,000
				$8,836,000	**$11,788,000**	**$10,145,000**

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT: Alternative Totals		PROJECT NO.:	210078	DATE:		
LOCATION: Chubbuck, Idaho		ESTIMATED BY:	SDA	3/7/2015		
OWNER: City of Chubbuck		CHECKED BY:	JPM			
			Sheet	3 of 5		
Water Right Inflation	7.5%					
Construction Inflation	6%	Interest	3%			
Item		**Year**		**Current Cost Est.**	**Projected Cost**	**PV Cost**
Alternative 1 - Wells Only						
Rehab Well #2		2016		$325,000	$345,000	$335,000
Well #6		2017		$1,120,000	$1,258,000	$1,186,000
Well #7		2017		$1,120,000	$1,258,000	$1,186,000
Well #8		2022		$1,120,000	$1,684,000	$1,369,000
Well #9		2029		$1,120,000	$2,532,000	$1,674,000
Alternative 1 Total				**$4,805,000**	**$7,077,000**	**$5,750,000**
Alternative 2 - 40 yr. Equalization						
Rehab Well #2		2016		$325,000	$345,000	$335,000
Well #6 @ BPS		2017		$800,000	$899,000	$847,000
Booster Station (6,000 gpm)		2017		$1,625,000	$1,826,000	$1,721,000
3 MG Storage Tank		2017		$4,400,000	$4,944,000	$4,660,000
Well #7		2023		$1,120,000	$1,785,000	$1,409,000
Transmission Trunk Line (12,000 ft of 24-in)		2017		$2,280,000	$2,562,000	$2,415,000
Major Dist. Line (8,000 ft of 16-in)		2020		$1,150,000	$1,539,000	$1,328,000
Alternative 2 Total				**$11,700,000**	**$13,900,000**	**$12,715,000**
Alternative 3 - Well/Tank/BPS Packages						
Rehab Well #2		2016		$325,000	$345,000	$335,000
Well #6 @ BPS		2017		$800,000	$899,000	$847,000
Booster Station (~4,000 gpm)		2017		$1,215,000	$1,365,000	$1,287,000
1 MG Storage Tank		2017		$2,000,000	$2,247,000	$2,118,000
Well #7 @ BPS		2023		$800,000	$1,275,000	$1,006,000
Booster Station (~4,000 gpm)		2023		$1,215,000	$1,937,000	$1,529,000
1 MG Storage Tank		2023		$2,000,000	$3,188,000	$2,517,000
				$8,355,000	**$11,256,000**	**$9,639,000**

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT: Alternative Totals		PROJECT NO.:	210078	DATE:		
LOCATION: Chubbuck, Idaho		ESTIMATED BY:	SDA	3/7/2015		
OWNER: City of Chubbuck		CHECKED BY:	JPM			
			Sheet	4 of 5		
Water Right Inflation	7.5%					
Construction Inflation	6%	Interest	3%			
Item		**Year**		**Current Cost Est.**	**Projected Cost**	**PV Cost**
Alternative 4 - Wells Only						
Rehab Well #2		2016		$325,000	$345,000	$335,000
Well #6		2017		$1,120,000	$1,258,000	$1,186,000
Well #7		2017		$1,120,000	$1,258,000	$1,186,000
Well #8		2022		$1,120,000	$1,684,000	$1,369,000
Well #9		2034		$1,120,000	$3,389,000	$1,933,000
Water Rights		2034		$750,000	$2,964,000	$1,690,000
Alternative 1 Total				**$5,555,000**	**$10,898,000**	**$7,699,000**
Alternative 5 - 40 yr. Equalization						
Rehab Well #2		2016		$325,000	$345,000	$335,000
Well #6 @ BPS		2017		$800,000	$899,000	$847,000
Booster Station (4,000 gpm)		2017		$1,625,000	$1,826,000	$1,721,000
3 MG Storage Tank		2017		$4,400,000	$4,944,000	$4,660,000
Well #7		2024		$1,120,000	$1,892,000	$1,450,000
Transmission Trunk Line (12,000 ft of 24-in)		2017		$2,280,000	$2,562,000	$2,415,000
Major Dist. Line (8,000 ft of 16-in)		2020		$1,150,000	$1,539,000	$1,328,000
Alternative 2 Total				**$11,700,000**	**$14,007,000**	**$12,756,000**
Alternative 6 - Well/Tank/BPS Packages						
Rehab Well #2		2016		$325,000	$345,000	$335,000
Well #6 @ BPS		2017		$800,000	$899,000	$847,000
Booster Station (~4,000 gpm)		2017		$1,215,000	$1,365,000	$1,287,000
1 MG Storage Tank		2017		$2,000,000	$2,247,000	$2,118,000
Well #7 @ BPS		2023		$800,000	$1,275,000	$1,006,000
Booster Station (~4,000 gpm)		2023		$1,215,000	$1,937,000	$1,529,000
1 MG Storage Tank		2023		$2,000,000	$3,188,000	$2,517,000
				$8,355,000	**$11,256,000**	**$9,639,000**

ENGINEER'S PRELIMINARY OPINION OF PROBABLE
PROJECT COSTS SUMMARY

PROJECT: Alternative Totals		PROJECT NO.:	210078	DATE:		
LOCATION: Chubbuck, Idaho		ESTIMATED BY:	SDA	3/7/2015		
OWNER: City of Chubbuck		CHECKED BY:	JPM			
			Sheet	5 of 5		
Water Right Inflation	7.5%					
Construction Inflation	6%	Interest	3%			
Item		**Year**		**Current Cost Est.**	**Projected Cost**	**PV Cost**
Alternative B1						
Rehab Well #1		2017		$191,000	$215,000	$203,000
Upsize BPS		2021		$233,000	$331,000	$277,000
Alternative 1 Total				**$424,000**	**$546,000**	**$480,000**
Alternative B2						
Upsize Well #1		2017		$268,000	$301,000	$284,000
Upsize BPS		2028		$233,000	$497,000	$338,000
Alternative 2 Total				**$501,000**	**$798,000**	**$622,000**
Alternative 3 - New Pump in Bench BPS						
Add new pump in Bench BPS		2017		$196,000	$220,000	$207,000
Alternative 4 - New Bench BPS		2017		$600,000	$674,000	$635,000
				$796,000	**$894,000**	**$842,000**

APPENDIX H WELL SITE EVALUATION

Decision Matrix for Locating the Preferred Well Site Location

The City of Chubbuck has identified 9 potential locations for the placement of a new potable water well. A number of site attributes were considered in choosing the most desirable location for the new well. These attributes include the following: distance to power, distance to a water main, site access distance, benefit to the distribution network, and proximity to a preferred zone with a higher likelihood of uncontaminated water quality.

A decision matrix, shown in Figure 1, was used to assist in choosing the most suitable well site location. The decision matrix works by listing the attributes to be considered for each alternative and then assigning an importance value and a score to each attribute. Importance values are assigned relative to one another. For example, an attribute with a given importance value of two is twice as important as an attribute with an importance value of one. Using the importance value assigned to each attribute, a weight is calculated corresponding to the assigned importance value. Finally, the weight for each attribute is multiplied by the respective score and summed to obtain the total score (See the example total score calculation below).

A **low** score on the decision matrix indicates a more desirable well location. This represents the relative benefit of drilling a well in a location that is close to power, access, the preferred water quality zone, and the distribution system (Figure 2). The negative scores in the Benefit to Distribution System attribute serve to decrease the score according to the length of transmission line that provides needed distribution piping.

Assignment of Attribute Importance Value, Weight, and Score

Distance to Water Main

Distance to the nearest water main was given an importance value of 1. The sum of all assigned importance values is 6.5. With an importance value of 1 out of 6.5, the Distance to Water Main attribute contributes 15% of the overall decision weight. The score was assigned by measuring the approximate length of pipeline required to connect to the distribution system. Longer distances yield a higher score indicating a less desirable well site location.

Benefit to Distribution Network

The City of Chubbuck plans to expand its water system to the west and north as demand and funding allow. All of the proposed well sites will require additional water lines to connect them to the distribution system. Some of these connections will be more beneficial than others because they will extend the distribution system's main water delivery lines toward areas where additional connections will likely be obtained. These water lines will serve the dual purpose of delivering water from the new well while simultaneously expanding the distribution system.

The Benefit to Distribution Network attribute was given an importance value of 0.5. The lower importance value was used to express that while the new distribution line will be beneficial, it will have an associated capital cost. The importance value of 0.5 indicates that it is twice as important to limit the distance to the nearest water main (importance value of 1) as it is to extend the distribution system. With a total importance value of 0.5 out of 6.5, the Benefit to Distribution System attribute has 8% of the overall decision weight.

Scores within this attribute were assigned with either a zero, indicating no benefit, or with a negative length. As described above, the negative length serves to lower the score thus indicating a more desirable well location. Those locations that do not provide any benefit to the distribution system were assigned a zero rather than the positive length of their distance from the nearest main so as not to double count their disadvantage. Their disadvantage is already accounted for in the Distance to Water Main attribute.

Distance to Power

Distance to the nearest power source was given an importance value of 1.5 out of 6.5 giving this attribute 23% of the overall decision weight. The score was assigned by measuring the distance to the nearest power source in feet. Sites immediately adjacent to a power source were assigned a score of 100. Longer distances yield a higher score indicating a less desirable well site.

Site Access Distance

Site Access Distance was given an importance value of 2.5 out of 6.5 giving this attribute 38% of the overall decision weight. This heavier value indicates that it will be more expensive to build access roads than it will be to lay distribution piping or extend power service to the well site. The score was assigned by measuring the distance to the nearest roadway in feet. Sites immediately adjacent to a roadway were assigned a score of 100. Longer distances yield a higher score indicating a less desirable well site.

In the case of potential well sites 6, 7 and 9 the nearest roadway was a private driveway. The City would need an access easement to use the driveway. If this easement is unobtainable, the access distance would greater which would make these three locations even less favorable.

Distance from Preferred Water Quality Zone

This attribute was given an importance value of 1 out of 6.5 giving this attribute 15% of the overall decision weight. If the potential well site was inside the preferred water quality zone it was given a score of zero. If the site was not in the preferred water quality zone, then it was scored based on the distance, in feet, from the nearest point of the preferred water quality zone.

Results

Figure 1 shows the results of the decision matrix using the importance values and scores as described. Potential Well 1 had the lowest score indicating that it was the most desirable location. The potential well locations are shown in Figure 2. Table 1 shows the potential well sites ranked in terms of desirability.

Potential Well Site 1 was the most highly recommended by the decision matrix. This site received the lowest score because it was immediately adjacent to power and access, it was very close to the nearest water main, and the preferred water quality zone. Finally, the pipeline used to connect it to the distribution system would be beneficial in expanding the system westward.

Table 1 Potential Well Sites Ranked in Terms of Desirability

Alternatives	Score	Rank
Potential Well 1	440	1
Potential Well 2	524	2
Potential Well 6	794	3
Potential Well 8 (Route b)	820	4
Potential Well 7	854	5
Potential Well 9	902	6
Potential Well 5	915	7
Potential Well 4	932	8
Potential Well 8 (Route c)	1016	9
Potential Well 8 (Route a)	1306	10
Potential Well 3	1891	11

Potential Well 1 Total Score Calculation

The following importance values were assigned to the listed attributes:

Attribute	Importance Value
Distance to Power:	1.5
Distance to Water Main:	1
Site Access Distance:	2.5
Benefit to Dist. Network:	0.5
Distance from Preferred Water Quality Zone:	1
Total:	6.5

The weight is calculated as:

Distance to Power Weight:	1.5/6.5 = 0.23 or 23%
Distance to Water Main weight:	1/6.5 = 15%
Site Access Distance weight:	2.5/6.5 = 38%
Benefit to Dist. Network weight:	0.5/6.5 = 8%
Distance from Preferred Water Qual. Zone weight:	1/6.5 = 15%

The following scores were assigned to the listed attributes:

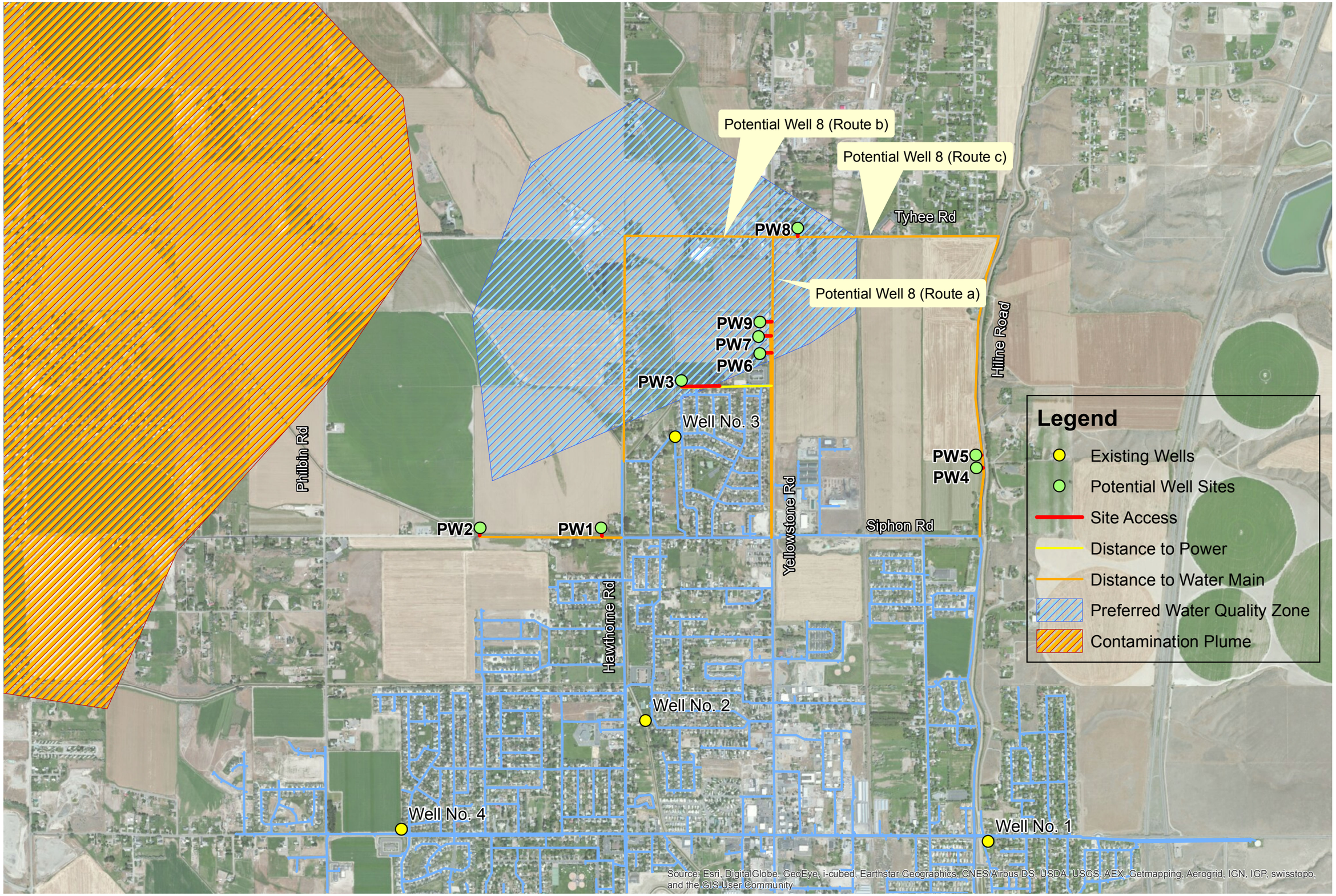
Potential Well 1 Attributes	Score
Distance to Power:	100
Distance to Water Main:	714
Site Access Distance:	100
Benefit to Dist. Network:	-714
Distance from Preferred Water Quality Zone:	2100

The final score is:

(0.23*100) + (0.15*714) + (0.38*100) + (0.08*-714) + (0.15*2100) = 440

Figure 1 The Decision Matrix

Importance Value:	1.5	1	2.5	0.5	1	6.5	
Calculated Weight:	23%	15%	38%	8%	15%	100%	
Alternatives	Distance to Power (ft)	Distance to Water Main (ft)	Site Access Distance (ft)	Benefit to Dist. Network (ft)	Distance from Preferred Water Quality Zone (ft)	Total Score	
Potential Well 1	100	714	100	-714	2100	440	
Potential Well 2	100	3640	100	-3640	1186	524	
Potential Well 3	2345	6021	1100	0	0	1891	
Potential Well 4	100	1817	100	-1817	4748	932	
Potential Well 5	100	2109	100	-2109	4495	915	
Potential Well 6	100	4763	100	0	0	794	
Potential Well 7	100	5154	100	0	0	854	
Potential Well 8 (Route a)	100	8090	100	0	0	1306	
Potential Well 8 (Route b)	100	9866	100	-9866	0	820	
Potential Well 8 (Route c)	100	12407	100	-12407	0	1016	
Potential Well 9	100	5465	100	0	0	902	



PROJECT NO. 210078

FILENAME Decision Matrix Map2.mxd

305 N. 3rd Avenue
Pocatello, ID 83201
208.238.2146
www.kellerassociates.com
KELLER associates

City of Chubbuck

Chubbuck WFPS

Decision Matrix Attributes

FIGURE NO. 2

Print Date: 11/13/2014

Document Path: Y:\Projects\210078-000 Chubbuck 2011 WFPS\Study Working Folder\Well Location Decision Matrix\GIS\Decision Matrix Map2.mxd

APPENDIX I ENVIRONMENT REFERENCES

U.S. Fish & Wildlife Service

Chubbuck Water System

IPaC Trust Resource Report

Generated August 20, 2015 02:54 PM MDT

US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Chubbuck Water System

PROJECT CODE

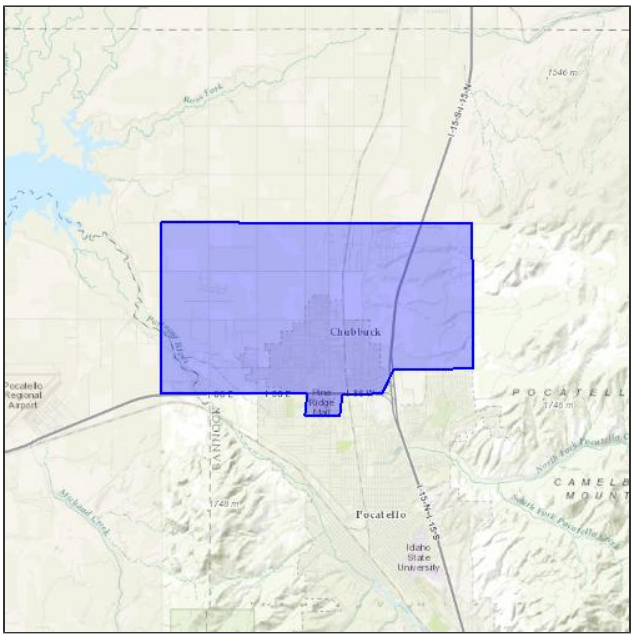
RBLTV-REUJ5-FZLCC-XNBXX-B2YBKI

LOCATION

Bannock and Power counties, Idaho

DESCRIPTION

Chubbuck, ID construction of two municipal water wells, storage reservoirs, booster pump stations and distribution pipeline. Anticipated construction Spring 2016-Summer 2017



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
(208) 378-5243

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

There are no endangered species identified for this project area

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle Haliaeetus leucocephalus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Brewer's Sparrow Spizella breweri — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HA

Calliope Hummingbird Stellula calliope — **Bird of conservation concern**
Season: Breeding

Cassin's Finch Carpodacus cassinii — **Bird of conservation concern**
Year-round

Eared Grebe Podiceps nigricollis — **Bird of conservation concern**
Season: Breeding

Ferruginous Hawk Buteo regalis — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06X

Fox Sparrow Passerella iliaca — **Bird of conservation concern**
Season: Breeding

Greater Sage-grouse Centrocercus urophasianus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W

Green-tailed Towhee Pipilo chlorurus — **Bird of conservation concern**
Season: Breeding

Lewis's Woodpecker Melanerpes lewis — **Bird of conservation concern**
Season: Breeding

Loggerhead Shrike Lanius ludovicianus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY

Long-billed Curlew Numenius americanus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S

Pinyon Jay Gymnorhinus cyanocephalus — **Bird of conservation concern**
Year-round

Sage Thrasher Oreoscoptes montanus **Bird of conservation concern**

Season: Breeding

Short-eared Owl Asio flammeus **Bird of conservation concern**

Year-round

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Swainson's Hawk Buteo swainsoni **Bird of conservation concern**

Season: Breeding

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Freshwater Emergent Wetland

PEM1F	2.94 acres
PEM1Ch	0.846 acre
PEM1B	0.526 acre
PEM1C	0.31 acre

Freshwater Forested/shrub Wetland

PSS1C	24.3 acres
PFO1A	3.71 acres

Freshwater Pond

PUBHx	1.21 acres
PAB4F	0.831 acre

PUBFh 0.714 acre

PUBFx 0.659 acre

Lake

L1UBKHx 9.4 acres

Riverine

R2UBH 106.0 acres

IDAHO

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ABERDEEN EXPERIMNT STN	1914-2005	0.00	0.00	0.00	0.00	7.46	8.95	10.28	9.40	6.41	3.85	0.00	0.00	46.35
ARROWROCK DAM	1916-2005	0.00	0.00	0.00	0.00	5.94	7.53	10.18	8.93	5.75	2.35	0.00	0.00	40.68
BLACKFOOT DAM	1948-1971	0.00	0.00	0.00	0.00	0.00	7.56	9.19	7.42	3.97	0.00	0.00	0.00	28.14
EMMETT 2 E	1948-2005	0.00	0.00	0.00	5.62	7.09	8.82	10.58	9.44	6.56	4.57	0.00	0.00	52.68
ISLAND PARK	1937-2005	0.00	0.00	0.00	0.00	0.00	4.90	6.58	5.69	0.00	0.00	0.00	0.00	17.17
LIFTON PUMPING STN	1935-2005	0.00	0.00	0.00	4.08	5.97	7.41	8.70	7.80	5.35	3.02	0.00	0.00	42.33
MACKAY 4 NW	1965-1988	0.00	0.00	0.00	0.00	6.81	8.39	10.23	8.73	6.39	0.00	0.00	0.00	40.55
MINIDOKA DAM	1947-2005	0.00	0.00	0.00	6.79	8.17	10.76	13.01	11.48	8.26	4.63	2.94	0.00	66.04
MOSCOW UNIV OF IDAHO	1893-2005	0.00	0.00	3.03	3.85	5.66	6.53	8.62	8.23	5.29	3.03	2.85	0.00	47.09
PALISADES	1947-1993	0.00	0.00	0.00	4.01	5.56	7.04	9.38	8.32	5.48	3.58	0.00	0.00	43.37
PARMA EXPERIMENT STN	1922-2005	0.00	0.00	0.00	6.00	8.26	9.05	10.41	9.47	6.30	0.00	0.00	0.00	49.49
REXBURG RICKS COLLEGE	1977-2005	0.00	0.00	0.00	0.00	6.59	7.29	8.06	7.36	5.23	0.00	0.00	0.00	34.53
SANDPOINT EXPERMNT STN	1910-2005	0.00	0.00	0.00	0.00	4.96	5.51	7.47	6.78	4.47	0.00	0.00	0.00	29.19
TWIN FALLS WSO	1963-2005	0.00	0.00	0.00	5.80	8.09	9.15	10.24	9.09	6.65	4.25	0.77	0.00	54.04

POCATELLO WSO ARPT, IDAHO (107211)

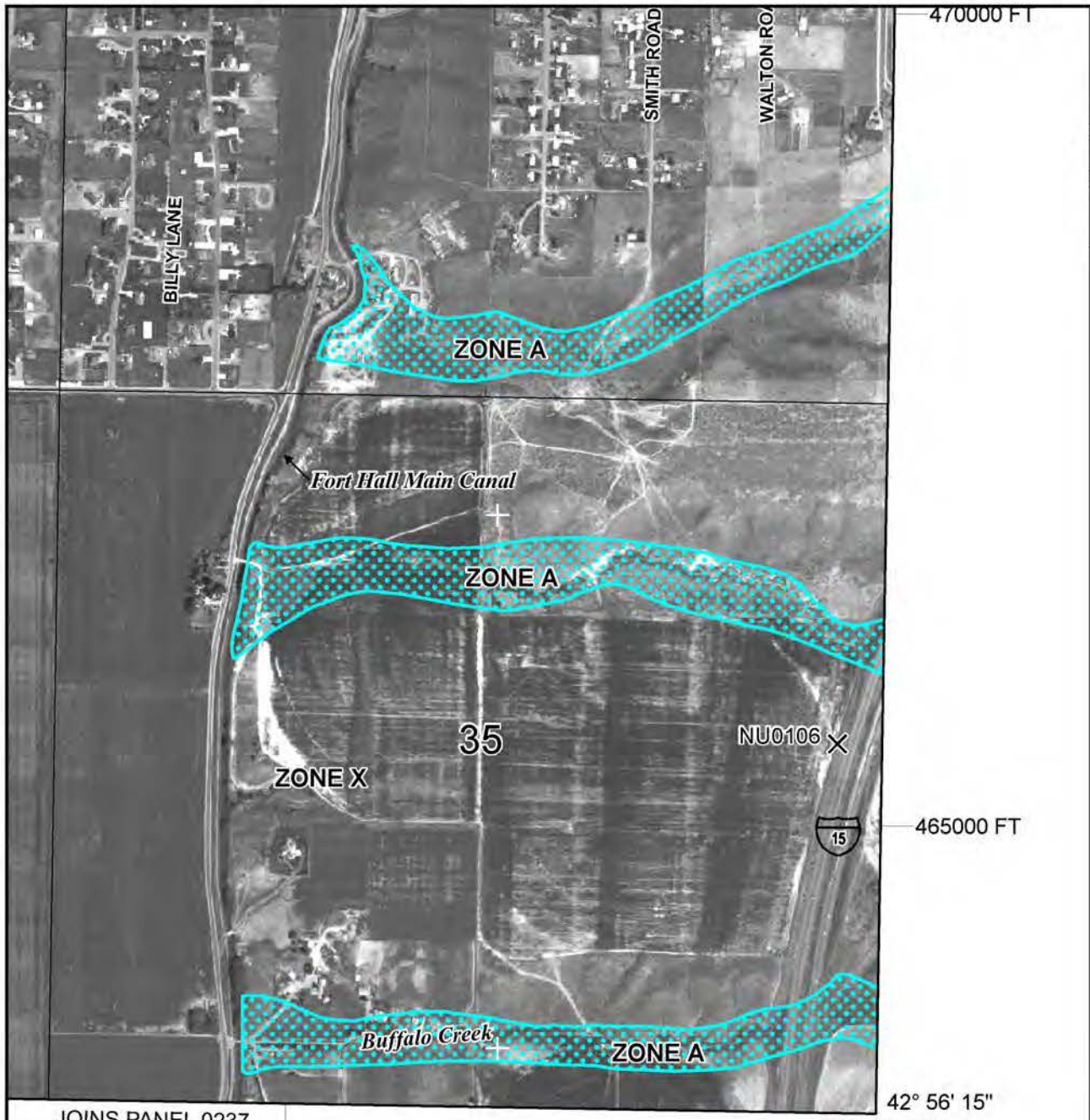
Period of Record Monthly Climate Summary

Period of Record : 1/ 3/1939 to 9/30/2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	32.5	38.2	47.6	58.1	68.1	77.5	88.5	87.0	76.0	62.3	45.3	34.8	59.7
Average Min. Temperature (F)	15.1	19.8	26.3	32.8	40.2	46.8	53.2	51.5	42.6	33.6	24.7	17.4	33.7
Average Total Precipitation (in.)	1.08	0.90	1.17	1.12	1.34	1.05	0.53	0.59	0.78	0.92	1.05	1.07	11.59
Average Total SnowFall (in.)	9.1	6.5	5.4	3.4	0.4	0.0	0.0	0.0	0.1	1.8	4.7	8.6	39.8
Average Snow Depth (in.)	2	1	0	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 100% Precipitation: 100% Snowfall: 100% Snow Depth: 94.6%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0230D

FIRM

FLOOD INSURANCE RATE MAP

BANNOCK COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 230 OF 925

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BANNOCK COUNTY	160009	0230	D
CHUBBUCK, CITY OF	160162	0230	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
16005C0230D

EFFECTIVE DATE
JULY 7, 2009

Federal Emergency Management Agency

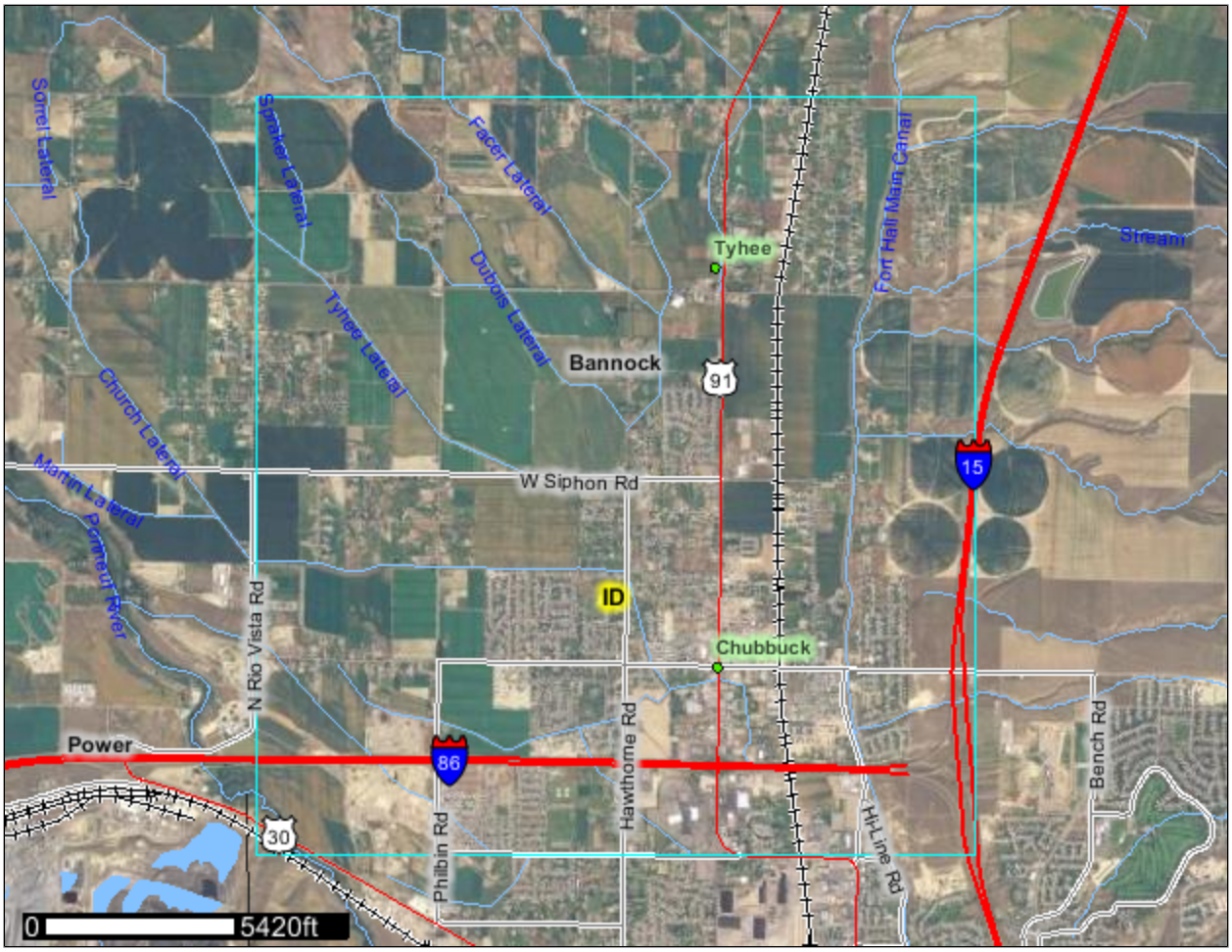
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bannock County Area, Idaho, Parts of Bannock and Power Counties; and Fort Hall Area, Idaho, Parts of Bannock, Bingham, Caribou, and Power Counties



February 28, 2013

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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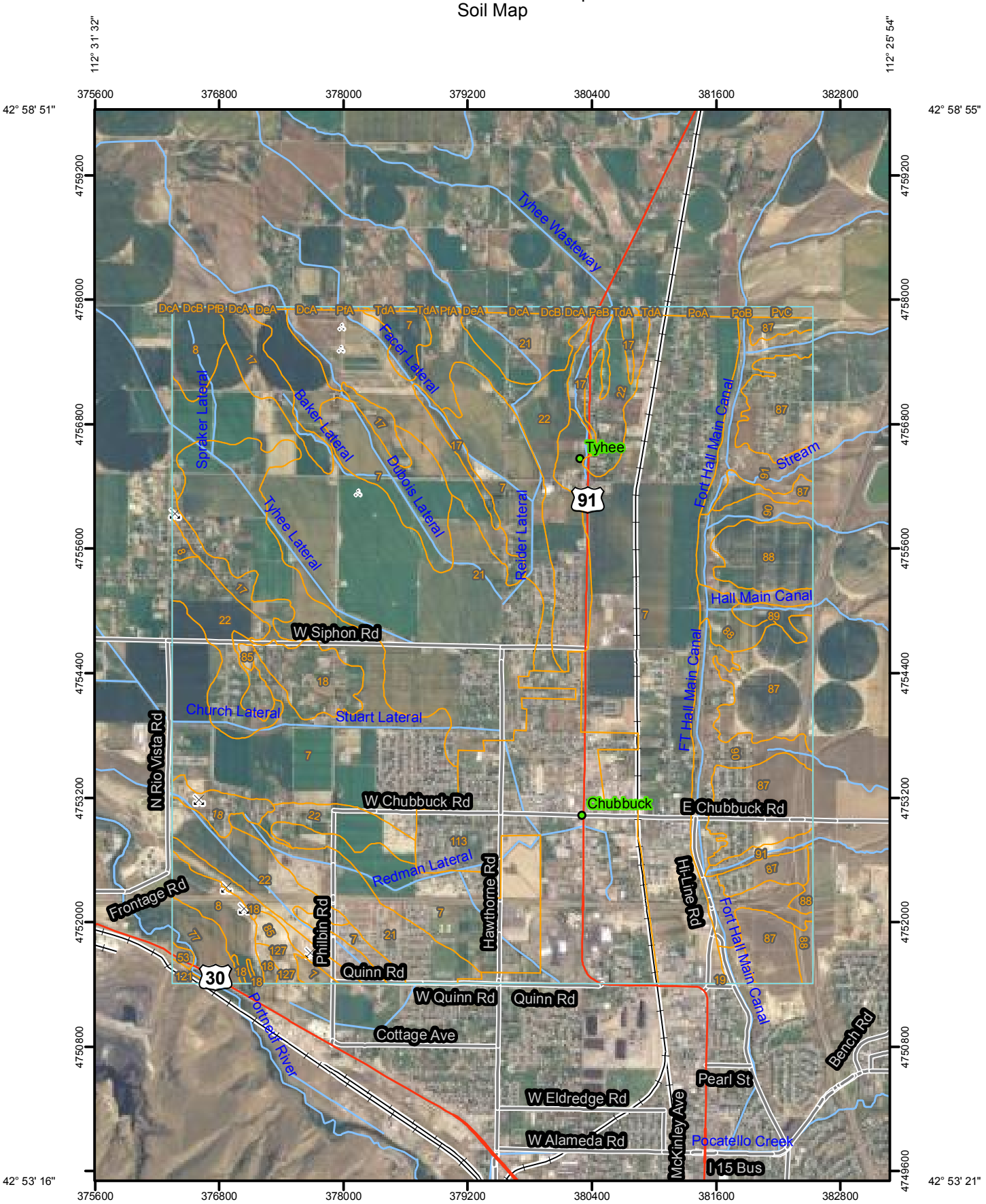
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:49,300 if printed on A size (8.5" x 11") sheet.

N

Meters
0 450 900 1,800 2,700

Feet
0 1,500 3,000 6,000 9,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:49,300 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bannock County Area, Idaho, Parts of Bannock and Power Counties
Survey Area Data: Version 7, Aug 14, 2012

Soil Survey Area: Fort Hall Area, Idaho, Parts of Bannock, Bingham, Caribou, and Power Counties
Survey Area Data: Version 7, Aug 14, 2012

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 7/12/2004; 7/11/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Bannock County Area, Idaho, Parts of Bannock and Power Counties (ID711)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
7	Bahem silt loam, 0 to 2 percent slopes	3,487.0	34.9%
8	Bahem silt loam, 2 to 4 percent slopes	201.9	2.0%
17	Broncho cobbly loam, 1 to 8 percent slopes	322.1	3.2%
18	Broncho cobbly loam, 4 to 20 percent slopes, extremely stony	295.7	3.0%
19	Broncho variant-Pocatello complex, 20 to 50 percent slopes	23.3	0.2%
21	Broxon silt loam, 0 to 2 percent slopes	1,646.1	16.5%
22	Broxon silt loam, 2 to 4 percent slopes	1,241.8	12.4%
53	Hondoho-Arbone complex, 4 to 12 percent slopes	8.0	0.1%
77	McDole-McDole variant complex, 0 to 2 percent slopes	74.9	0.8%
85	Pits, gravel	46.6	0.5%
87	Pocatello silt loam, 1 to 4 percent slopes	750.6	7.5%
88	Pocatello silt loam, 4 to 8 percent slopes	235.6	2.4%
89	Pocatello silt loam, 8 to 12 percent slopes	34.9	0.3%
90	Pocatello silt loam, 12 to 20 percent slopes	387.0	3.9%
91	Pocatello silt loam, 20 to 30 percent slopes	191.8	1.9%
113	Urban land-Bahem-Broxon complex, 0 to 3 percent slopes	929.1	9.3%
121	Watercanyon-Swanner-Rock outcrop complex, 20 to 50 percent slopes	10.6	0.1%
127	Water	1.2	0.0%
Subtotals for Soil Survey Area		**9,888.1**	**99.1%**
Totals for Area of Interest		**9,979.2**	**100.0%**

Fort Hall Area, Idaho, Parts of Bannock, Bingham, Caribou, and Power Counties (ID710)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
DcA	Declo loam, 0 to 2 percent slopes	17.4	0.2%
DcB	Declo loam, 2 to 4 percent slopes	2.9	0.0%
DeA	Declo loam, saline-alkali, 0 to 2 percent slopes	5.9	0.1%
GP	Pits, gravel	0.1	0.0%
PeA	Paniogue loam, 0 to 2 percent slopes	3.8	0.0%
PeB	Paniogue loam, 2 to 4 percent slopes	6.6	0.1%
PeC	Paniogue loam, 4 to 8 percent slopes	2.1	0.0%
PfA	Paniogue loam, saline-alkali, 0 to 2 percent slopes	2.9	0.0%

Fort Hall Area, Idaho, Parts of Bannock, Bingham, Caribou, and Power Counties (ID710)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
PfB	Paniogue loam, saline-alkali, 2 to 4 percent slopes	1.7	0.0%
PoA	Penoyer silt loam, 0 to 2 percent slopes	18.7	0.2%
PoB	Penoyer silt loam, 2 to 4 percent slopes	1.3	0.0%
PvC	Pocatello silt loam, 4 to 8 percent slopes	15.9	0.2%
TdA	Tickason loam, 0 to 2 percent slopes	10.4	0.1%
W	Water	0.4	0.0%
WhF	Wheeler silt loam, 30 to 55 percent slopes	1.0	0.0%
Subtotals for Soil Survey Area		**91.0**	**0.9%**
Totals for Area of Interest		**9,979.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments

on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bannock County Area, Idaho, Parts of Bannock and Power Counties

7—Bahem silt loam, 0 to 2 percent slopes

Map Unit Setting

Landscape: Valleys
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Bahem and similar soils: 85 percent

Description of Bahem

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or loess

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 27 to 60 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.8 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B

Typical profile

0 to 11 inches: Silt loam
11 to 49 inches: Silt loam
49 to 60 inches: Extremely cobbly sand

8—Bahem silt loam, 2 to 4 percent slopes

Map Unit Setting

Landscape: Valleys

Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition
Bahem and similar soils: 85 percent

Description of Bahem

Setting
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or loess

Properties and qualities
Slope: 2 to 4 percent
Depth to restrictive feature: 27 to 60 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.8 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B

Typical profile
0 to 11 inches: Silt loam
11 to 49 inches: Silt loam
49 to 60 inches: Extremely cobbly sand

17—Broncho cobbly loam, 1 to 8 percent slopes

Map Unit Setting
Landscape: Valleys
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition
Broncho and similar soils: 85 percent

Description of Broncho

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 1.4 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B

Typical profile

0 to 6 inches: Cobbly loam
6 to 13 inches: Cobbly loam
13 to 60 inches: Extremely cobbly coarse sand

18—Broncho cobbly loam, 4 to 20 percent slopes, extremely stony

Map Unit Setting

Landscape: Valleys
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Broncho, extremely stony surface, and similar soils: 80 percent

Description of Broncho, Extremely Stony Surface

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Mixed alluvium

Properties and qualities

Slope: 4 to 20 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 1.3 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: STONY LOAM 8-12 ARTRW8/PSSPS (R011BY003ID)

Typical profile

0 to 6 inches: Cobbly loam
6 to 13 inches: Cobbly loam
13 to 60 inches: Extremely cobbly coarse sand

19—Broncho variant-Pocatello complex, 20 to 50 percent slopes

Map Unit Setting

Landscape: Valleys
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Pocatello and similar soils: 45 percent
Broncho variant and similar soils: 45 percent

Description of Broncho Variant

Setting

Landform: Terraces
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from sedimentary rock and/or metasedimentary rock

Properties and qualities

Slope: 20 to 50 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: STONY LOAM 8-12 ARTRW8/PSSPS (R011BY003ID)

Typical profile

0 to 4 inches: Very gravelly loam
4 to 20 inches: Extremely cobbly loam
20 to 28 inches: Extremely cobbly clay loam
28 to 60 inches: Extremely cobbly sandy loam

Description of Pocatello

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: SOUTH SLOPE LOAMY 11-13 ARTRW8/PSSPS (R011BY012ID)

Typical profile

0 to 8 inches: Silt loam
8 to 40 inches: Silt loam
40 to 60 inches: Silt loam

21—Broxon silt loam, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Broxon and similar soils: 85 percent

Description of Broxon

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Silt loam
8 to 25 inches: Silt loam
25 to 60 inches: Extremely stony sand

22—Broxon silt loam, 2 to 4 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Broxon and similar soils: 85 percent

Description of Broxon

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over mixed alluvium

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Silt loam
8 to 25 inches: Silt loam
25 to 60 inches: Extremely stony sand

53—Hondoho-Arbone complex, 4 to 12 percent slopes

Map Unit Setting

Landscape: Mountains, valleys
Elevation: 4,400 to 5,800 feet
Mean annual precipitation: 11 to 18 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 70 to 100 days

Map Unit Composition

Hondoho and similar soils: 50 percent
Arbone and similar soils: 45 percent

Description of Hondoho

Setting

Landform: Mountain slopes, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or colluvium

Properties and qualities

Slope: 4 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water capacity: Low (about 5.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: STONY LOAM 13-16 ARTRV/PSSPS (R013XY002ID)
Other vegetative classification: mountain big sagebrush/bluebunch wheatgrass (HFW019)

Typical profile

0 to 15 inches: Cobbly silt loam
15 to 60 inches: Very cobbly sandy clay loam

Description of Arbone

Setting

Landform: Mountain slopes, fan remnants
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Mixed alluvium and/or loess

Properties and qualities

Slope: 4 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 10.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY 12-16 ARTRV/PSSPS-FEID (R013XY001ID)
Other vegetative classification: mountain big sagebrush/bluebunch wheatgrass (HFW019)

Typical profile

0 to 9 inches: Silt loam
9 to 12 inches: Silt loam
12 to 60 inches: Silt loam

77—McDole-McDole variant complex, 0 to 2 percent slopes

Map Unit Setting

Landscape: Valleys
Elevation: 4,200 to 5,200 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Mcdole and similar soils: 50 percent
Mcdole variant and similar soils: 35 percent

Description of Mcdole

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 12.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B

Typical profile

0 to 21 inches: Silt loam
21 to 74 inches: Silt loam

Description of Mcdole Variant

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or loess

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3w
Land capability (nonirrigated): 6w
Hydrologic Soil Group: B

Typical profile

0 to 34 inches: Silt loam
34 to 60 inches: Fine sandy loam

85—Pits, gravel

Map Unit Composition

Pits, gravel: 100 percent

Description of Pits, Gravel

Typical profile

0 to 60 inches: Gravel, cobbles

87—Pocatello silt loam, 1 to 4 percent slopes

Map Unit Setting

Landscape: Foothills
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Pocatello and similar soils: 90 percent

Description of Pocatello

Setting

Landform: Hillslopes, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance, if irrigated
Land capability classification (irrigated): 3e

Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 11-13 ARTRW8/PSSPS (R013XY018ID)

Typical profile
0 to 8 inches: Silt loam
8 to 40 inches: Silt loam
40 to 60 inches: Silt loam

88—Pocatello silt loam, 4 to 8 percent slopes

Map Unit Setting
Landscape: Foothills
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition
Pocatello and similar soils: 90 percent

Description of Pocatello

Setting
Landform: Fan remnants, hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities
Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 11-13 ARTRW8/PSSPS (R013XY018ID)

Typical profile
0 to 8 inches: Silt loam
8 to 40 inches: Silt loam

40 to 60 inches: Silt loam

89—Pocatello silt loam, 8 to 12 percent slopes

Map Unit Setting

Landscape: Foothills
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Pocatello and similar soils: 90 percent

Description of Pocatello

Setting

Landform: Fan remnants, hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities

Slope: 8 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 6e
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 11-13 ARTRW8/PSSPS (R013XY018ID)
Other vegetative classification: Wyoming big sagebrush/bluebunch wheatgrass (HFW033)

Typical profile

0 to 8 inches: Silt loam
8 to 40 inches: Silt loam
40 to 60 inches: Silt loam

90—Pocatello silt loam, 12 to 20 percent slopes

Map Unit Setting

Landscape: Foothills
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Pocatello and similar soils: 90 percent

Description of Pocatello

Setting

Landform: Fan remnants, hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 11-13 ARTRW8/PSSPS (R013XY018ID)

Typical profile

0 to 8 inches: Silt loam
8 to 40 inches: Silt loam
40 to 60 inches: Silt loam

91—Pocatello silt loam, 20 to 30 percent slopes

Map Unit Setting

Landscape: Foothills
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Pocatello and similar soils: 90 percent

Description of Pocatello

Setting

Landform: Fan remnants, hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 11-13 ARTRW8/PSSPS (R013XY018ID)

Typical profile

0 to 8 inches: Silt loam
8 to 40 inches: Silt loam
40 to 60 inches: Silt loam

113—Urban land-Bahem-Broxon complex, 0 to 3 percent slopes

Map Unit Setting

Landscape: Valleys
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Urban land: 50 percent
Broxon and similar soils: 20 percent
Bahem and similar soils: 20 percent

Description of Bahem

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or loess

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 27 to 60 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 9.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B

Typical profile

0 to 11 inches: Silt loam
11 to 49 inches: Silt loam
49 to 60 inches: Extremely cobbly sand

Description of Broxon

Setting

Landform: Terraces
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Loess over mixed alluvium

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Silt loam
8 to 25 inches: Silt loam
25 to 60 inches: Extremely stony sand

121—Watercanyon-Swanner-Rock outcrop complex, 20 to 50 percent slopes

Map Unit Setting

Landscape: Mountains
Elevation: 4,500 to 7,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 70 to 115 days

Map Unit Composition

Watercanyon and similar soils: 40 percent
Swanner and similar soils: 30 percent
Rock outcrop: 15 percent

Description of Watercanyon

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Volcanic ash and/or silty alluvium and/or loess

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 9.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: SOUTH SLOPE LOAMY 12-16 ARTRW8/PSSPS (R013XY035ID)

Typical profile

0 to 7 inches: Silt loam
7 to 16 inches: Silt loam
16 to 60 inches: Silt loam

Description of Swanner

Setting

Landform: Mountain slopes, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over bedrock derived from tuff and/or rhyolite

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 1.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: SHALLOW STONY 12-20 ARAR8/PSSPS (R013XY014ID)

Typical profile

0 to 9 inches: Extremely stony loam
9 to 17 inches: Extremely stony loam
17 to 31 inches: Bedrock

Description of Rock Outcrop

Properties and qualities

Slope: 20 to 50 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 8

Typical profile

0 to 60 inches: Bedrock

127—Water

Map Unit Composition

Water: 100 percent

Fort Hall Area, Idaho, Parts of Bannock, Bingham, Caribou, and Power Counties

DcA—Declo loam, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 2,500 to 5,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Declo and similar soils: 85 percent

Description of Declo

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits and/or lacustrine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Sodium adsorption ratio, maximum: 8.0
Available water capacity: High (about 11.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 5 inches: Loam
5 to 10 inches: Silt loam
10 to 60 inches: Very fine sandy loam

DcB—Declo loam, 2 to 4 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 2,500 to 5,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Declo and similar soils: 85 percent

Description of Declo

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits and/or lacustrine deposits

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Sodium adsorption ratio, maximum: 8.0
Available water capacity: High (about 11.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 5 inches: Loam
5 to 10 inches: Silt loam
10 to 60 inches: Very fine sandy loam

DeA—Declo loam, saline-alkali, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,200 to 5,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 95 to 130 days

Map Unit Composition

Declo, saline-alkali, and similar soils: 75 percent

Description of Declo, Saline-alkali

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits and/or lacustrine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water capacity: High (about 11.0 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance, if irrigated
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 5 inches: Loam
5 to 10 inches: Silt loam
10 to 60 inches: Very fine sandy loam

GP—Pits, gravel

Map Unit Composition

Pits, gravel: 100 percent

Description of Pits, Gravel

Typical profile

0 to 60 inches: Gravel, cobbles

PeA—Paniogue loam, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 2,100 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 100 to 155 days

Map Unit Composition

Paniogue and similar soils: 85 percent

Description of Paniogue

Setting

Landform: Fan remnants, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3s

Land capability (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: SEMIWET SALINE MEADOW SAVE4/DISP (R011AY007ID)

Typical profile
0 to 7 inches: Loam
7 to 18 inches: Silt loam
18 to 60 inches: Stratified very gravelly coarse sand to silt loam

PeB—Paniogue loam, 2 to 4 percent slopes

Map Unit Setting
Landscape: Plains
Elevation: 2,100 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 100 to 155 days

Map Unit Composition
Paniogue and similar soils: 85 percent

Description of Paniogue

Setting
Landform: Fan remnants, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities
Slope: 2 to 4 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: SEMIWET SALINE MEADOW SAVE4/DISP (R011AY007ID)

Typical profile
0 to 7 inches: Loam

7 to 18 inches: Silt loam
18 to 60 inches: Stratified very gravelly coarse sand to silt loam

PeC—Paniogue loam, 4 to 8 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 2,100 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 100 to 155 days

Map Unit Composition

Paniogue and similar soils: 80 percent

Description of Paniogue

Setting

Landform: Fan remnants, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: SEMIWET SALINE MEADOW SAVE4/DISP (R011AY007ID)

Typical profile

0 to 7 inches: Loam
7 to 18 inches: Silt loam
18 to 60 inches: Stratified very gravelly coarse sand to silt loam

PfA—Paniogue loam, saline-alkali, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,400 to 4,700 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 100 to 120 days

Map Unit Composition

Paniogue, saline-alkali, and similar soils: 80 percent

Description of Paniogue, Saline-alkali

Setting

Landform: Fan remnants, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium
Land capability classification (irrigated): 3s
Land capability (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: SEMIWET SALINE MEADOW SAVE4/DISP (R011AY007ID)

Typical profile

0 to 7 inches: Loam
7 to 18 inches: Silt loam
18 to 60 inches: Stratified very gravelly coarse sand to silt loam

PfB—Paniogue loam, saline-alkali, 2 to 4 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,400 to 4,700 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 100 to 120 days

Map Unit Composition

Paniogue, saline-alkali, and similar soils: 85 percent

Description of Paniogue, Saline-alkali

Setting

Landform: Fan remnants, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: SEMIWET SALINE MEADOW SAVE4/DISP (R011AY007ID)

Typical profile

0 to 7 inches: Loam
7 to 18 inches: Silt loam
18 to 60 inches: Stratified very gravelly coarse sand to silt loam

PoA—Penoyer silt loam, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,300 to 5,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Penoyer and similar soils: 85 percent

Description of Penoyer

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 10.6 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 5 inches: Silt loam
5 to 39 inches: Silt loam
39 to 60 inches: Silt loam

PoB—Penoyer silt loam, 2 to 4 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 4,300 to 5,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 130 days

Map Unit Composition

Penoyer and similar soils: 80 percent

Description of Penoyer

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Sodium adsorption ratio, maximum: 10.0
Available water capacity: High (about 10.6 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 5 inches: Silt loam
5 to 39 inches: Silt loam
39 to 60 inches: Silt loam

PvC—Pocatello silt loam, 4 to 8 percent slopes

Map Unit Setting

Landscape: Plateaus
Elevation: 3,000 to 5,200 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Pocatello and similar soils: 85 percent

Description of Pocatello

Setting

Landform: Hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or mixed alluvium

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water capacity: High (about 10.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 8 inches: Silt loam
8 to 38 inches: Silt loam
38 to 60 inches: Silt loam

TdA—Tickason loam, 0 to 2 percent slopes

Map Unit Setting

Landscape: Plains
Elevation: 3,000 to 4,500 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 46 to 54 degrees F

Map Unit Composition

Tickason and similar soils: 85 percent

Description of Tickason

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or beach sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 55 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 8.4 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: LOAMY 12-16 ARTRV/PSSPS-FEID (R013XY001ID)

Typical profile

0 to 12 inches: Loam
12 to 20 inches: Loam
20 to 54 inches: Silt loam
54 to 61 inches: Loamy sand

W—Water

Map Unit Composition

Water: 100 percent

WhF—Wheeler silt loam, 30 to 55 percent slopes

Map Unit Setting

Landscape: Plateaus
Elevation: 3,000 to 5,500 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Wheeler and similar soils: 85 percent

Description of Wheeler

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Properties and qualities

Slope: 30 to 55 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 12.0 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: LOAMY 8-12 ARTRW8/PSSPS (R011BY001ID)

Typical profile

0 to 3 inches: Silt loam
3 to 72 inches: Silt loam

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://soils.usda.gov/

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://soils.usda.gov/

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://soils.usda.gov/

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.glti.nrcs.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://soils.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://soils.usda.gov/

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

APPENDIX J PUBLIC MEETINGS

City of Chubbuck

Council Workshop: Water Facilities

June 2015

Well #4 Standby Power

Well #3 Standby Power

Well #2 Rehabilitation

Presented by:

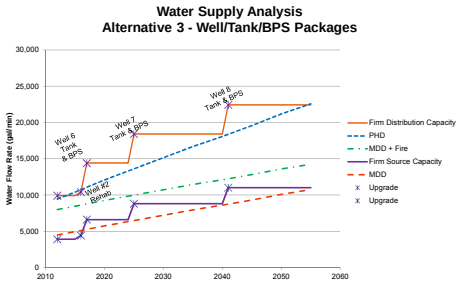
Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
(208) 238-2146

James P. Mullen, P.E.
Skyler D. Allen, P.E.

Summary of Deficiencies

- Water Supply
  - Well #2 Rehabilitation Underway
    - This will not quite resolve the current system deficiency – 2015
  - Well #6 – immediate need
  - Well #7 – short term need
- Storage
  - Immediate need is ~1 million gallons
  - Projected need is 3 million gallons

Needed Water Supply



Existing Water System

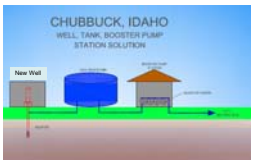
Recommendations

Projects In Progress
1. Rehabilitate Well #2
2. Add capacity in Bench Zone
3. Top Priority Fire Flow Improvements

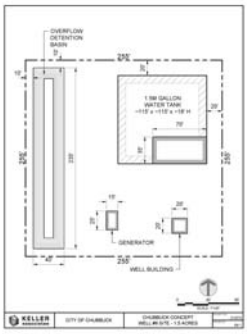
Phase 1 Improvements
1. Construct Well #6
2. 1.5 MG Storage Reservoir
3. Booster Pump Station

Phase 2 Improvements
1. Construct Well #7
2. 1.5 MG Storage Reservoir
3. Booster Pump Station
   - Establish North Bench Pressure Zone from this BPS/Storage location

Phase 3 Improvements
- Fire flow improvements
- Distribution network upgrades
- Distribution system expansion to new service areas



Schematic Layout for Well #6/Tank/BPS



Phasing of Recommendations

KELLER associates

Completed Projects — 2011-2014
1. Purchase of water rights
2. Well #3 Refurbishing
3. Well #4 Standby Power
4. Well #3 Standby Power

Projects In Progress
1. Rehabilitate Well #2
2. Add capacity in Bench Zone
3. Top Priority Fire Flow Improvements

Design – 2015
Construction – 2015-2016

Phase 1 Improvements
1. Construct Well #6
2. 1.5 MG Storage Reservoir
3. Booster Pump Station

Estimated Cost - $5.2 M*
Design – 2015
Construction – 2016

Phase 2 Improvements
1. Construct Well #7
2. 1.5 MG Storage Reservoir
3. Booster Pump Station

Estimated Cost - $5.9 M*
Design – 2016
Construction - 2017

*Phase 1&2
Total Cost Expected =
$9.5 - $11.1 M

Phase 3 Improvements
1. Priority 2 Fire Flow Improvements
2. Distribution Network Upgrades
3. New Service Areas

Design – 2017 - 2025
Construction – 2017 - 2026

Next Steps

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Phase 1 is an immediate need for the City ($5.2 M)

Phase 2 is a short term need ($5.9 M)
- **Added urgency from Siphon Interchange**

Steps for Implementation

- **Design Agreement for Phase I & 2**
- **Authorization of funding**
  - **Judicial Confirmation**
  - **Bond Election**
- **Finalize FPS & Environmental**
- **Design**
- **Bid**
- **Construction**

Funding

- **IDEQ – SRF Loan has been offered**
  - **$5.5 Million @ 2.75%**
  - **Additional funding is available upon request**

City of Chubbuck

Council Workshop: Water Facilities

April 2014

Presented by:

Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
(208) 238-2146

James P. Mullen, P.E.
Michael R. Jaglowski, P.E.
Skyler D. Allen, P.E.

Presentation Overview

What is the message?

- The water system currently operates at a *critical water deficit*.

- What is a **"critical water deficit"**?

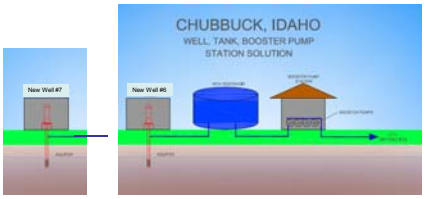
Goal for today:

- To present a solution pathway to resolve the water system's critical needs for the next 20 years.

Presentation Outline

- Summary of Recommendations
  - Immediate
  - Short Term
  - Growth Driven
- Water System Overview
- Recent Improvements
- Needed Actions
  - Water Supply
  - Water Storage
- Schedule & Cost

Recommendations – Immediate
Priority 1A

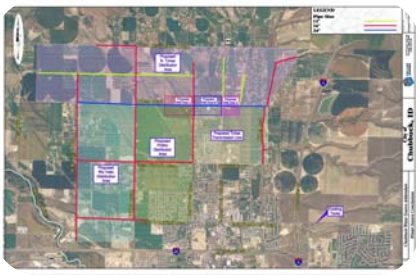


Priority 1A Improvements –Immediate
1. Secure land for well site (target 3 acres)
2. Drill Wells #6 & #7 (target combined >3,700 gpm)
3. Transmission line to distribution system
4. Storage reservoir (3 million gallons)
5. Booster pump station

Recommendations – Short Term
Priority 1B

Priority 1B Improvements – Short Term
6. Tank Farm Transmission Line Improvements
7. Bench Booster Pump Station Improvements
8. Fire Flow Distribution Improvements

Recommendations – Growth Driven
Priority 2



Priority 2 Improvements – Growth Driven
9. Extend service area – to west and north
   - Phased approach determined by water service opportunities
   - Goal of water service availability to sewered area

Existing Water System

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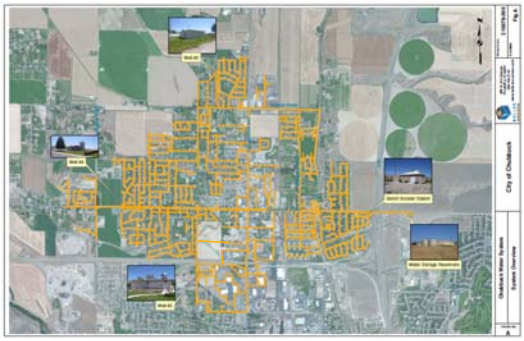

Recent Improvements

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System Interconnection
- Hwy 86 crossing replaced (West of Yellowstone)
- Hawthorne-Yellowstone connection (Knudsen)

Water Rights
- An estimated 4,350 gpm equivalent of water rights acquired
- Water right needs met through ~2040 (25 year solution)

Generators
- Standby generators installed at Well #4 and Well #3
- Meets water supply needs in event of power outage
- Improves reliability of wells

Needed Action – Water Supply

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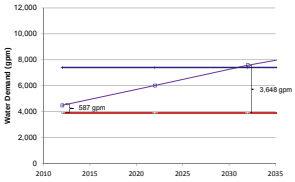
Chubbuck Projected Maximum Day Demand and Supply



Water Supply (gpm)	2012	2032	2052
Population	14,166	23,901	32,808
Average Day Demand	2,017	3,403	4,671
Maximum Day Demand (gpm)	4,497	7,558	10,415
Peak Hour Demand (gpm)	9,444	15,934	21,872
Redundant Source Capacity (gpm)	3,910	3,910	3,910
Water Source Deficiency (gpm)	*587*	*3,648*	*6,505*

- MDD – Maximum Day Demand
- Regulations require redundant supply > MDD
- Currently operating with MDD> Redundant supply
- Means that a well failure during high demand could result in insufficient water supply
- Projected demand to exceed all water sources ~2030

Recommended Water Supply Solution

•Construct two new wells (total >3,700 gpm capacity)
•Connect to distribution system

Needed Action - Water Storage

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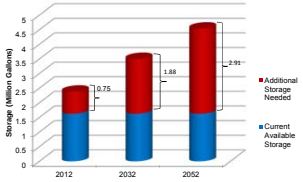
Chubbuck Water Storage Analysis



Water Storage (MG)	2012	2032	2052
Operational Storage	0.35	0.52	0.68
Equalization Storage	1.39	2.35	3.23
Fire Storage	0.63	0.63	0.63
Stand-By Storage	0	0	0
Current Available Storage	**1.65**	**1.65**	**1.65**
Total Required Storage	***2.37***	***3.5***	***4.54***
Storage Deficiency (MG)	***0.75***	***1.88***	***2.91***

- Storage satisifes:
  - Peak demand
  - Fire suppression
- 3 MG reservoir is a 40 year solution
- Storage reservoir design life is ~50 yrs

Recommended Water Storage Solution

•Install New Storage Reservoir capacity = 3 MG

•There are economic and operational benefits from constructing storage to meet the 40 year projection

•Install Booster Pumping Station to deliver high volume at system pressure

Schedule & Cost

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Priority 1A Improvements
1. **Procure land**
2. **Construct Wells #6&7**
3. **Transmission line to distribution system**
4. **Construct Storage Reservoir**
5. **Construct Booster Pump Station**

Priority 1B Improvements
6. **Tank Farm Transmission Line Improvements**
7. **Bench Booster Pump Station Improvements**
8. **Fire Flow Distribution System Improvements**

Priority 2 Improvements
8. **Extend service area – to west and north**

Procure land – now
Complete WFPS – June 2014
Construction Funding – June 2014
Begin design of P1A – July 2014
Start Construction – July 2015
Finish Construction – Fall 2015

P1A Estimated Cost - $7.6 M*

Begin design of P1B – May 2016
Start Construction – Sept 2016
Finish Construction – Dec 2016

P1B Estimated Cost - $2.7 M*

*Cost of financing is estimated to be: $1.40 per EDU/month for each $1M of loan

Develop Preliminary Phased Improvement Schedule – June 2014

Phase improvements to provide service to developing areas

City of Chubbuck

Council Discussion: Water Facilities

April 2012

Presented by:

Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
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James P. Mullen, P.E.
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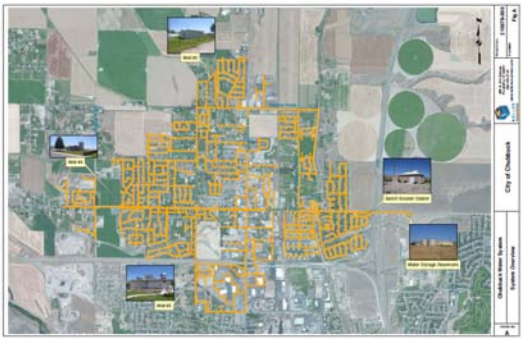
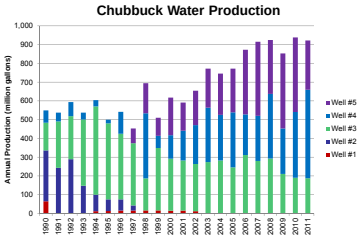
Chubbuck Water System



Water Production

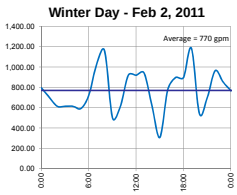


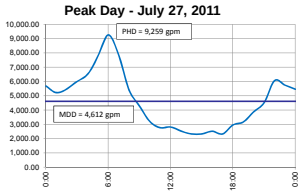
- Total water produced in 2011 = 922 million gallons.
- From 2000 to 2010 total water production increased by 52%
- Population increase from 2000-2010 was 44%

- Average annual water use (gallons per person per day):

Chubbuck = 185 gpcd
Idaho average = 243 gpcd
U.S. average = 180 gpcd

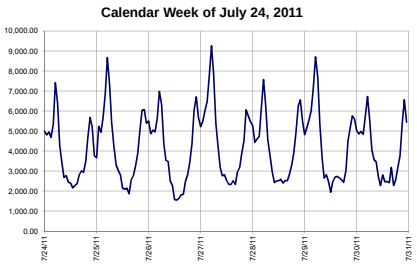
Daily Demand Patterns





(This curve is used on other slides)

Summer Water Demand



System Analysis Criteria

Idaho Rules for Public Drinking Water Systems

- **Emergency Operation (IDAPA 58.01.08.501.07)**
  Provide Average Day Demand plus Fire Flow for 8 hours during a power outage.

- **Source Redundancy (IDAPA 58.01.08.501.17)**
  Provide the larger of **Peak Hour Demand** or **Maximum Day Demand** plus **Equalization Storage** with largest source out of service.

- **Redundant Fire Flow (IDAPA 58.01.08.501.18)**
  Provide **Maximum Day Demand** plus **Fire Flow** with largest pump out of service.

Emergency Operation

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•**Emergency Operation (IDAPA 58.01.08.501.07)**
Provide Average Day Demand plus Fire Flow for 8 hours during a power outage.

•Well #5 has standby generator – (3,500 gpm)
•Booster Station has standby generator
•Well #4 Generator Project – Substantially Complete – (2,295 gpm)
•Well #3 Generator Project – In design phase – construction 2012-2013 – (1,620 gpm)
•All new wells will be required to have standby generators

•Current water storage is sufficient to provide Fire Flow

•**Current and projected emergency operation requirement are met**

Source Redundancy

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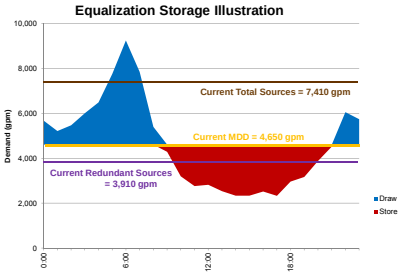
•**Source Redundancy (IDAPA 58.01.08.501.17)**
Provide the larger of **Peak Hour Demand** or **Maximum Day Demand** plus **Equalization Storage** with largest source out of service.



•Redundant source capacity = MDD

•Storage fills during low demand period and draws down during high demand period.

•Area above and below are equal.

Meeting Demand

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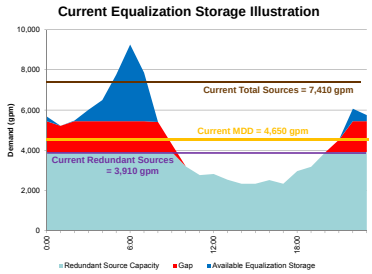

•**Current Equalization Storage = 680,000 gallons**

•**Gap** – represents the hazard to the water system in event of pump failure during high demand season

•**Current Redundant Source Capacity = 3910 gpm**

Meeting Demand

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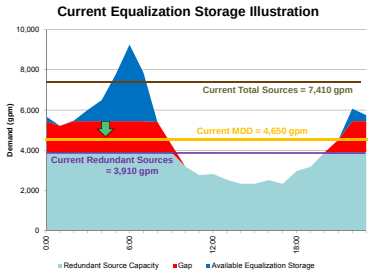
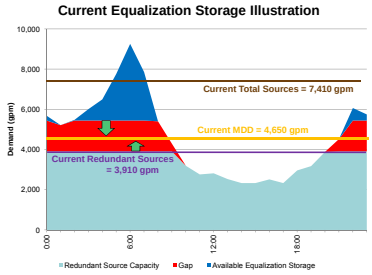


•**Increase Storage Capacity**

Meeting Demand

KELLER associates

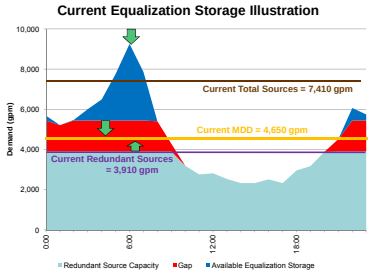


•**Increase Equalization Storage Capacity**

•**Increase Redundant Source Capacity**

Meeting Demand

KELLER associates



•**Increase Equalization Storage Capacity**

•**Increase Redundant Source Capacity**

•**Water Conservation & Management**

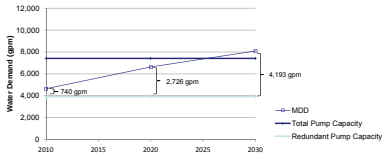
Water Supply

Water Supply (gpm)	2010	2020	2030
Population	13,922	19,868	24,259
Average Day Demand	1,789	2,552	3,117
Maximum Day Demand (gpm)	4,650	6,636	8,103
Peak Hour Demand (gpm)	9,301	13,273	16,206
Redundant Source Capacity (gpm)	3,910	3,910	3,910
Water Source Deficiency (gpm)	***740***	***2,726***	***4,193***

Redundant Source Capacity
Refers to pumping capability with largest pump offline

Water Source Deficiency
is in reference to the standard (IDAPA 58.01.08.501.17)

Chubbuck Projected Maximum Day Demand and Supply



Recommended Water Supply Solution

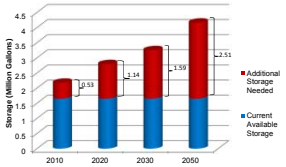
•Install New Well (2013) – capacity 2,000+ gpm

•Install New Well (2018) – capacity 2,000+ gpm

Estimated cost = $600,000 each

Water Storage

Chubbuck Water Storage Analysis



Water Storage (MG)	2010	2020	2030	2050
Operational Storage	0.34	0.44	0.51	0.65
Equalization Storage	1.21	1.72	2.10	2.88
Fire Storage	0.63	0.63	0.63	0.63
Stand-By Storage	0	0	0	0
Current Available Storage	**1.65**	**1.65**	**1.65**	**1.65**
Total Required Storage	***2.18***	***2.79***	***3.24***	***4.16***
Storage Deficiency (MG)	**0.53**	***1.14***	***1.59***	***2.51***

Recommended Water Storage Solution

•Install New Storage Reservoir (2013) – capacity = 2.5 MG

•There are economic and operational benefits from constructing storage to meet the 2050 projection

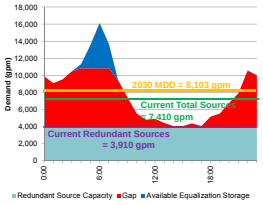
•Install Booster Pumping Station (2013) – capacity ~5,000 gpm

Estimated Cost = $4.4 million

Meeting Future Demand

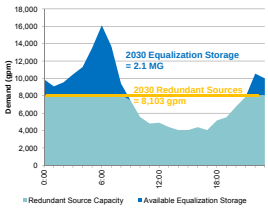
Projected Water Supply Deficiency

2030 Equalization Storage – no improvements



Recommended Solution

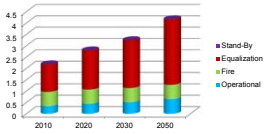
2030 Equalization Storage – Add Storage & Pumping



Redundant Fire Flow

•**Redundant Fire Flow Capacity (IDAPA 58.01.08.501.18)**
Provide **Maximum Day Demand** plus **Fire Flow** with largest pump out of service.

Storage By Component



Fire Flow Solution

•There is currently no projected deficiency in redundant fire flow capacity.

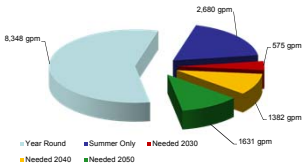
•New reservoir and booster station could potentially provide increased available fire flow if it becomes necessary.

Water Rights

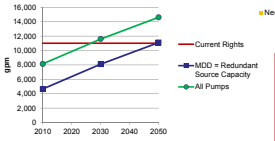
Recent Water Rights Acquisition

- •Summer only (April through October)
- •Three rights purchased = 2,680 gpm
- •Total water rights in summer = 11,028 gpm

Projected Water Rights Summary (gpm)



Projected Water Rights Need



Recommended Water Rights Solution

•Continue efforts to secure additional water rights
•Adopt alternative operation strategy to reduce long-term water rights need
•Implement conservation efforts to reduce long-term water need

Deficiencies & Solutions

Deficiencies

•Water Sources
•Need an additional **4,193 gpm** of water supply

•Storage
•Need an additional **1.6 MG** of storage (2030) or **2.5 MG** of storage (2050)

•Water Rights
•Need an additional **575 gpm** of water rights (2024)
•Need an additional 3,013 gpm of water rights (2030-2050)

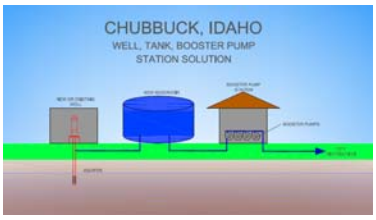
Solutions

•Water Sources
•New well of 2,000+ gpm capacity (2013)
•New well of 2,200+ gpm capacity (~2018)

•Storage
•Construct 2.5 MG storage reservoir
•Construct booster pump station (~5,000 gpm)
•Construct transmission line to connect into existing distribution network

•Water Rights
•Purchase additional water rights as budget and availability permit
•Continue current and implement additional water conservation efforts
•Consider appropriate operation adjustments to curtail need for additional water rights long-term

Water System Improvements



Recommended Water System Improvements:
Estimated Cost: $5 million
- 2,000 gpm Well
- 2.5 MG Storage Reservoir
- Booster Pump Station ~5,000 gpm capacity
- Standby Power Generator for new well and BPS
- Transmission Lines to Water System

Available Funding

Idaho Department of Environmental Quality – State Revolving Fund

- January 2012 – Letter of Interest Submitted
- Initial System Rank – 6 of 14 for project priority statewide
- Initial Loan Offer extended by IDEQ:
  - $5.0 million
  - 2.75% interest
  - 20 year term
- Estimated cost per household connection = $5.75-6.25 per month

Required for Implementation:

- Final Preliminary Engineering Report
- Environmental Information Document
- Approval to Incur Debt
- Acquire land for project site
- Design and Construction of Tank/BPS/Well Project

Discussion

Comments

and questions invited!

City of Chubbuck

Council Discussion: Water Facilities

Presented by:

Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
(208) 238-2146

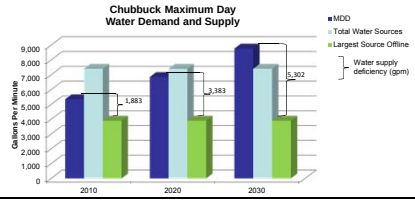
James P. Mullen, P.E.
Michael R. Jaglowski, P.E.
Skyler D. Allen, E.I.T.

Objectives

1. Summary of previous discussions.
2. Water system improvement recommendations.
3. Discussion.

Water Supply Summary

Water Supply (gpm)	2010	2020	2030	Water Conservation 2020	Water Conservation 2030
Population	12,417	15,895	20,346	15,895	20,346
Maximum Day Demand (gpm)	5,355	6,855	8,774	6,519	7,937
Fire Suppression to storage (gpm)	438	438	438	438	438
MDD + Fire Storage (gpm)	**5,793**	**7,293**	**9,212**	**6,957**	**8,375**
Largest Source Offline Capacity (gpm)	3,910	3,910	3,910	3,910	3,910
Water Supply Deficiency (gpm)	***1,883***	***3,383***	***5,302***	***3,047***	***4,465***



Does the population projection still make sense?
Yes, US Census 2009 Estimate is 12,483.

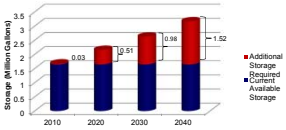
How much would water conservation affect the water supply deficiency?
Water use reduction of 0.5% annually would reduce the 20 year projected water supply deficiency by 837 gpm; the State average water use is 180 gallons per person per day.

What do these numbers mean?
The system requires 5,302 gpm of new supply for 2030 to meet State requirements.

How do we get there?
•Build a new well-3,500 gpm
•Future well (2020)-1,800 gpm
•Both with standby power

Water Storage Summary

Water Storage (MG)	2010	2020	2030	2040
Operational Storage	0.25	0.33	0.40	0.48
Equalization Storage	0.800	1.20	1.60	2.06
Fire Storage	0.630	0.630	0.630	0.630
Stand-By Storage	0	0	0	0
Current Available Storage	**1.65**	**1.65**	**1.65**	**1.65**
Total Required Storage	***1.68***	***2.16***	***2.63***	***3.17***
Storage Deficiency (MG)	***0.03***	***0.51***	***0.98***	***1.52***



What can be done to reduce required storage?
Water conservation and standby power can reduce the need for water storage.

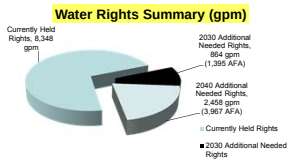
•***The single largest component of water use is landscape irrigation.*** An annual water use reduction of 0.5% would result in reduction of the 2030 storage deficiency by 150,000 gallons.

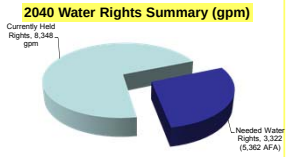
•Standby power at water sources can eliminate the immediate need for standby storage. All new water sources are required to have standby power.

How much storage is needed?
1.5 million gallons of new storage capacity is needed.

What do we need to do about water storage?
•Build a 1.5 MG storage reservoir
•Add standby generators to new water sources
•Water conservation

Water Rights Summary - Revised





How much water rights does the City need?
5,362 AFA (acre-feet per annum) of water rights are needed to satisfy *2040* water demands. This equates to *3,322 gpm* (gallons per minute) or *7.40 cfs* (cubic feet per second).

Is there any way to **reduce the need for water rights?**
Yes, water conservation will directly reduce the future need for additional water rights. An annual 0.5% water demand reduction would reduce the needed water rights in 2030 by 837 gpm (1,350 AFA).

What should be done to address water rights?
•*Purchase water rights as is financially feasible for the City at this time.*
•*Additional water rights, up to a total of 5,362 AFA are anticipated to be needed by 2040, a 30 year planning horizon.*
•Encourage water conservation, specifically for landscape irrigation.

Distribution System Expansion

What would a water concept plan for servicing the same areas as the sewer project look like?

How much waterline is this?
The lines shown total approximately 110,000 feet of waterline.

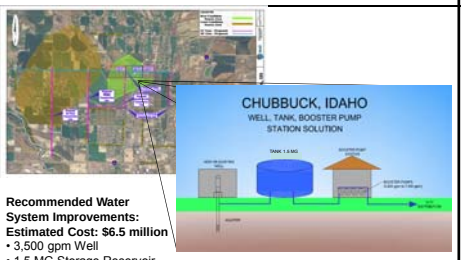
How much does waterline cost to install?
12-inch ~$92/ft
16-inch ~$115/ft
24-inch ~$132/ft

Includes line, valves, fittings, surface restoration, etc. Does not include Engineering, Legal, or Funding costs.

What lines are needed right now?
A transmission line from the recommended new well on Tyhee to Hawthorne is included as part of the recommended water system improvements.

How does the rest of this fit in?
Some of the lines shown could be planned for construction in the near future to expand the Chubbuck Water System service area.

Water System Improvements



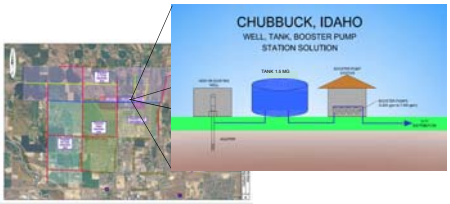
Recommended Water System Improvements:
Estimated Cost: $6.5 million

- 3,500 gpm Well
- 1.5 MG Storage Reservoir
- Booster Pump Station - 5,800 to 7,000 gpm
- Standby Power Generator to power well and BPS
- Transmission Lines to Water System – (See Tyhee Well on Distribution System Expansion)
- Acquire new water rights – total of 7,037 AFA

7

Recommendations

1. Complete a Preliminary Engineering Report (PER)
2. Approval to Incur Debt
3. Acquire new land for future well and storage site
4. Acquire new water rights
5. Water System Improvements – Tank/BPS/Well



8

Comments

and questions invited!

9

City of Chubbuck

Water Facilities Council Work Session

Presented by:

Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
(208) 238-2146

James P. Mullen, P.E.
Michael R. Jaglowski, P.E.
Skyler D. Allen, E.I.T.

Objectives

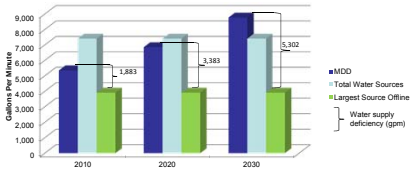
1. Summarize current system shortfalls.
2. Summarize recommendations.
3. Potential user impacts.
4. Discussion.

Water Supply Summary

Water Supply (gpm)	2010	2020	2030
Population	12,417	15,895	20,346
Maximum Day Demand (gpm)	5,355	6,855	8,774
Fire Suppression to storage (gpm)	438	438	438
MDD + Fire Storage (gpm)	**5,793**	**7,293**	**9,212**
Largest Source Offline Capacity (gpm)	3,910	3,910	3,910
Water Supply Deficiency (gpm)	***1,883***	***3,383***	***5,302***

Water supply is required to meet or exceed the Maximum Day Demand with the largest source offline (IDAPA 58.01.08.501.17)

Chubbuck Maximum Day Water Demand and Supply

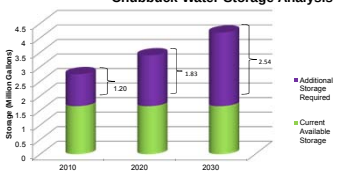


Water Storage Summary

Water Storage (MG)	2008	2020	2030
Operational Storage	0.370	0.450	0.545
Equalization Storage	0.800	1.20	1.60
Fire Storage	0.630	0.630	0.630
Stand-By Storage	0.950	1.12	1.41
Current Available Storage	**1.65**	**1.65**	**1.65**
Total Required Storage	***2.85***	***3.48***	***4.19***
Storage Deficiency (MG)	**1.20**	***1.83***	***2.54***

Required water supply is reduced by storing water produced during off-peak times for peaking, fire suppression, and stand-by conditions

Chubbuck Water Storage Analysis



Water Storage Summary

Water Storage (MG)	2008	2020	2030
Operational Storage	0.25	0.33	0.40
Equalization Storage	0.800	1.20	1.60
Fire Storage	0.630	0.630	0.630
Stand-By Storage	0	0	0
Current Available Storage	**1.65**	**1.65**	**1.65**
Total Required Storage	***1.68***	***2.16***	***2.63***
Storage Deficiency (MG)	**0.03**	***0.51***	***0.98***

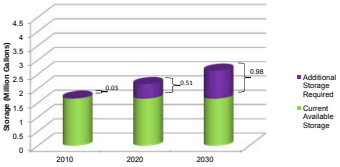
Additional emergency power generation at wells to provide Average Day Demand during emergency conditions would reduce or eliminate the Stand-by Storage component.

Chubbuck Water Storage Analysis

Emergency Power for well capacity >3,052 gpm

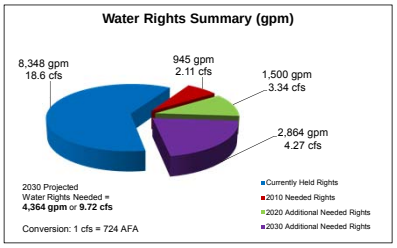
Either new or existing wells

Reduces needed storage by up to 1.5 million gallons.



Water Rights Summary

Additional Water Rights are needed:
A total of 4,364 gpm (gallons per minute), 9.72 cfs (cubic feet per second), or **7,037 AFA** (acre-feet per annum) of water rights are needed by 2030



Analysis & Recommendations

KELLER associates

- **Recommendations To Address Deficiencies** (20 yr Planning Horizon)
  1. Complete a Preliminary Engineering Report (PER) ($60,000)
     - Evaluate Improvement Alternatives
     - Recommend New Well and Storage Location(s)
     - Transmission and Distribution Improvements
     - Investigate Funding Alternatives
       - SRF Loan/Grant
       - Congressional Appropriations
  2. Approval to Incur Debt
     - Bond Election or Judicial Confirmation
  3. Acquire new land for future well and storage site ($50-70,000)
     - PER to identify and evaluate 2-3 specific sites
  4. Acquire new water rights ($1.0M)
     - 9.7 cfs required by 2030

Analysis & Recommendations

KELLER associates

- **Recommendations continued**
  5. Preliminary Water System Solution (~$5.0 M)
     - Storage Tank – 1.0 MG
     - Booster Pump Station – 5,800 to 7,000 gpm
     - New Well – 3,500 gpm now (an additional 1,800 gpm required by 2020)
     - Transmission lines for system connection
  6. Well #1 Rehabilitation
     - Connect to Lower Zone
  7. Distribution System Improvements
     - Improve Fire Flow and System Redundancy
  8. Transmission Line Meter(s) and SCADA upgrade ($200,000)
     - To Improve System Understanding and Management

Impact to System Users

KELLER associates

- **Each $1 million borrowed:**
  - **20 year repayment**
  - **4% interest on bond market**
    - **Approximately $1.80 per connection per month**
- **Total Recommended Solution ~ $6.5 Million**
  - **Well (3,500 gpm) – $1.2 million**
  - **Water Rights (9.7 cfs = 7,040 AFA) - $1 million +**
  - **Land (2 acres) - $70,000**
  - **Booster Pump Station (6,500 gpm) - $1 million**
  - **Storage Reservoir (1 MG) - $1.5 million**
  - **Transmission Line to System (24-inch) - $1.5 million**
  - **Upgrade to SCADA system - $200,000**
    - **Total per month per connection ~ $11.70**

KELLER associates

Comments

and questions invited!

City of Chubbuck

Water Facilities Council Work Session

Presented by:

Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
(208) 238-2146

James P. Mullen, P.E.
Michael R. Jaglowski, P.E.
Skyler D. Allen, E.I.T.

April 2010

Objectives

1. Compare System Capabilities to Current Regulations
2. Identify & Categorize Solutions
3. Present Recommendations
4. Schedule for Completion

Analysis & Recommendations

Chubbuck Water Demands

Demand	GPCD	2010	2020	2030
Population		12,417	15,895	20,346
Average Day (gpm)	216	1,863	2,384	3,052
Maximum Day (gpm)	621	5,355	6,855	8,774
Peak Hour (gpm)	931	8,028	10,276	13,155
Fire Flow (gpm)		3,500	3,500	3,500

Analysis & Recommendations

Water Sources and Rights

- Reliability and Emergency Operation (IDAPA 58.01.08.501.07):
  - Supply is measured with the largest source off-line
  - Emergency supply > 8 hrs Average Day Demand plus fire
- Design Recommendation:
  - Water rights should equal the 20 year maximum day demand

	Source Capacity	Emergency Capacity
TOTAL Water Sources	7,410 gpm	3,500 gpm
Largest Source (Well #5)	3,500 gpm	3,500 gpm
Largest Source Offline	*3,910 gpm*	*0 gpm*

Total Water Rights = 8,348 gpm

Analysis & Recommendations

Water Storage Analysis

- Operational Storage is 15% of Total Storage
- Equalization Storage from Hydraulic Model
- Fire Storage provides 3,500 gpm for 3 hours
- Stand-By Storage provides 8 hrs of Average Day Demand

	2008	2020	2030
Operational Storage	0.370	0.450	0.545
Equalization Storage	0.800	1.20	1.60
Fire Storage	0.630	0.630	0.630
Stand-By Storage	0.950	1.12	1.41
Current Available Storage	**1.65**	**1.65**	**1.65**
Total Required Storage	***2.85***	***3.48***	***4.185***
Storage Deficiency (MG)	**1.20**	***1.83***	***2.535***

Based on 2007 per capita usage.

Analysis & Recommendations

Water Supply Analysis

Groundwater Pumping + Storage to Satisfy:

- Groundwater Source Redundancy (IDAPA 58.01.08.501.17):
  - With any source out of service provide Peak Hour Demand or Maximum Day Demand and equalization storage
- Redundant Fire Flow Capacity (IDAPA 58.01.08.501.18):
  - With any pump out of service supply Maximum Day Demand and fire suppression

	2010	2020	2030
Population	12,417	15,895	20,346
Maximum Day Demand (gpm)	5,355	6,855	8,774
Fire Suppression to storage (gpm)	438	438	438
MDD + Fire Storage (gpm)	**5,793**	**7,293**	**9,212**
Largest Source Offline Capacity (gpm)	3,910	3,910	3,910
Water Supply Deficiency (gpm)	***1,883***	***3,383***	***5,302***

Analysis & Recommendations

KELLER associates

Water Delivery Analysis

Pumping to Satisfy:
- Peak Hour Demand
- Maximum Day Demand and fire suppression

With any Pump out of service

	2010	2020	2030
Population	12,417	15,895	20,346
Maximum Day Demand (gpm)	5,355	6,855	8,774
Fire Suppression flow (gpm)	3,500	3,500	3,500
MDD + Fire Flow (gpm)	**8,855**	**10,355**	12,274
Peak Hour Demand	8,028	10,276	**13,155**
Largest Source Offline Capacity (gpm)	3,910	3,910	3,910
Required Delivery from Storage* (gpm)	***4,945***	***6,445***	***9,245***

***Delivery from Existing Tanks ~3,500 gpm**

Analysis & Recommendations

KELLER associates

Summary of System Deficiencies

- 2010 Deficiencies
  - Water Source Deficiency of 1,900 gpm
  - Water Rights Deficiency of 950 gpm
  - Water Storage Deficiency of 1.2 MG
  - Delivery From Storage Deficiency of ~1,450 gpm
  - Continue Distribution System Improvements
  - Add Transmission for Storage Tanks and Wells
  - SCADA System Upgrade
- 2030 Projected Deficiencies (20 year planning horizon)
  - Water Source Deficiency of 5,300 gpm
  - Water Rights Deficiency of 4,375 gpm
  - Storage Deficiency of 2.6 MG
  - Delivery from Storage Deficiency - (5,800 to 7,000 gpm)

Analysis & Recommendations

KELLER associates

- **Recommendations To Address Deficiencies** (20 yr Planning Horizon)
  1. Complete a Preliminary Engineering Report (PER) ($60,000)
     - Evaluate Improvement Alternatives
     - Recommend New Well and Storage Location(s)
     - Transmission and Distribution Improvements
     - Investigate Funding Alternatives
       - SRF Loan/Grant
       - Congressional Appropriations
  2. Approval to Incur Debt
     - Bond Election or Judicial Confirmation
  3. Acquire new land for future well and storage site ($50-70,000)
     - PER to identify and evaluate 2-3 specific sites
  4. Acquire new water rights ($1.0M)
     - 9.7 cfs required by 2030

Analysis & Recommendations

KELLER associates

- **Recommendations continued**
  5. Preliminary Water System Solution (~$5.0 M)
     - Storage Tank – 2.6 MG
     - Booster Pump Station – 5,800 to 7,000 gpm
     - New Well – 3,500 gpm (additional 1,800 gpm required by 2020)
     - Transmission lines for system connection
  6. Well #1 Rehabilitation
     - Connect to Lower Zone
  7. Distribution System Improvements
     - Improve Fire Flow and System Redundancy
  8. Transmission Line Meter(s) and SCADA upgrade ($200,000)
     - To Improve System Understanding and Management

Analysis & Recommendations

KELLER associates

- **Schedule of Recommendations**

Spring/Summer 2010 - (March through July 2010)
1. Preliminary Engineering Report – Identify Solutions
2. City Council Workshops
3. Negotiate water rights
4. Arrange project funding

Fall 2010 - (August through November 2010)
1. Approvals to incur debt
2. Begin design for project

Analysis & Recommendations

KELLER associates

- **Schedule of Recommendations (continued)**

Winter (November 2010 through March 2011)
1. Finalize design & project approvals - February 2011
2. Secure funding - March 2011

Spring/ Summer 2011
1. Bid water system improvement project - April 2011
2. Begin construction - May 2011
3. Start up new improvements project – October 2011

Winter 2011
1. Construction closeout for improvements project – Dec. 2011

KELLER associates

Comments

and questions invited!

City of Chubbuck

Water Facilities Update and Evaluation

Presented by:

Keller Associates, Inc.
305 N. 3rd, Suite A
Pocatello, ID 83201
(208) 238-2146

James P. Mullen, P.E.
Michael R. Jaglowski, P.E.
Skyler D. Allen, E.I.T.

February 2010

1

Presentation Objectives

- **Water system review**
  - 2002 to 2010
- **Technical opinions of the existing water system**
- **Analysis, recommendations and next steps**

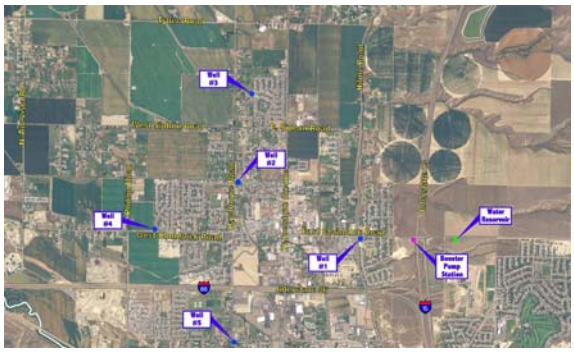
2

Water System Review

- **Water System Component Overview**
  - 5 wells – 3 operational (7,410 gpm), 1 abandoned and 1 off line
  - Largest well = Well #5 (3,500 gpm)
  - Water rights = 8,348 gpm (18.6 cfs) available – 938 gpm surplus
  - 3 tanks – 1.65 MG
  - 2 pressure zones; connected by valves
  - 1 booster pump station – upper zone
  - 47.5 miles of waterline
    - Majority are 6" diameter pipe
    - Trunk lines are typically 16" diameter pipe or larger

3

Existing Assets



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Water System Review

- **Completed Studies and Reports**
  - Water Facilities Planning Study
    - IDEQ approved April 2004
  - Connection Fee Analysis and Recommendations
    - Submitted July 2006
  - Water Source Evaluation
    - Submitted July 2007

5

Water System Review

- **Completed Studies and Reports**
  - Water System Rates Analysis
    - On-going - start Summer 2007
  - Updated Water Model
    - November 2007
  - Water Source Addendum
    - February 2008
  - Pressure Irrigation Design & Construction Standards
    - Submitted April 2008
  - Water Rights Consolidation
    - Completed December 2009

6

Water System Review

- **Studies and Reports – Final Recommendations**
  - Water Facilities Planning Study
    - *Priority Improvements (2004 – 2005)*
    - Short Term Improvements (2006 – 2013)
    - Long Term Improvements (2014 – 2023)

City Reservoir Site

Bench Booster Pump Station

Well #4 – Independence Road

Water System Review

- **Studies and Reports – Final Recommendations (cont.)**
  - Water Facilities Planning Study – Priority Improvement Projects:
    - Completed Improvements:
      - Rehabilitated the existing storage tank
      - Groundwater assessment study
      - Connection fee analysis
      - Pressure irrigation system ordinance and specifications
      - Well #5 electrical improvements
      - Water rate adjustments
    - Pending Improvements:
      - Well #1 rehabilitation – lower zone connection
      - Transmission line meter and SCADA
      - Water conservation study and ordinance

Water System Review

- **Studies and Reports – Final Recommendations (cont.)**
  - Water Facilities Planning Study
    - Priority improvements
    - *Short term improvements (2006 – 2013)*
    - Long term improvements

Well #5 – Hawthorne Road

Water System Review

- **Studies and Reports – Final Recommendations (cont.)**
  - *Water Facilities Planning Study – Short Term:*
    - Completed improvements:
      - Distribution system rehabilitation – fire flow
      - Water rights identification and research
    - Pending improvements:
      - Procure land for new storage tank (2006)
      - Procure land and water rights for new well (2007)
      - Distribution system improvements – fire flow and system redundancy (2006 – 2013)
      - Update Water Facilities Planning Study (2008)
      - New water source – Well #6 (2010)

Completed Dist. System Projects

Water System Review

- **Studies and Reports – Final Recommendations (cont.)**
  - Water Facilities Planning Study
    - Priority improvements
    - Short term improvements
    - *Long term improvements (2014 – 2023)*
    - Pending improvements:
      - New transmission line to gravity storage (2014)
      - Water reclamation /non-potable water project (2018)
      - Rehabilitate existing wells (2019 – 2023)
      - New storage tank (2023)

Water System Review

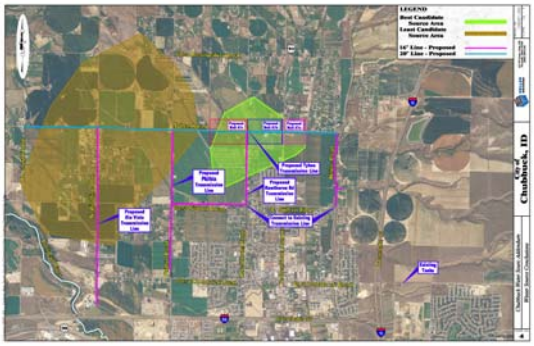
- **Studies and Reports – Final Recommendations (cont.)**
  - Connection fee analysis and recommendation
    - Raise the connection fee to $2,250
  - Water source evaluation
    - Groundwater contamination plumes – treatment costly
    - Targeted available water rights
    - Locate well generally to the north and east of City
  - Updated water model

Ground Water Trends

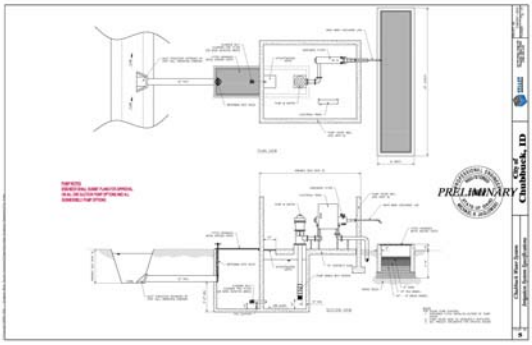
Water System Review

- **Studies and Reports – Final Recommendations (cont.)**
  - Water source addendum
    - Locate new well in the Tyhee/Hawthorne area
    - Distribution system connection points
    - Possible well/tank/booster pump station solution
    - Preliminary costs of recommended solution
  - Pressure irrigation design and construction standards
    - Provided material and construction standards
  - Water system rates analysis - Visit and update yearly
  - Water rights consolidation – Completed December 2009

Water Source Conclusions



Irrigation System Specification



Analysis & Recommendations

Water Sources Analysis–Water Rights

- IDEQ Recommendation:
  - Water rights should equal the 20 year maximum day demand

Location	Total Source Rights
Well #1	350 gpm
Well #2	494 gpm
Well #3	498 gpm
Well #4	3,006 gpm
Well #5	4,000 gpm
Total Source Rights	***8,348 gpm***

Analysis & Recommendations

KELLER associates

Water Sources Analysis - Delivery

- IDEQ Regulation (IDAPA 58.01.08):
  - Supply is measured with the largest source off-line
  - Emergency supply > Average day demand plus fire

Location	Source Capacity	Emergency Capacity
Well #1	OFF-LINE	
Well #2	ABANDONED	
Well #3	1,620 gpm	
Well #4	2,290 gpm	
Well #5	3,500 gpm	3,500 gpm
TOTAL Source Delivery	7,410 gpm	3,500 gpm
Largest Well (Well #5)	3,500 gpm	3,500 gpm
IDEQ Total Delivery	***3,910 gpm***	***0 gpm***

Analysis & Recommendations

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Water Demand Analysis

- Chubbuck's flow demands are typical for cities this size
- For analysis; demand is proportional to population
- Reported flow values are based on linear models
- Ratios between residential, commercial, and industrial remain constant
- Water usage behavior remains consistent

Demand	GPCD	2003	2008	2015	2020	2030
Population		10,175	13,200	14,968	16,212	19,587
Ave Day (gpm)	216	1,529	1,980	2,245	2,430	2,940
Maximum Day (gpm)	621	4,390	5,690	6,450	6,990	8,445
Peak Hour (gpm)	931	6,580	8,530	9,680	10,480	12,660

Analysis & Recommendations

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Supply vs. Demand

- City is required to have sufficient capacity to supply maximum day demand plus fire flow (3,500 gpm) with large well off-line
  - IDEQ Regulations (IDAPA 58.01.08.501.17)
- City currently requires an additional 1,780 gpm to satisfy existing demands
- City will require an additional 4,535 gpm of supply by 2030
- Flow deficiencies can be mitigated by additional storage or additional wells
  - IDAPA 58.01.08.501.03

	2003	2008	2015	2020	2030
Population	10,175	13,200	14,968	16,212	19,587
Total System Capacity	7,410	7,410	7,410	7,410	7,410
Maximum Day Demand (gpm)	4,390	5,690	6,460	6,990	8,445
IDEQ System Capacity (gpm)*	3,910	3,910	3,910	3,910	3,910
IDEQ Flow Deficiency	***480***	***1,780***	***2,550***	***3,080***	***4,535***

* With largest well off-line

Analysis & Recommendations

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Water Storage Analysis

	2003	2008	2015	2020 (4)	2030
Operational Storage (1)	0.200	0.370	0.410	0.450	0.545
Equalization Storage	0.340	0.800	1.00	1.20	1.60
Fire Storage (2)	0.630	0.630	0.630	0.630	0.630
Stand-By Storage (3)	0.275	0.950	1.10	1.12	1.41
Current Available Storage	**1.65**	**1.65**	**1.65**	**1.65**	**1.65**
Total Required Storage	***1.445***	***2.85***	***3.140***	***3.48***	***4.185***
Current Deficiency (MG)	**Adequate**	**1.20**	**1.49**	***1.83***	***2.535***

1. 15% of Total Storage
2. Based of 3,500 gpm for 3 hours
3. Based on IDEQ recommendation of 8 hrs of Average Daily Flow
4. Based on Current (2007) per capita usage, actual volumes may be decreased due to conservation efforts

Technical Opinion – Water System

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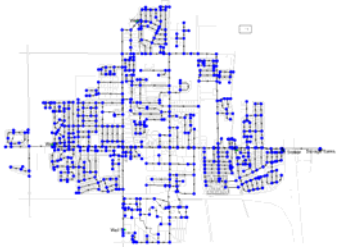
Water Distribution & Delivery

- Delivery refers to the system's ability to deliver the flows at the appropriate pressures under a variety of state defined scenarios.
- A blue nodes indicates there is 3,500 gpm of fire flow at 20 psi under the Maximum Day Demand IDEQ scenario with the largest well (well 5) off-line.



Completed Dist. System Projects

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Analysis & Recommendations

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- **Recommendations- System Assets**
  - Reports & Studies
    - Refresh the 2004 Water Facilities Planning Study
    - Leak Detection Study
    - SCADA System Up-grade to Optimize System Efficiency
  - Supply & Demand
    - Acquire land for future well
    - Add new wells and/or decrease demand
    - Add emergency power to wells
    - Acquire new water rights
  - Water Storage
    - Acquire land for future storage
    - Add new storage tank and booster pump station in lower zone
  - Distribution and Delivery
    - Transmission line meter and SCADA upgrade

Potential Sites for Tyhee Well

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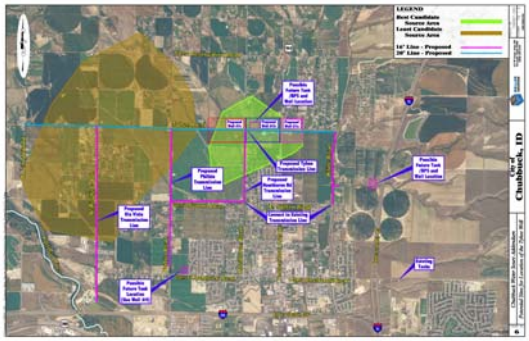

Analysis & Recommendations

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- **Recommendations Planning Horizon**
  - Priority Improvements (FY 2010 to 2012)

1. Refresh the 2004 Water Facilities Planning Study ($60,000)
2. Acquire new land for future well and storage site ($50,000)
3. Acquire new water rights ($1.0M)
4. Add emergency power to wells ($100,000 each Well)
5. Add new well ($500,000 to $1.0M)
6. Transmission lines for the new well ($750,000)
7. Storage tank and booster pump station in lower zone ($2.5M) Well #4 option – New well option
8. Transmission line meter(s) and SCADA upgrade ($200,000)

Potential Sites for Tyhee Well

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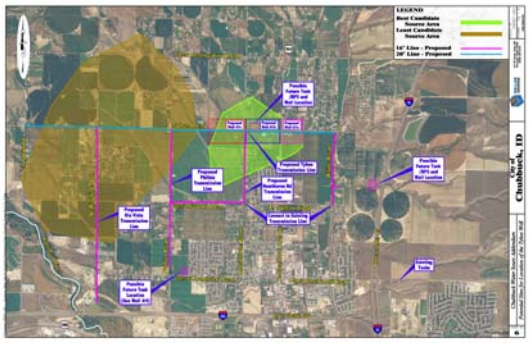

Analysis & Recommendations

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- **Schedule of Recommendations**

Spring/Summer 2010 - (March through July 2010)

1. Preliminary Engineering Report – Identify Solutions
2. City Council Workshops
3. Negotiate water rights

Fall 2010 - (August through November 2010)

1. Approvals to incur debt
2. Arrange project funding
3. Begin design for project

Analysis & Recommendations

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- **Schedule of Recommendations (continued)**

Winter (November 2010 through March 2011)

1. Finalize design & project approvals - February 2011
2. Secure funding - March 2011

Spring/ Summer 2011

1. Bid water system improvement project - April 2011
2. Begin construction - May 2011
3. Start up new improvements project – October 2011

Winter 2011

1. Construction closeout for improvements project – Dec. 2011

Analysis & Recommendations

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- **Recommended City Action Items**

1. Initiate Preliminary Engineering Report
2. City Council Workshops (March & April 2010)
   a) Progress of preliminary Engineering Report
   b) Further water system education
   c) Parallel transmission line – Tyhee Road
   d) Water rights
   e) Locate/Acquire land for project site
   f) Possible funding sources & amounts
3. Target plan to incur debt

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Comments

and questions invited!

Our Commitment to Your Project Needs…

Our first goal is to listen and understand ***your project needs***. Changing times require innovation. As we look toward the future, water, wastewater, and transportation issues are becoming increasingly complex and are paramount to our quality of life and overall economy. Our professionals will apply progressive and forward-thinking concepts on your studies, planning efforts, and projects – solutions will be cost-effective. The Keller Associates team of dedicated engineers and associates are committed to the timely delivery of quality products.

We are excited to address your water needs –
Keller Associates will ***listen, innovate, motivate, and deliver.***